The German Gas Market post 2005:
Development of Real Competition

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Heiko Lohmann is an independent journalist based in Berlin specialising on German gas issue. He has been writing for a number German and English publications about German gas developments since the beginning of the liberalisation process. Since 2004, he has been publishing his own monthly newsletter: "Gasmarkt Deutschland".

Preface

At the launch of Heiko Lohmann's first study, I recall remarking that it was amazing that this was the first comprehensive account in English of the steps towards liberalisation of Europe's second largest gas market. Afterwards, a senior executive from a major German energy company corrected me saying that this was the first major study in *any* language on the German gas market; as far as I know, that is still the case. If the first study filled that gap in the literature, this new study brings the story four years further on covering the years 2006-09, an enormously important period in terms of the development of competition.

The first study took us from the start of the Verbandevereinbarung through the E.ON-Ruhrgas merger to entry/exit tariff design and the legal challenge to long term contracts. This study takes us through the story of the two-contract model and the development of market areas, OTC and exchange-based trading, the development of competition, and balancing and flexibility markets. As before, not only does this study explain these events but it provides a comprehensive picture of all the different market players, their relative positions and strategies.

Just as for the first study, I would like to say how grateful we are to Heiko Lohmann for taking on this very difficult task. Even with his encyclopaedic knowledge of the subject, the ferocious complexity of the German gas market means that this has been a huge amount of work; this study covering only four years is only marginally shorter than the first one! Taken together, the two represent a major work of reference on European gas markets and one that I am hugely proud that our research programme has sponsored.

Jonathan Stern September 2009

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Acknowledgements

In 2006 the Oxford Institute of Energy Study (OIES) published my study "The German path to natural gas liberalisation - is it a special case? Until May 2006 – the time when the first manuscript was finally finished the German market was characterised by a lack of a proper framework in particular concerning network access and a very slow market development. But already in May 2006 a new element could be observed. After an amendment of the German energy law in 2005 a regulatory authority was introduced and it had started first initiatives to improve in particular network access. By I concluded my 2006 study with a sceptical outlook. I thought the further development would be slow because of more a less successful resistance of the incumbents. But the evolution was different to what I had expected and therefore I felt it would be useful to write an update of my 2006 study. I am very glad that the OIES gave me the opportunity to write this update. Although there are still a number of issues concerning the framework of the German gas market are still not finally settled, I think it is less a "work in progress" than the first study, because the main cornerstones were in place when the manuscript was finished in July 2009.

The study is largely based on my journalistic work on the German gas market. Many issues that are included in the study were published in my monthly publication Gasmarkt Deutschland. Most information and analysis is based on numerous discussions with those working within the industry or institutions concerned about the industry. I would like to say thank you to all those willing to share with me their views and analyses of the German gas market.

But in particular I have to say thank you to Jonathan Stern who not only read the first draft very carefully and pointed out things that had to be clarified or added but also had the nasty task to transfer my German English into proper language. Simon Pirani from the OIES also had to struggle with the manuscript and John Elkins from GasMatters and OIES did the final editing. I want to thank all of them for the time and work they spent. A number of people from the industry read the draft and gave their comments and suggestions for improvement. I am grateful for their their time spent in reading and discussions. All remaining shortcomings are entirely my responsibility.

Finally I have to thank my wife and my children for their patience, when I spent the evenings at my desk or was in a bad mood because the work didn't proceed.

Heiko Lohmann

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1 Summary

This study describes the development of the German gas market from 2006 to 2009 and its transition from a market situation where hardly any competition was observable to a market where competition is starting to take place. I already described in an earlier study in 2006 the development – or stagnation - of the German gas market from 2000 to 2005[1]. I start the present study with a summary of the main results of my 2006 study, where I identified three main issues that were responsible for the lack of change in the German gas market and the not very satisfying response to the initiative of market liberalisation started in 1998 with the first EU directive, 98/30/EC "Concerning common rules for the internal gas market in natural gas". The three issues were:

- Network access
- Long-term contracts
- Market structure

The main obstacle that prevented any change was the issue of network access. The German government did not install a regulatory authority at the beginning of formal market liberalisation but relied on negotiated third party access. But associations were not able to agree on a system that really facilitated access for new market entrants and encouraged competition[2].

In the present study I describe how this changed after the German government changed the energy law in 2005 and installed a regulatory authority, the Bundesnetzagentur (BNetzA) following the prescriptions of the second – EU directive 2003/55/EC - which repealed the first one. The BNetzA finally enforced – after lengthy and difficult discussions with the main stakeholder associations - a model of network access, called the "two-contract model" that allowed rather easy and non-discriminatory third party access to the German networks. But the model still had one severe shortcoming. It allowed the network operators to divide Germany into so called "market areas", and the two-contract model was applied in each market area separately. In October 2006, when the new model of network access was finally introduced, Germany was divided into 19 different market areas, still a large hurdle for the development of competition. This study describes the progress and setbacks in the reduction of market areas. In October 2009 the number will be finally reduced to a maximum of eight.

Based on the new model of network access, OTC trading and exchange based trading at the German energy exchange EEX started to develop in Germany. I show that the virtual trading point in the E.ON GT (now called NCG) market area developed into a hub, with significant liquidity, although it still does not have the same importance as the more developed Dutch TTF, the leading hub on the continent. I also describe how market prices quoted at this hub

[1] Heiko Lohmann: The German path to natural gas liberalisation – Is it a special case?, Oxford Institute of Energy Studies 2006.

[2] See my 2006 study, p 25-50 for a detailed description of the "Verbändevereinbarungen"(association agreements) and the four involved associations of gas users and the gas industry.

have started to have an influence on pricing of gas contracts, which are still dominated by oil-linked contracts. The traditional pricing principle of "Anlegbarkeit" (pricing related to competing fuels) has started to lose its dominance in the German gas market.

The next step of the study is a description of the development of gas-to-gas competition in Germany, based on this changed model of network access. The main findings in this section are:

- New market entrants became much more successful. Besides improved network access, one of the main reasons is the ban on long-term contracts in the wholesale sector by the Bundeskartellamt in 2006.
- Competition among incumbents started. Not only did the major German gas companies begin to compete against each other, but regional and local gas companies also started sales activities outside their traditional sales areas.
- Competition started even in the residential market, where virtually no competition took place before 2006, although the German antitrust authority still keeps a very close eye on this market segment and competition in many parts of Germany is at a very early stage.

Competition in Germany might not be perfect in 2009 but at least players in the wholesale sector (local utilities) and the industrial sector in most German market areas can choose between different suppliers. In many cases ten to fifteen potential suppliers respond to tenders in these sectors.

A still difficult area of the German gas market - but an area where significant changes are taking place - is balancing and flexibility. One of the most prominent changes in 2008 was the shift from a regime of hourly to daily balancing. After intensive discussions with the stakeholder associations, daily balancing was introduced in October 2008. This new system is supplemented with some means to give shippers incentives to take care of their hourly load management. In principle the system is a huge improvement for shippers, although it is rather complicated and operational procedures are not yet working smoothly. The new system reduces the demand for flexibility from shippers, because the responsibility for load management and system balancing is mainly transferred to network operators. But market players still need access to storage or flexibility services to manage their portfolios. Germany is in principle well equipped with storage capacity but most of it is booked long-term. But there are many new storage projects in Germany and not only incumbents but also international gas traders and local utilities are investing in storage capacity. Furthermore a market for primary and secondary storage capacity is developing, where auctions of capacity take place or storage capacity or flexibility products are offered bilaterally.

In the last chapter, future trends in the German gas market are described. There is a trend towards ownership unbundling and the regulatory framework reduces the strategic value of pipeline systems for the major gas companies that are still integrated, because it enforces more and more separation of transportation operations. As a result, framework conditions for investment in new infrastructure become crucial and this is an area where further progress is

needed. The last important regulatory issue on the German agenda is capacity allocation and congestion management. A new regime, that may have a severe impact on the business of the major incumbents, will be most likely introduced by the regulatory authority in 2009, for implementation not before 2010. The final trend is a potential decrease in gas demand in Germany. In the heating sector the German energy and climate policy will most likely lead to a decrease of gas demand and the future of gas in the power sector might not be very bright.

The final conclusion of the study is that major changes have taken place in the German gas market between 2006 and 2009. The major driver was the work of the regulatory authority, but changed market behaviour and mindset towards regulation and competition of the major incumbents – in particular E.ON Ruhrgas - supported this development. Although there are still issues that need to be settled, especially further reduction of market areas and principles of congestion management, the market design now allows market entry and competition, and competition is in reality taking place.

2 Introduction – From 2000 to 2008/2009

2.1 2006 – 2008/2009: The winds of change

In September 2006 I published my study "The German Path to Natural Gas Liberalisation – Is it a special case?" The study covered the German liberalisation process from 2000 to 2005. The main result of the study was that although a number of important steps were made to allow the formal liberalisation of the German gas market, the impact had been extremely limited. The market structure remained more or less unchanged and identifiable competition was negligible.

But since 2006 the situation in Germany has fundamentally changed. Representatives of the major incumbents describe these changes as "revolutionary"[3]. The changes, which are indeed "revolutionary" for the industry, include:

- That regulation started to become effective and a model of network access was finally enforced, facilitating market entry and supporting the development of gas trading.
- Gas trading at virtual trading points became frequent and as a consequence market prices for gas appeared.
- Not only new entrants but also incumbent gas players are now actively promoting gas-to-gas competition.
- As a consequence since 2006 even residential customers have a choice between at least two suppliers, and in some regions many more suppliers are offering gas to residential customers.

[3] The former CEO of E.ON Ruhrgas, Burckhard Bergmann who retired in February 2008 spoke in his final speeches about a "revolutionary change in competition in the German gas market." (For example at the 15th Handelsblatt-Jahrestagung Energiewirtschaft the major German energy conference at January 23, 2008 at Berlin.

This study deals with these new developments and the reasons behind these rapid changes in the German gas market. But in the following section, the main findings of my 2006 study are summarised as a starting point for this analysis.

2.2 Summary of the 2000 – 2005 period covered in the first study – a slow development [4]

2.2.1 Key issues for the market development

After the formal liberalisation of the market took place in 2000, the following issues were identified as key drivers for the development or non-development of the German gas market:[5]

- Network access
- Long-term contracts
- Market structure

Network access: during the first phase of liberalisation Germany relied on a regime of negotiated Third Party Access. Negotiations among the four major associations of network operators and network users were a nightmare and did not result in a truly transparent, non-discriminatory and workable system that allowed third parties reliable and efficient access to the German networks to supply all customers groups in Germany. In 2003 discussions about regulated Third Party Access started after the 2nd EU-Directive on the opening of the gas market made regulated Third Party Access compulsory and forced Germany to establish a new system.[6] But two years of legal process amending the German energy law - which came finally into force in July 2005 - did not produce a comprehensive and clearly worded framework that could be implemented directly by network operators and easily monitored by the newly created regulator Bundesnetzagentur (BNetzA). But as a result of very clever political lobbying by some stakeholder associations and political bargaining processes, the law contained the nucleus for a model of network access similar to that established in the German power market[7]. The law said that, in principle, network access should be based on one entry and one exit contract and network operators should manage this system by mutual co-operation. This entry-exit model should have been implemented by February 1, 2006. But the months that followed July 2005 demonstrated very clearly how the German network operators fought fiercely and skilfully against a model of network access, which would really endanger the established market structure. As a result, February 1, 2006 passed without any implementation of a new model. The BNetzA, different associations of network operators and different groups of gas users and gas traders, struggled with different concepts called the "Two-contract model" and "Single-booking model".

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[4] Heiko Lohmann: The German Path to Natural Gas Liberalisation – Is it a special case? Oxford Institute for Energy Studies, 2006. NG14

[5] It is not straightforward to identify the proper starting date for the liberalisation process. Formally all German gas customers were allowed to choose their supply freely from 1998 after a first amendment of the energy law. Furthermore the traditional demarcation rules, which were part of the antitrust law were also abolished in 1998, when the antitrust law was amended. The first EU Directive on the opening of the gas market was effective from 1998 and should have been transposed into national law by 2000. A first agreement on network access was in place in August 2000.

[6] See Directive 2003/55/EC of the European Parliament and of the Council, Article 25

[7] The whole law making process for the amendment of the energy law is a textbook example of how this process is influenced to a large extent more by different lobbying groups than by rational policy making.

To make the long story on network access short: even by 2006, no working model of network access was in place. This was neither a very good prerequisite, nor a good omen, for the development of a competitive market.

Long-term contracts: Another important characteristic of the German gas market was the existence of long-term gas supply contracts at the wholesale level. Typically German distribution companies had procurement contracts with one regional or interregional gas supplier[8] with a duration of up to twenty years. Although some of these long-term agreements had been modified at the beginning of the liberalisation process, they continued to have the effect of closing large parts of the market to competition. Only a limited number of local distribution companies were able to switch supplier, or build up a portfolio of procurement contracts. From the beginning of liberalisation it was clear that these traditional long-term contracts were in conflict with German and European antitrust law relating to liberalisation. In late 2003, the German antitrust authority, Bundeskartellamt (BkartA) started a formal procedure against the long-term sales contracts of interregional and regional gas companies with local distribution companies. But it took until January 2006 before the BkartA released a formal decision to ban E.ON Ruhrgas' contracts with local distribution companies.

Long-term contracts were a second major issue where no final agreement was reached by the end of 2005. As a result, the traditional market structure remained during this period due to a lack of clear rules on the limits of long-term contracts. This uncertainty meant that distribution companies were usually reluctant to challenge their existing contracts.

Market structure: The system of long-term contractual relationships was a feature of the peculiar structure of the German gas market. Gas companies at all levels of the industry perceived themselves as part of a single "gas family". In addition to long-term contracts, these family relationships were underpinned by the following arrangements:

- Mutual shareholdings between interregional gas companies.
- Shareholdings of interregional gas companies in regional gas companies and local distribution companies.
- The principle of sales partnership, where the supplier supported the local distribution companies with advice, know-how and finance on all aspects of the business, including market penetration, and customer service.
- Sales contracts with distribution companies that were not only long-term but also included "No-Worry Packages" where the customer paid for the annual gas off-take

[8] Traditionally the German gas market had a hierarchical market structure with several layers. All companies were integrated, with sales and network activities. The companies usually were characterised by their position in the transportation chain, which is correlated with their position in the supply chain. Interregional gas companies (überregionale Ferngasgesellschaften) are the importing German gas companies (mainly E.ON Ruhrgas, ExxonMobil, Shell, VNG – Verbundnetz Gas and Wingas). Regional gas companies buy their gas typically from the interregional gas companies, ship it through their networks and sell it to distribution companies. This group includes Bayerngas, Gasversorgung Süddeutschland, Ferngas Nordbayern, Gas-Union, Saar Ferngas. Some companies like RWE, EWE or Erdgas Münster do not perfectly fit in this pattern (For a more detailed account see Lohmann 2006, p. 7 – 9 and Hans-Wilhelm Schiffer: Energiemarkt Deutschland Cologne 2005, p. 147 – 169.

and flexibility it used. Local distribution companies therefore had only very limited incentives and competence to manage their gas procurement[9].

- Very strong informal relationships.
- No gas-to-gas competition between the incumbents[10].

Between 2000 and 2005 these family relationships weakened. As shown in the 2006 study, a major blow was the take-over of Ruhrgas by E.ON. Ruhrgas was the "mother" of the gas family. The take-over by E.ON was a first step towards changing the role of Ruhrgas in the German gas market. A second important step was the separation of Shell's and ExxonMobil's sales businesses. Both companies were part of the German "gas club" or "gas family[11]" as shareholders in Ruhrgas and co-owners of BEB, a traditional interregional gas company. In 2004, the two oil and gas majors each transferred their sales business from BEB to separate sales companies[12]. As a consequence a partly unbundled network and storage operator, the new BEB, emerged, along with two new sales companies with new – and different – business strategies.

But the effects of these first structural changes and the weakening of the traditional ties among the different companies of the industry had no obvious effect on the German gas market until the end of 2005. Changes of ownership and organisation did not lead to a visible change of strategies.

2.2.2 The German gas market at the end of 2005

The conclusion of my 2006 study was that, as a result of these developments, the emergence of competition was very slow. Beginning in 2000, a number of new entrants entered the gas market; some left the market for different reasons; others stayed and learned to cope with the different obstacles. The companies had some successes in acquiring customers in the distribution and industrial sectors. In terms of capturing market share, successes remained negligible[13]. And due to the obstacles described in the study, the aspirations of new entrants were limited. They had limited volumes of gas available, difficulties in providing flexibility, and very small sales forces; hence they were forced to concentrate on a limited geographical area. The lack of competition, measured by a lack of success of new entrants and significant

[9] There were exceptions and more advanced distribution companies operated – usually pipe - storage for peak shaving, but there was no real need for such activities.

[10] Although the traditional formal demarcation arrangements had been illegal since 1998, in practice horizontal and vertical arrangements continued. Horizontally there were only very rare and exceptional occasions were one of the interregional gas companies made any offer in the sales (and network) regions of one of the other majors. The same applies to other levels of the industry. Vertically the reluctance to compete among each other was typically justified with the expression: "You can't sell the gas twice."

[11] It is amazing how prominent the sentiment of being part of "one family" was in the German gas industry. Even in 2009, when I talked to managers that had worked in the gas industry for a long time, they referred to the expression "gas family" to describe the cosy pre-liberalisation atmosphere that finally lasted until 2004 or 2005.

[12] To keep things simple, every BEB sales contract was split 50/50 between Shell Energy Deutschland and ExxonMobil Gas Marketing, the two new sales companies.

[13] According to my assessment all new entrants sold around 25 TWh in the different sectors in the gas year 2005. The annual demand of all end customers in Germany is roughly 1,000 TWh.

switching rates, has been acknowledged by all official bodies involved in the German gas market.[14]

The principal gas industry incumbents had always challenged this view[15]. Since 2001 the annual reports of the major incumbents like E.ON Ruhrgas or VNG – Verbundnetz Gas have included statements about "fierce and intensifying competition". This intense competition – the incumbents argue – has not resulted in customer switching but in price reductions for customers. Incumbents argued that they had been forced to offer large rebates to prevent customers from switching supplier. Indeed these rebates were given and were described in the 2006 study. In the wholesale sector the relevance of these rebates is partly assessable. In the industrial sector a quantitative analysis is not possible[16]. And it is true that new entrants repeatedly complained that the policy of "a suitcase full of money[17]" made their business more difficult. Taking into account the obstacles for market entry described in the 2006 study, it is hard to argue that the German gas environment could be considered competitive given:

- The complete lack of competition in the residential sector.

- Numerous complaints of representatives from distribution companies and industrial customers about a lack of competing offers.

2.3 The scope of this study

If rebates were solely responsible for a lack of competitive market dynamics then the situation should not have changed after 2005. But since 2006 there have been indicators of changes in the German gas market towards greater competition. I concluded that up to the end of 2005, changes had occurred which could be the basis for significant competition. I argued that such developments were not certain because of major forces that would resist changes. I argued that the two major groups of market participants who would be able to achieve changes would be producers and distribution companies.

I think I correctly in identified the major elements relevant for the structure of the German market and for future development, but I completely underestimated the dynamics that could take place under a new framework (and producers still only play a very limited role in the German downstream markets). And I underestimated the commitment and powers of the regulatory authority to enforce changes and its understanding of the rules of the energy law and the consequences of the institutional setting. The regulatory authority has powers almost

[14] See for example the annual monitoring reports of the regulator Bundesnetzagentur (BNetzA) or the latest report of the German Monopoly Commission, an advisory institution of the German government.

[15] Indeed these different views of the gas industry itself and of observers were one of the reasons why I started to write the first study.

[16] In its annual monitoring report, BNetzA asked industrial customers about new contractual arrangements with their suppliers to gain price reductions. According to this survey 7.95% of the customers with an annual gas demand between 0.3 GWh and 10 GWh negotiated new contracts in 2006. 12.49% of larger customers with an annual demand of 10 to 100 GWh used this opportunity. Compared to 2005 these rates declined by 2 – 3%. See BNetzA: Monitoring-Report 2007, p. 162.

[17] This expression "suitcase full of money" was exactly the wording representatives of new entrants used to describe outcomes of tenders or procurement processes where finally, at the very last minute, the incumbent either offered prices significantly below their last offer or used high out of the pocket payments as further incentives to induce customers not to switch.

equivalent to law making. This allows very effective enforcement of decisions based on the energy law. These issues are described in the present study.

Chapter 3 deals with network access and the development towards a model which in principle allows market players to supply all customer groups without discrimination. It is once again a story of delays and attempts to avoid significant changes. But the most important lesson is that regulation matters and that the German regulator is powerful.

Chapter 4 examines the development of OTC trading in Germany. Since the end of 2006 an OTC market has developed where it is possible to buy and sell volumes not only short-term but also forward. It is still by no means as liquid as the NBP or the Dutch TTF. But taking into account that OTC trading hardly existed before 2006, it is quite remarkable. It is a story about the creation of virtual trading points and of the decision of E.ON Ruhrgas to switch from preventing the development of gas trading to supporting it. I ended my last study arguing that a player or a group of players was needed to support OTC-trading and that from the perspective of early 2006, no supporter was on the horizon. Very surprisingly for many players, E.ON Ruhrgas became a sponsor of a German hub and an important part of this chapter will be to show how this changed the German attitude towards OTC trading.

Chapter 5 deals with competition, which became more intense in all sectors of the market up to 2008. These changes are still not evident from the statistics[18] but the perception of competition in the market from both sides, suppliers and customers, changed. Perhaps the most important change is the behaviour of incumbents. For different reasons the German gas majors, regional gas companies and local distribution companies started to sell gas outside their traditional network areas. The gas industry always argued that "we learned from the power sector", i.e. we will not start cut-throat competition, which at the end of the day only destroys margins. But by mid 2008, more and more market players argued the competitive situation in the gas market had become more and more similar to the power market during 1998-2000.

Chapter 6 deals with access to flexibility and the balancing regime which have been "unresolved" issues in the German gas market. I argued in my first study that, in contrast to the transportation sector, a market for storage and flexibility started to emerge and that investment in storage facilities could increase diversity of supply. This development continued over the last two years. But the perceptions of market participants are different. On one hand more flexibility is being offered, on the other hand there are complaints about the lack of available storage capacity as a result of long-term bookings. This chapter will shed some more light on this situation. Related to the question of access to flexibility is the balancing regime. Starting in October 2008, the change from hourly to daily balancing is one of the revolutions in the German gas market. How this shift became possible under the current regulatory framework, how the new system works and its likely consequences are described in this chapter.

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[18] Statistics for 2008 were not available, when the manuscript was finished. The switching rates published for 2007 by the regulator are still low. And the Bundeskartellamt did not change the concept of market demarcation, which is still based on the assumption that competition does not work mainly as a result of problems with network access. I come back to these issues in more detail in chapter 6.

Finally, chapter 7 deals with various issues that will have an impact on the future development of the gas market including: ownership unbundling, congestion management, investment in transportation capacity, the role of biomethane, and gas-fired power generation.

3 Network access[19]: The enforcement of the "Two-Contract Model"

3.1 Entry-exit-system: The discussion about market areas[20]

The key question concerning the organisation of network access, that dominated all discussions about the third party access to the German network is, whether the whole of Germany can be treated as one entry-exit system, where gas can be injected at any entry point and withdrawn at any exit point independent of the ownership of the different pipelines, the pressure level or any other potential restriction. Or to put it differently: Could Germany become one market area?

The extent to which the whole German network system could become one comprehensive entry-exit system, encompassing all pipelines of all operators, and as a consequence one market area or market-place, or must be divided into different separate systems, has been one of the most controversial topics since the discussion of entry-exit started in 2003. Already in a monitoring report from August 2003 the ministry of economics proposed abandoning the point-to-point system of network access in place at that time, in favour of an entry-exit-system. This system should create market-places or market areas that should be "independent of the different ownerships in networks, encompassing an area as large as possible, where tradable products can be exchanged without major restrictions.[21]". The report says further: "These control zones will be spatially restricted by existing network restrictions, i.e. capacity constraints on defined network sectors or interconnection points, different gas qualities and other restrictions of interoperability.[22]" The only agreement between the different stakeholders involved in the following discussions about the correct model of network access was that two different zones were needed for high cal and low cal gas. The network operators argued for a large number of (control zones) or market areas because of[23]:

- The large variety of different gas qualities, which can not be handled in large control zones even within the high cal and low cal range[24]:
- The reduction of available firm capacity in large control zones:
- The lack of transparency for customers in large zones:

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[19] All terms related to network access are explained in the glossary in annex 1.

[20] For a definition of market areas see glossary.

[21] Bericht des Bundesministeriums für Wirtschaft und Arbeit an den Deutschen Bundestag über die energiewirtschaftlichen und wettbewerblichen Wirkungen der Verbändevereinbarungen (Monitoring Bericht), Berlin, 31. August 2003, p. 51

[22] See monitoring report p. 51. The term "control zone (Regelzone)" was the official wording for the model, which was developed on behalf of the ministry by the consultancy BET. Therefore it was known as "BET Regelzonen-Modell".

[23] See presentation of the negotiation group of BGW and VKU: "Comments on the control zone model of BET, held on July 9, 2003 at the ministry of economics.

[24] See the glossary for a short description of the relevance of high cal and low cal gas in Germany.

- Restrictions on entrepreneurial decisions of network operators in large zones:
- Violation of property rights of network operators.

Network users always argued that, in the final outcome, the country needs only a maximum of three market areas: one for high cal gas, one for low cal gas and perhaps one for the Wingas system, which is not integrated into the rest of the German network system[25].

Network operators – except BEB which switched to an entry-exit system before it was made compulsory by the amended energy law in 2006 - consequently divided their network into numerous separate entry-exit-systems.

- E.ON Ruhrgas Transport introduced five sub-systems in November 2004 (three high cal and two low cal).
- RWE Transportnetz Gas divided the network into nine different sub-systems in April 2005[26].
- Wingas implemented a system in July 2005 with four sub-systems.

I deliberately used the wording "entry-exit-system" or "sub-system" above because none of the systems encompassed regional and local systems that are directly connected to the pipeline systems of these interregional network operators; i.e. vertical integration did not take place at that time[27]. Although the German energy law from 2005 literally does not mention the word "market area", the fight of the regulatory authority for a proper system of network access is the fight for a minimum number of different market areas, i.e. entry-exit-systems where all networks are vertically integrated and network access is efficiently organised. The following box contains the wording of § 20 1b of the energy law. It is the most important legal basis for the development described in the following. In principle it postulates very clearly the aim of one German market area – without mentioning the word. But with its ambiguous wording, in particular concerning the extent to which network operators can be obliged to co-operate, the paragraph was and is not a sound legal basis to achieve the target[28].

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[25] See EFET Deutschland: Beschreibung des Entry/Exit Netzzugangsmodells Erdgas, September 2003, p42. EFET argues that historically the German network system – except the Wingas system - was developed as an interconnected system.

[26] In May 2007 DG-COMP started an antitrust procedure against RWE, accusing RWE, and in particular its affiliate RWE Transportnetz Gas, of erecting artificial obstacles to third party access. One of the practices criticised was the "the maintenance of an artificial network fragmentation." (see MEMO/07/186 DG COMP of May 11, 2007). The proceedings were based on information obtained during dawn raids on the RWE premises. If DG COMP really found evidence that the fragmentation of the RWE network into nine sub-networks was done not for technical reasons but to foreclose the market, this would be a very strong response to the arguments of network operators. Unfortunately we shall never know, because RWE decided in late May 2008 to reach a settlement with the Commission by offering to sell its transmission network see chapter 7.1.1

[27] The only small exception was E.ON Ruhrgas. The company included the regional network of Ferngas Nordbayern, a company controlled by E.ON Ruhrgas into one of the sub-systems.

[28] See also my 2006 study, p. 66 – 73 where I describe the different interpretations of the § 20 1b of the energy law.

§ 20 1b of the energy law: "To grant network access, the operators of gas networks have to offer entry and exit capacity that enables access without any reference to a concrete, transaction-dependent transportation route. It must be possible to use and to trade each entry and exit capacity independently. To manage access to gas networks it is necessary to close a contract with the network operator into whose networks gas is injected (injection contract). In addition a contract must be concluded with the operator of the network from which the gas is withdrawn (withdrawal contract). If the withdrawal contract is concluded with the operator of a distribution network it must not refer to a concrete point of withdrawal. All operators of gas networks are obliged to co-operate as necessary to organise transport of gas for one shipper through different networks that are connected by interconnection points using only one injection and one withdrawal contract. The co-operation is limited to cases where it is technically feasible and economically affordable. To make transportation through different networks possible, operators have to co-operate closely in calculating and offering capacity, the provision of system services and the assignment of cost and tariffs. They have to develop common standard contractual procedures for network access and to use all possibilities of co-operation, taking into account technical constraints and economic viability, with other network operators to keep the number of different networks or sub-networks and balancing areas as low as possible. Operators of networks that are connected by interconnection points have to co-operate in the calculation and provision of available technical capacity with the aim of offering the maximum combined capacity in the connected networks. If a customer switches supplier, and if the new supplier is not able to supply the customer according to its contractual obligation and he can demonstrate this to the previous supplier, the new supplier can demand from the previous supplier the transfer of entry and exit capacity that is necessary to supply the customer. Operators of transmission systems are obliged to offer rights for the use of capacity so that the shipper is able to inject gas at any entry point for withdrawal at any exit point of the system, or in the case of lasting bottlenecks every sub-system (entry-exit-system). Operators of local distribution systems have to offer network access according to an ordinance provision following § 24 on the access to gas transportation systems by taking the gas at entry points to their networks for every exit point connected to their network."

Box 1: Stipulation of § 20 1b of the energy law about access to the gas networks (author's translation)

During the whole process of discussions, negotiations and struggles for a proper model of network access, in addition to politicians and from 2006 the regulatory authority, stakeholder associations played a major role. Because these associations and their positions are so important for the whole process they are described in Box 2.

Bundesverband der Gas- und Wasserwirtschaft (BGW): Association of the gas industry. All interregional, regional gas companies and most local utilities are BGW members. BGW is dominated by the major incumbent gas companies and mainly represents their position. BGW usually tried to block any significant change concerning the model of network access. A number of pro-active local distribution companies left BGW in 2005 and 2006 because they disagreed with the "stubborn" blocking strategy of the association. In 2007 BGW and the major association of the power industry merged into a new association Bundesverband der Energie- und Wasserwirtschaft (BDEW). This merger was driven by the German energy majors and by politicians that asked for one major representative from the energy sector as a contact. It is remarkable that the industry is still represented by an integrated association encompassing sales and transportation business despite the existing unbundling rules. When the resistance of the association to changes finally became unsuccessful more and more representatives of the industry became dissatisfied with BGW and now BDEW. In addition many representatives of the industry think gas interests are not very well represented in the BDEW, which is mainly driven by the interests of the power industry.

Verband kommunaler Untenehmen (VKU): Association of local utilities. The major aim of the association is to represent the general interests of municipal owned companies to politicians. The particular competence of VKU in the gas sector was always limited. Over a long period VKU mainly backed BGW's positions. A large number of more pro-active utilities became dissatisfied with the conservative position of the association concerning network access gas by 2004 and joined GEODE (see below). It must be emphasised that these companies did not leave VKU because they only disagreed with VKU's position concerning network access in the gas sector. In 2007 VKU started to switch support from BDEW and approached GEODE's positions

Groupement Européen des Entreprises et Organismes de Distribution d'Energie (GEODE): An organisation of independent – not dominated by any major – gas and power distribution companies. In Germany since 2004 pro-active distribution companies, i.e. distribution companies that were in favour of market liberalisation and wanted to use emerging opportunities started to organise in a German section of GEODE. GEODE started to play a very important role in 2005. The association was mainly responsible for including the stipulation on network access gas in paragraph 21 1b in the energy law. Later the basic ideas for the two-contract model and for the daily balancing regime were worked out by GEODE.

Verband der Industriellen Energie- und Kraftwirtschaft (VIK): VIK represents mainly the large industrial gas users. The association has played a major role since the beginning of the discussions on Third Party Access in 2000. It was more or less the only counter party to the incumbent gas industry represented by BGW and VKU in the association agreements. VIK always supported strongly the two-contract model and one single entry-exit model for Germany. Usually VIK and the associations of traders and new entrants, EFET and bne, worked closely together and shared the basic positions. VIK only diverted from this camp in the discussions about the daily balancing system.

Bundesverband der deutschen Industrie (BDI): BDI was formally the second association of the gas users in the negotiations for the association agreements. After these negotiations were

terminated the association did not play any role in the further process of regulating Third Party Access

European Federation of Energy Traders (EFET). EFET is a European trader's organisation. Already in 2000 a German Gas Task Force was founded. In 2001 EFET Deutschland was founded. The association was representing at the beginning new entrants like the American Aquila but concentrates now on the interests of traders. The association obviously tried to lobby for the opening of the German gas market. But due to internal organisational problems its power and influence was always limited. Among others member are BP, E.ON Energy Trading, EconGas, EdF Trading, Electrabel, EnBW Trading, Enercity, Nuon Energy Trade & Wholesale, RheinEnergie, RWE Supply & Trading, Syneco Trading, Trianel Trading, Vattenfall Trading Services.

Bundesverband Neuer Energieanbieter (bne): The association of new entrants was founded in 2002 by a number of companies offering power to residential customers. But over the years bne managed to become an important representation of interests for new entrants in all sectors of the gas industry. Among others members are Distrigas, DONG Energy Sales, GdF Suez, natGAS, Nuon, Sempra

Bundesverband der Energieabnehmer (VEA): Representation of the small and medium sized industrial gas users. VEA does not play an independent role in the whole game about network access. Usually the association supports VIK positions.

Interests of residential customers: Interestingly enough these are not represented by existing groups. Associations like Bund der Energieverbraucher or Verbraucherzentrale Bundesverband (vzbv) actively lobby for lower prices for residential customers and support consumer protests but they were never involved in association negotiations and in consultation processes for the new model of network access.

Box 2: Description of positions und influence of the main stakeholder associations in the German gas sector

3.2 The first Co-operation agreement – confusion about the correct model of network access and still no progress

The whole history of Third Party Access to the gas networks in Germany is a textbook example of how a lack of political commitment, asymmetric information, competence and bargaining power results in unstable, unclear and incomplete private arrangements; and an opaque and contradictory legal framework, as a result of lobbying and last minute compromises or deadlines to conclude agreements.

The situation started to change after the German regulator Bundesnetzagentur (BNetzA) appeared on the scene. Although the BNetzA has formally only very limited competence to prescribe and enforce a model of network access, it was the first and only player committed to establishing a comprehensive model of network access and willing to develop the necessary knowledge and expertise. Nevertheless, as a result of its limited powers, BNetzA initially failed to enforce a coherent model because of the complex network of unclear and

contradictory legal provisions, its lack of competence and knowledge, and strong resistance from the network operators.

From October 1, 2006, the formal basis for the rules of network access was a co-operation agreement among network operators. This arrangement – with an unclear legal status – was necessary because the law required the co-operation of network operators to organise transportation through different networks. A first co-operation agreement was put together on June 1, 2006 after almost a year of discussions or negotiations between the associations of network operators and associations of other stakeholders[29]. The agreement allowed two alternative models or variants of network access:

- A two-contract model where, at least within one market area, network access is based on one entry contract to the market area and one exit contract to the final customer, irrespective of the number of network operators or numbers of networks involved.
- An option or single-booking model, where entry and exit is booked separately for each network within one market area.

This was definitely not the preferred outcome of the BNetzA. Before describing in more detail the ideas behind the models, it is worth quoting the president of the BNetzA, Matthias Kurth, to demonstrate the, at least partial, defeat of the regulator: "The regulator thinks that the intention of the law making institution – taking into account the wording and content of paragraph 20 1b – was to introduce a two-contract model. To implement this model is inevitable but also sufficient.[30]" Kurth is very clearly saying here that the alternative single-booking model was not the choice of the regulator. Later in his speech he explained why the regulator "accepted" the introduction of a second model or variant by the network operators: "It must be acknowledged that although the different parties started to agree on some issues, major positions remained unchanged. But further negotiations would have endangered the agreed time table without the chance to achieve better results[31]. " An additional passage from Kurth's speech completes the picture of the contradictions, confusion and conflict about this co-operation agreement: "Network operators can sign the co-operation with the condition to implement only the two-contract model. This was an important request of the Bundesnetzagentur" With regard to the major issue of the number of so-called market areas, i.e. separate network areas, Kurth said: "BGW/VKU said in the course of the negotiations they wanted to introduce 28 market areas. This was significantly above the maximum number of 20 agreed at the end of January. In intensive discussions the Bundesnetzagentur achieved finally a number of 19 market areas. It is still necessary to reduce this number."

The concerns of Kurth, and the results of negotiations between network operators other stakeholders and the BNetzA, which ended in the first co-operation agreement can be summarised as follows:

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[29] "Vereinbarung über die Kooperation gemäß § 20 Abs. 1b) EnWG zwischen den Betreibern von in Deutschland gelegenen Gasversorgungsnetzen. In all around 700 network operators had to sign the co-operation agreement. In a formal signing ceremony on July 19 2006 representatives of 20 network operators signed the agreement in public. All other network operators should have followed.

[30] See manuscript of the speech of Matthias Kurth at a press conference on June 8, 2006.

[31] The discussions were already behind the timetable of the law. The law said that a new model of network access should have been introduced by February 1, 2006.

- In principle a model was developed – the two-contract model – in line with the energy law which could, from the perspective of network users and one group of distribution companies[32], facilitate network access significantly.

- Two major associations of network operators managed nevertheless to include a second model of network access in the co-operation agreement. They were able to enforce this single-booking model as an option although it would increase implementation cost. And different to the intention of the regulatory authority, in the co-operation agreement the single-booking model was not described as an exemption but as a model with equal importance to the two-contract model. The regulator and stakeholders doubted that the two models could be applied in a non-discriminatory manner and that this second model was consistent with the law.

- To make the situation more confusing, but to ease the concerns of more pro-active network operators, they were allowed not to implement the single booking model[33]. BGW and VKU argued this condition had only a very limited impact because network operators were obliged to implement the single-booking variant at the request of a shipper[34].

- Germany remained divided into 19 different market areas, and the two-contract model was applied only in each area. This is again not exactly what the law requires i.e. network access based on one entry and one exit contract for the whole German network. And although Kurth said the BNetzA agreed during the negotiations on a maximum of 20 market areas, the target of the regulator was to reduce this number to less than 10.

Contrary to what was said in the introductory chapter, this did not look like a big success for the regulator. It looked more like a continuation of the old story, with network operators able to prevent any significant changes[35]. The main reason for this unsatisfactory result was legal. According to the law it was not the task of the German regulator to prescribe a detailed model of network access. The Bundesnetzagentur mainly has the following formal duties concerning network access:

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[32] The role of the distribution companies in the whole negotiation process is very interesting. See Box 2 for a description of the associations BGW, VKU and GEODE and their relations.

[33] To what extent network operators should be obliged to implement the single-booking model in addition to the two-contract model was discussed very controversially by the associations of the gas industry BGW/VKU and the BNetzA. The above mentioned quote from Kurth shows that the regulatory authority had the clear view, that network operators were obliged only to implement the two-contract-model. BGW/VKU argued that any shipper could enforce network operators to offer in addition the single-booking model as an additional means of network access (see internal BGW memo from May 16, 2006 with a short study of the law firm Redeker Sellner Dahls & Widmaier that supports this view). Finally the co-operation agreement stipulated in § 20 the following weak caveat: "Some network operators already declared before the draft was published that they would sign only with an exception concerning the single-booking-variant. Such exceptions, which are disclosed to BGW and VKU in writing are noticed." Finally more than 150 distribution companies signed the agreement only conditionally.

[34] VKU and BGW referred to the report made by Redeker Sellner Dahls & Widmaier on behalf of the two associations. In a circular letter from July 13 2006 the two associations wrote: "We want to point out that a juridical study confirms that network operators are obliged according to article 20 1 b of the energy law to offer the single-booking variant." This is exactly the opposite of what Kurth said at the mentioned press conference. The letter demonstrates very clearly the intention of the incumbents to avoid that the two-contract model would be the relevant model of network access and to keep the status quo by enforcing the single-booking-model.

[35] In an internal presentation to members BGW/VKU argued that the single-booking model can be implemented without major efforts and avoid complex and risky adaptations of business processes

- The law and the ordinance provisions[36] on network access and network tariffs stipulate the right of the regulator to prescribe and standardise certain elements regarding network access and contractual standards of the network operators.
- Companies and associations can formally complain to the BNetzA about the behaviour of network operators, and can ask the BNetzA to investigate whether this behaviour complies with the law.

But it is the task of the network operators to develop and implement a model of network access. Therefore the whole consultation and negotiation process about such a new model, which started in October 2005, was always an informal one[37]. Kurth, who headed most of the negotiations, genuinely believed that he could be successful in convincing the network operators to introduce the two-contract model as the backbone of a new model of network access. During the negotiations the representatives of the network operators showed some flexibility, but the drafts of the agreements resulting from the negotiations always showed that network operators were neither willing nor able to keep these promises[38]. This was at least partly related to internal conflicts among the network operators where some "hard-liners" did not want to accept any changes. Due to the long process between a first agreement on the main principles of the model of network access, and the negotiations about the different draft versions of the co-operation agreement, timing also became critical. According to the law, the model should have been in place by February 1, 2006. The network operators and the BNetzA agreed to extend the deadline for the model to be in operation until October 1, 2006 [39]. Because, following any agreement, the operators needed time for implementation, the written co-operation agreement needed to be in place by the beginning of June 2006 at the latest[40]. A final reason why the BNetzA did not insist more strongly on a more coherent agreement was the deep disagreement among (in particular) local network operators about the correct model of network access. The very different positions of the GEODE and VKU, the former backing the two-contract model as a single model for network access and the latter, jointly with BGW, defending the option model have already been mentioned.[41]

3.3 A formal decision of the regulator that changed the German gas world

On July 19, 2006, the same day as the formal signing of the first co-operation agreement, the Bundesverband Neuer Energieanbieter (bne)[42] and Nuon Deutschland GmbH filed a formal

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[36] For a definition of ordinance provision see the glossary.

[37] When the BNetzA proposed in October 2005 the establishment of a consultative group on a new model of network access, it clearly stated in the e-mail invitation to the first meeting the purpose: "The BNetzA wants on one hand to support the fulfilment of the legislative task and it wants on the other hand to understand the preliminary thoughts of the stakeholders," is the wording in the email signed by the vice president of the agency Martin Cronenberg.

[38] A last meeting between representatives of the network operators and the BNetzA took place on May 23 2006, one week before the co-operation agreement was scheduled to be published. Even at that time the minutes of this meeting list nineteen different topics, running to eight pages, where the BNetzA demanded changes in eight pages of the draft version on the table.

[39] On February 1, 2006 only the cornerstones for the new model were agreed, enough for the BNetzA and the associations of the network operators to save face.

[40] It later became clear that even this date was much too late for a proper implementation of the system.

[41] See note 32. The president of the BNetzA Matthias Kurth said in several discussions after the agreement that these diverging positions of local distribution companies made it difficult for the regulatory authority to refuse the single-booking option.

[42] for a description of bne see Box 2.

complaint with the Bundesnetzagentur against three of the signatories: RWE Transportnetz Gas, E.ON Hanse and Stadtwerke Hannover. Bne and Nuon filed on two issues:

- To prohibit RWE, E.ON Hanse and Stadtwerke Hannover from applying the single-booking variant of the co-operation agreement;
- to declare null and void the fragmentation of the network into 19 market areas.

Bne and Nuon argued that the single booking model would lead to an inefficient system of network access and would restrict competition. They further argued that there was no legal basis justifying the introduction of this model of network access.

In relation to market areas, Bne and Nuon argued that any fragmentation of the German network into sub areas must be justified by concrete arguments. The co-operation agreement – where the market areas are listed – does not give any justification for the way in which the divisions have been chosen.

Based on this formal complaint, the BNetzA was now in a much better position to investigate the co-operation agreement and decide whether it was consistent with the law. I have already mentioned that this is one of the basic duties of the regulator. To cope with this task the BNetzA has a special organisational structure. The department of energy is responsible for the day to day business of monitoring the market, negotiating with network operators and the examination of the cost of network operations. In addition, formal decision bodies (Beschlusskammern) are responsible for, among other things, formal complaints from market participants. These bodies can also issue binding decisions to regulate certain aspects of network access. The energy law defines the areas of these responsibilities. Decisions of the Beschlusskammern are legally binding and can be only challenged by court action. In 2006 two formal decision bodies were responsible for the gas sector: Beschlusskammer 7 is in charge of questions related to network access and Beschlusskammer 9 is in charge of questions related to network tariffs[43].

The procedures of the Beschlusskammern are similar to court procedures. The complaint is based on a formal brief by the lawyer of the plaintiff to which the defendant makes a formal response. Concerned third parties can apply to be involved in the procedure[44]. In most cases a hearing takes place where the two parties and third parties present their arguments, after which the Beschlusskammer releases a written decision. The complete procedure takes two months, according to the energy law, a time span that can be extended to four months.

[43] In 2008 the responsibilities of Beschlusskammer 4 were transferred from the telecommunication sector to the energy sector. Since then this decision body is also partly in charge of special gas issues.

[44] The Beschlusskammer must decide whether companies or associations have an eligible interest. Parties formally involved in formal procedures have the rights to see all documents, file written documents themselves and take active part in hearings on the cases.

Beschlusskammer 7 was in charge of the Bne/Nuon complaint. On October 18, 2006 a hearing took place at the BNetzA. Kurt Schmidt, the head of Beschlusskammer 7, outlined during the hearing the intended decision and the arguments of the BNetzA[45]:

- "The decision body will not declare the nineteen market areas null and void because it thinks the complaint of Bne and Nuon was not the correct procedural approach." But Schmidt repeated the target of the regulator to reduce the number below ten.
- "The decision body will ban the single-booking model because it is, for several reasons, in conflict with the provisions of the energy law.

Directly after the hearing, Friedrich von Burchard from E.ON AG, the leader of the BGW group in all negotiations sent an e-mail to representatives of network operators that stated very clearly the complete defeat of the network operators at the hearing and with respect to the whole procedure: "… concerning the legitimacy of the single-booking-model, BNetzA accepted completely the arguments of the plaintiffs. Concerning the legal and gas-related topics, the regulator did not accept any of our arguments. The agreement between the top level management and Kurth and his statements at two press conferences during January and June did not prevail. BNetzA has prohibited the model irrespective of practical experience. The consequences for the gas sector and the fate of gas contracts are severe. Although only three network operators are involved it is relevant for the whole industry. The BNetzA itself characterises it as a model procedure.[46]" The e-mail characterises well the atmosphere during the hearing, where the decision body showed annoyance about the behaviour and the arguments of the established gas industry.

The final decision released from the Beschlusskammer 7 on November 17 2006 confirmed the fears of von Burchard. Over 188 pages the decision body explained why it had prohibited the three network operators from applying the single-booking model[47]. November 17, 2006 is one of the most important dates for the German gas sector because it was the starting point for major changes in the industry. The defendants refrained from challenging the decision by court action and it therefore became effective.

3.4 Two-contract model and co-operation agreement II

After the decision of the BNetzA to prohibit the single-booking model, the associations of the network operators BGW and VKU immediately started work on a co-operation agreement II (KoV II)[48], based solely on the two-contract model. The first draft was delivered to the regulator on February 2, 2007, and met the main expectations of Beschlusskammer 7. In a letter dated March 9, 2007 Kurt Schmidt told the associations that his reaction to the basic

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[45] The decision body usually has in mind at least a line of reasoning and a preliminary decision resulting from these arguments before the hearing takes place. The hearing is used to test the arguments and give the involved parties the possibilities to challenge them. After the hearing the parties can present additional documents either to counter the arguments or to support the arguments of the BNetzA (depending on the interest of the party).

[46] E-mail of Friedrich von Burchard dated October 19, 2006 to members of the BGW/VKU co-oordination group.

[47] Beschluss Az BK7-06-074 published on the internet site of the Bundesnetzagentur www. Bundesnetzagentur.de

[48] From December 2007, after some slight pressure from the regulator, GEODE the association of the more pro-active distribution companies was included in this work.

outline of the new agreement was positive. "Furthermore," Schmidt added, "significant process in the development of a two-contact model was made, which supports competition and the development of a mass market.[49]" But the regulator demanded a number of changes and the new co-operation agreement was not finished until April 25, 2007[50].

3.4.1 Structure of the co-operation agreement

Because this co-operation agreement remains the basis for network access in Germany it is important to examine it in more detail. It is a complex document, not easy to read or self-explanatory, consisting of the following parts:

- The co-operation agreement itself
- Annex 1: A list of market areas
- Annex 2: Guidelines on how to calculate capacity that network operators allocate among themselves
- Annex 3: General conditions of network access

3.4.2 Founding principles of the two-contract model

The founding principles of the model of network access (two-contract model) that is described in the agreement and the annexes are as follows:

- Within each market area, in Germany network access is based on one entry and one exit contract. The entry contract allows shippers to bring gas into the market area. The exit contract is made in relation to the end customer and covers transportation through all networks in the market area.
- The network operators are responsible for ensuring sufficient capacity through the different networks in one market area using a bottom–up methodology based on the booked total exit capacity (how this capacity is calculated is described in detail in annex 2 of the co-operation agreement).
- As a consequence of this system of capacity allocation (within each market area) no capacity constraints can prevent the switching of end customers. Each customer holds the transportation capacity as a kind of "rucksack" and can transfer this capacity to a new supplier.
- All tariffs applying to networks within one market area (except the entry tariff to the market area) are allocated to the final exit tariff.

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[49] See letter of Beschlusskammer 7 dated March 9, 2007 to Wolf Pluge, managing director of BGW and Michael Schöneich, managing director of VKU, page 1. The three page letter with an annex of eight pages was signed by Kurt Schmidt

[50] Änderungsfassung vom 25. April 2007. Vereinbarung über die Kooperation gemäß § 20 1 b) EnWG zwischen den Betreibern von in Deutschland gelegenen Gasversorgungsnetzen.

- Within each market area a virtual trading point will be created where all exchanges of gas will take place. Balancing and all storage will be organised at virtual trading points.
- To balance entry and exit volumes, balancing groups will be introduced. Each shipper has to include all entry and all exit points into a balancing group. Balancing groups can encompass the portfolio of more than one shipper. Balancing is based partly on nominated (mainly entry) and partly on metered (mainly exit) volumes. The balancing is done for the whole market area. The balancing groups are established by the transmission system operator in charge of the market area (balancing group network operator).
- Balancing is carried out on an hourly basis. To facilitate balancing a free basic balancing service is provided for 10% of the applicable hourly capacity with one hourly volume as an accumulated tolerance[51].

The following graph illustrates how network access is organised within one market area.

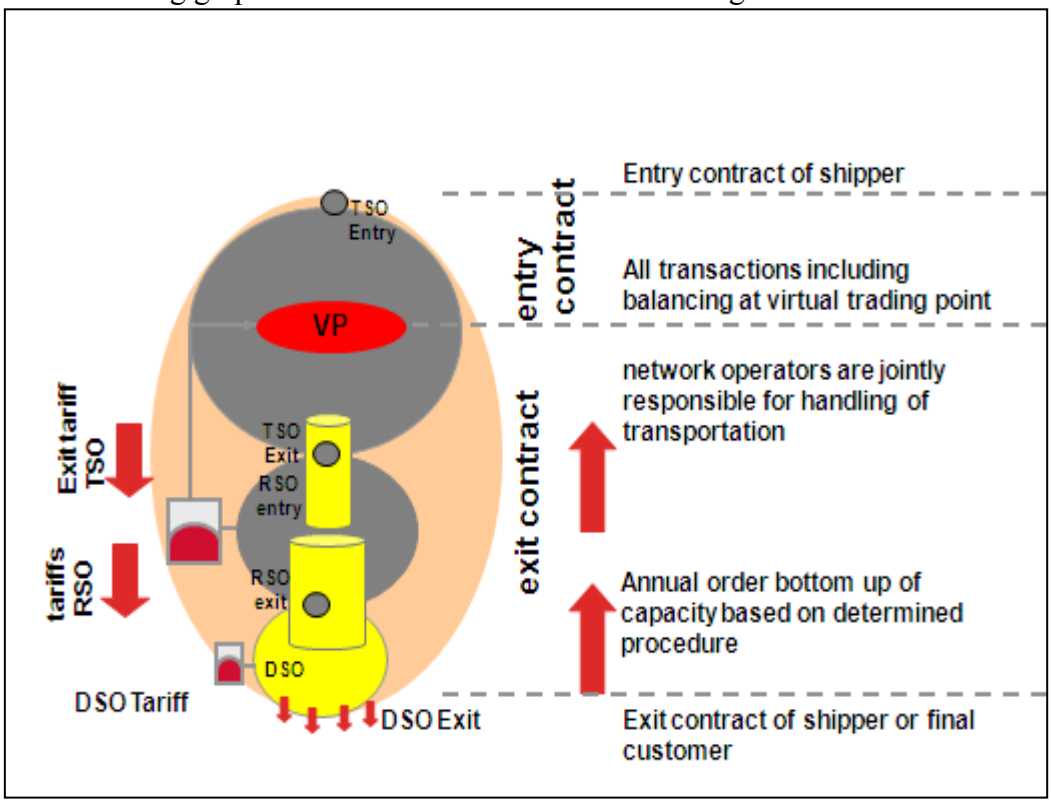

Figure 1: Network access within one market area according to the two-contract-model (Source: Own illustration adapted from an EFET presentation. TSO: Transmission System Operator; RSO: Regional System Operator; DSO: Distribution System Operator)

[51] The calculation of the basis capacity for the basic balancing service was rather complicated. The network operator in charge of the market area calculates once a year the total booked entry capacity and the total booked exit capacity. If the total booked entry capacity is bigger than the total booked exit capacity the applicable hourly capacity is the booked exit capacity. If the the total exit capacity is bigger than the total entry capacity the applicable hourly capacity is the exit capacity multiplied by the ratio of entry and exit capacity. The latter was called BBA-factor. This factor was between 0.5 and 1 in the different market areas. As a result in some market areas the effective basic balancing service was significantly below 10%.

This system significantly facilitates transportation for shippers within each market area. They do not have to worry about different networks or different interconnection points, and do not face any capacity constraints within the market area. In addition, they can balance their total portfolio within the market area. The system is totally non-discriminatory because the transportation cost within the market area is equal for all shippers[52]. The cost of all transportation-related portfolio effects from the load factor[53] are spread equally across all users because the network operators take into account the aggregate effect for all customers within the market area when arranging capacity.

The system has two major disadvantages from the perspective of the incumbent gas sales companies and network operators:

- Network operations became much more complex because the network operators have to fulfil new tasks and provide a great deal of information along the transportation chain to make the system operational.
- The traditional supply and delivery structure of the German gas industry was destroyed.

The first issue is more operational. As a result, the costs for network operators increased and – perhaps more important – operations after October 1, 2007 became a nightmare because local distribution network operators in particular were often unable to cope with the new tasks. In particular they were usually not able to provide the necessary data to clear their balancing accounts at the end of each month[54].

The latter issue is more fundamental and the main reason why the incumbent gas industry wanted to enforce the single-booking model. Traditionally gas passed through the different networks from gas supplier to gas supplier. The importing gas companies supplied the gas to regional gas companies and delivered the gas at the entry points of the regional network (the so-called "regiogate"). The regional gas company supplied the gas to the local distribution company and delivered the gas at the entry points to the local distribution networks (the so-called "citygate". The local distribution companies passed the gas to the final customers and their exit points. As a result of the two-contract-model the "regiogate" and "citygate" no longer exist as exit points. The delivery point for all contracts with regional and local gas companies is the virtual trading point. The following graph shows this difference between the two-contract-model and the traditional delivery chain, which would have been retained by the single-booking-model.

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[52] Market players report very special cases where this is not true.

[53] The factor results from the fact that in a portfolio of customers not all the customers have their peak demand at the same time. As a result the shipper must not book the sum of the maximum gas need of the customers as the maximum transportation capacity.

[54] Ontras – VNG Gastransport, one of the major network operators wrote for example in December 2007 a letter to its shippers saying: "Unfortunately we did not receive all necessary data to provide you with the status of your balancing account until the 21st working day after the transportation month (…) Depending on the provision of the data from the network operators at the lower network levels we will provide you with the final clearing of your account as soon as possible." According to my information even by mid 2008 the balancing accounts for October 2007 were not settled for most users.

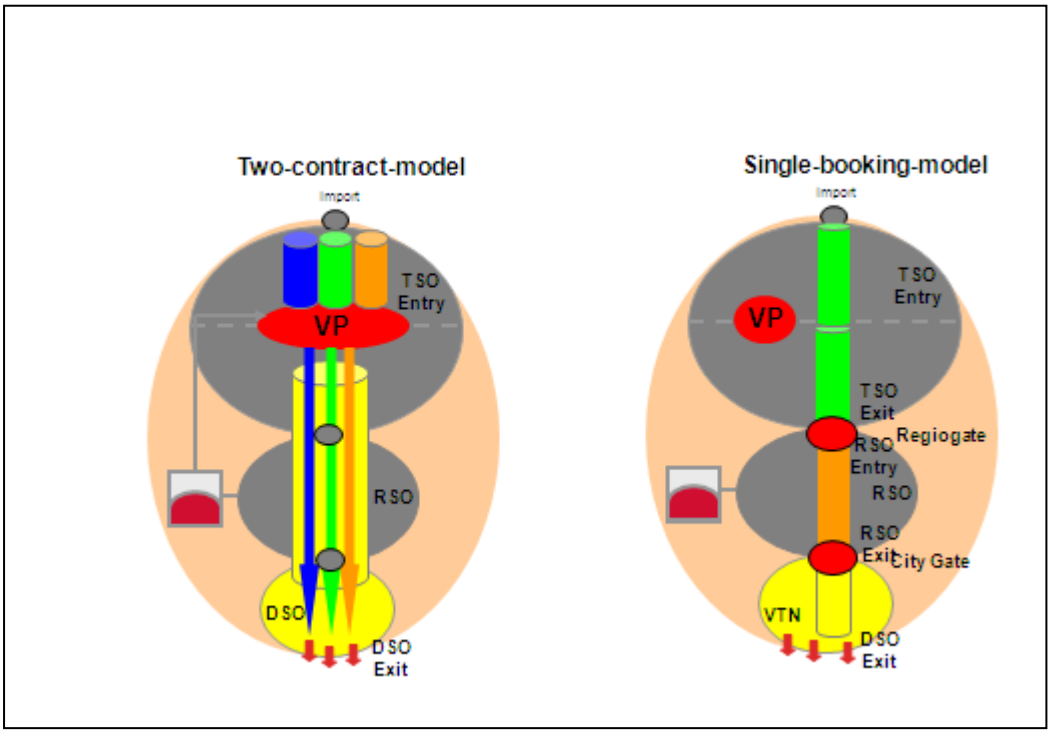

Figure 2: Entry-exit-model and single-booking-model
(Source: Adapted by the author from an EFET presentation)

As a consequence the existence of regional gas companies in the delivery chain is called into question and this is one of the reasons why these companies fought for the single-booking model. But in principle this model makes it much easier for distribution companies to optimise their portfolio at the virtual trading point by means of trading[55]. Another consequence is that the new model makes it much easier for distribution companies to sell outside their local network area, because they have the gas available at the virtual trading point. They can ship this gas without any additional effort either to the customers within their own network or to customers in other local networks in the same market area. On the other hand gas procurement became more challenging. To use these new opportunities they must in principle be able to operate their own balancing group and balance supply and demand hourly, based on an accurate forecast of demand.

This task was, at least at the beginning, too challenging for many distribution companies and the reorganisation of procurement started slowly. But the two-contract-model was indeed the potential starting point for an extremely significant change in the structure of the German gas industry.

However, despite these achievements, this new framework still had some major weaknesses:

- It could be used only in each market area separately. Therefore the number and design of market areas remained crucial.
- Partly related to market areas is the topic of capacity constraints. The existence of different market areas not only made transportation more complicated, but in most cases no firm interconnection capacity was available. This limited trading and competition in Germany.

[55] The distribution companies usually had the contractual freedom to start these activities. After the German antitrust authority banned the traditional long-term contracts between interregional and regional gas companies and local distribution companies, contract duration was in many cases reduced to two years or less.

- The balancing regime. Portfolios had to be balanced hourly and, perhaps more important, the network operators charged high penalties for imbalances beyond a certain tolerance. In the final phase of the negotiations for the co-operation agreement II, the regulator indicated that this system was not satisfactory and remained on the agenda of the BNetzA.

In chapter 7, I deal with the balancing issue where major changes happened in 2008. The development of market areas is the subject of the next section.

3.4.3 Market areas – From smaller to larger markets

3.4.3.1 Market areas and the two-contract model

As already explained the energy law does not contain the concept of market areas. § 20 1 b regulates the principles of network access but says only that network operators have to co-operate to keep "the number of networks or sub-networks, and balancing zones as low as possible." And the ordinance provision on network access, which should have regulated network access in more detail, is also not very helpful. It allows network operators to divide their networks into sub-networks if long-term capacity constraints do not permit flexible combinations of entry and exit capacity for the whole network[56]. It is not surprising that the ordinance provision did not provide any answer to the question how market areas should be designed, because this provision does not fit with the energy law[57]. When the first proposals for the design of the two-contract model were made during the consultation process between the BNetzA and the associations of the stakeholders, GEODE[58] proposed the following criteria for market areas:

- Market areas should be formed by transmission operators.
- They should operate high pressure import pipelines.
- They should operate a transmission network and/or
- Storage with significant capacity within the network.

In a later presentation GEODE mentioned eight market areas as a starting point, but the actual number of market areas as a starting point for the new system was finally reached in a bargaining process between BGW, the association of the network operators and individual network operators. The bargaining continued up until the very last moment before publication of the first co-operation agreement. The minimum target of the BNetzA for the starting date of the system was a maximum number of market areas of 20. BGW wanted to implement 28 or 29 market areas. Finally BGW accepted the preliminary – not very ambitious - target of the BNetzA and managed to convince all concerned network operators to restrict the number

[56] See § 6 paragraph 4 of the ordinance provision on network access gas (GasNZV).

[57] I described in detail in my first study the law-making process and the shortcomings of the results, Lohmann 2006, p. 58 – 63.

[58] See Box 2 for a description of GEODE's role in the whole process

of market areas to the minimum target of the BNetzA. 19 market areas were implemented at the starting date of the new system in October 2006.

The following two figures show the high cal and low cal market areas in October 2006.

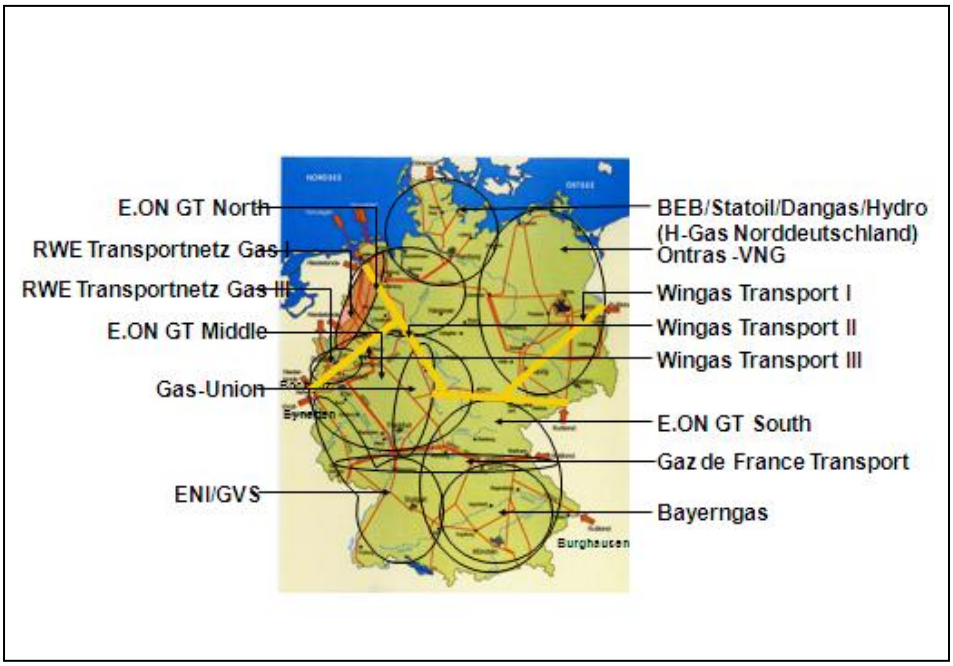

Figure 3: High cal market areas from October 2006
(Source: Co-operation agreement among the network operators)

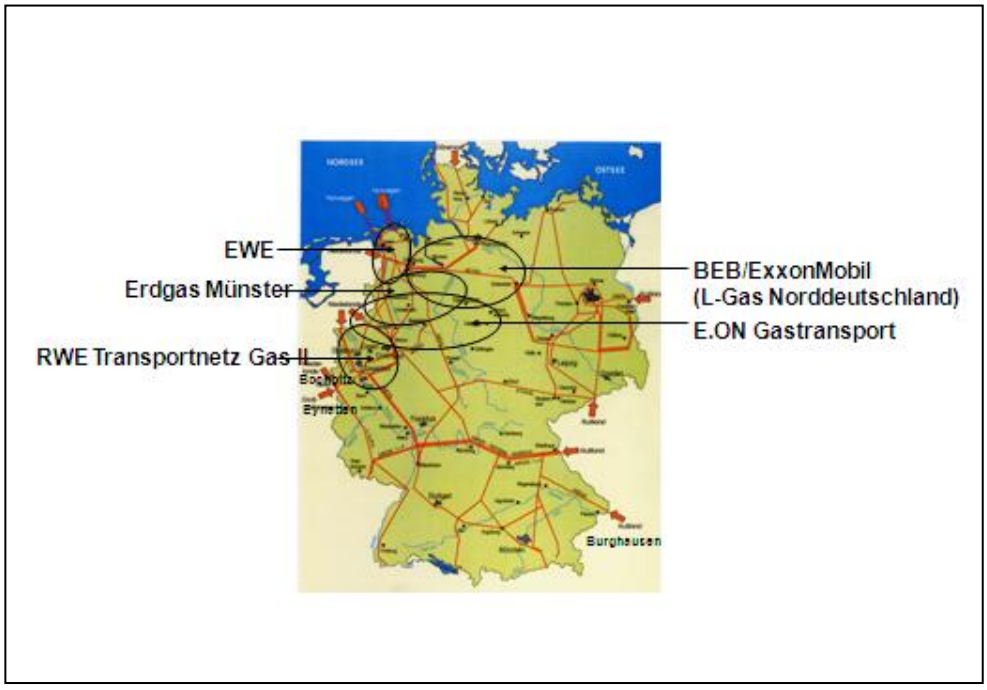

Figure 4: Low cal market areas from October 2006
(Source: Co-operation agreement among network operators)

The following characteristics can be summarised from Figures 3 and 4:

- Some of the major network operators (E.ON GT, Wingas, RWE) divided their high cal networks into more than one market area.
- Co-operation between network operators to create market areas beyond property boundaries is the exception. Only BEB (with Statoil, Hydro, Dangas and ExxonMobil) and ENI and Gasversorgung Süddeutschland (GVS) co-operated in this way.
- Some regional network operators like EWE, Gas-Union and Bayerngas operated their own market area, although they are better connected to other German network operators than to border points[59]

The initial organisation of market areas did not follow any well-defined criteria aside from the interests of the different network operators[60] and this could not be a stable situation. But before I describe the process of reducing market areas, it is important to explain the key obstacles which this system created to the development of a unified gas market.

3.4.3.2 Market areas: An obstacle for competition and gas trading

The principal problem with the concept of different market areas in the context of the model of network access is that the two-contract model applies only in each market area separately.

- If gas is shipped through more than one market area, then more than two contracts are needed. One entry contract to market area I, one exit contract out of market area I, one entry contract into market area II and one exit contract to the final customer.
- Shippers must pay a separate exit and entry fee, which adds additional cost for transportation.
- Capacity constraints between market areas may exist and the "rucksack-principle" (see glossary) is not applied automatically for entry capacity into one market area or transportation between market areas. Therefore new suppliers have no guarantee that they are able to book the necessary firm capacity to supply a customer. According to shippers it is usually not possible to book firm interconnection capacity between two market areas [61].
- Shippers have to balance their portfolio within each market area separately, which increases balancing costs and risks. A number of suppliers said, that as another

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[59] This is also true for the GVS network, which is connected to the E.ON GT and Wingas networks.

[60] Even the network operators later acknowledged this. E.ON GT argued during the formal procedure of the BNetzA on the approval of exemptions from cost based tariffs (see chapter7.1.3): "The market areas were designed along sub-networks. For the formation of such sub-networks the technical network design was only one criterion which network operators took into account. Besides gas flows, mainly company policies, the time frame and the effort of implementation (necessary IT systems) determined the number of market areas in 2006." (unpublished written pleading of E.ON GT dated July 13, 2007).

[61] Shippers report a lot of funny or sad stories about capacity availability between market areas. In some cases network operators at the interconnection points seem to publish different capacity for entry and exit. Either firm exit capacity or firm entry capacity was not available. A number of shippers said they were able to enforce the Rucksack-principle for the entry and exit points of market areas, while others reported that their attempts were not successful. In general the situation at interconnection points of market areas lacks transparency.

consequence they concentrated sales efforts on some market areas, because for very small portfolios, balancing is too expensive and risky.

- A number of networks are connected to more than one market area. In these cases all final customers must be assigned to one of the market areas. This initial assignment follows three criteria: gas flows, existing gas supply contracts of the local or regional gas company that are physically delivered from the different market areas for certain customer groups and discretion[62]. With the assignment of customers to different market areas, access to these customers for suppliers will depend on their portfolios. For incumbent sales companies having procurement contracts with suppliers from different market areas, this fragmentation creates optimisation problems between the different contracts.

It should be emphasised very clearly: fragmentation into different market areas is the most important obstacle for all players interested in entering the market and offering gas in competition to the local incumbent[63].

Fragmentation into market areas made the application of the two-contract-model much more difficult. At the start of the system it was perhaps a temptation for the integrated gas companies to limit the impact of the new model of network access by dividing Germany into as many market areas as possible. But this strategy – if it existed – started to break down very soon, as shown in the following section.

3.4.3.3 Reduction of market areas

One of the interesting issues concerning the further development of market areas since mid 2006 is that all subsequent merging of areas up to 2009 was not prescribed by the regulator, but was the result of company decisions. There were many discussions between the different network operators and the regulator, but although the BNetzA signalled repeatedly that the reduction of market areas to a number below ten was a priority, it – except for one so far unsuccessful exception (see chapter 3.4.3.4 - never instituted a more formal procedure to achieve this goal and enforce the application of its own criteria[64]. The process of reducing the number of market areas was triggered by E.ON Ruhrgas. On December 11, 2006 the CEO of E.ON Ruhrgas, Burckhard Bergmann himself announced at a press conference the merger of the three high cal market areas from October 2007. The step was technically possible because E.ON GT, the transmission system operator, invented a new methodology to calculate network capacities[65]. This demonstrates again, that a design of the German network system to

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[62] . Discretion played a major role in the initial assignment (see Monitoringbericht 2007 of the BNetzA, p. 101).

[63] See for example Bundesverband Neuer Energieanbieter (bne) press release dated June 16, 2009: "If we really want a liquid and competitive gas market the still too high number of market areas must be reduced in the short-term". Or see E-Bridge: Gutachten zur wettbewerblichen Weiterentwicklung des deutschen Gasmarktes, Bonn February 2009, p. 12: "An important obstacle for the development of competitive gas trading is the high number of currently 12 market areas for high cal and low cal gas." (The study was done on behalf of MVV Energie, one of the German companies trying to extend gas sales activities beyond its network area (see chapter 5.3.3)

[64] During the negotiations with the network operators about the first co-operation agreement the BNetzA proposed that: "Market areas must encompass the network of at least one interregional network operator. They must have significant import capacity or connection to German production and storage facilities." See minutes of a meeting between the BNetzA and the associations of network operators on May 23, 2006, p. 3. Again, the market areas proposed by the network operators did not all meet these criteria.

[65] .For a description of the procedure see Andreas Böhmer: Statistisches Kapazitätsmodell – Neue Ansätze auf dem Weg zu größeren Marktgebieten, Zeitrschrit für Energie, Markt, Wettbewerb, 3/2007.

improve the conditions for competition and gas trading is possible, but is of course accompanied with bigger challenges, costs and risks for network operators. The merger of the three high cal networks was a huge improvement of the network situation in itself because:

- For the first time it was possible to transfer gas between many of the important German border points without any additional obstacles on the transportation side. The next chapter will show how this improved the prerequisites for gas trading in Germany.
- The E.ON GT network covers most parts of Germany and therefore the merger facilitated national transportation and was one of the elements that increased competition as I will show in chapter 5.

But the announcement of the merger was also the starting point of serious negotiations among almost all major network operators about co-operation and the merger of market areas. At the above-mentioned press conference E.ON Ruhrgas CEO Bergmann said: "If E.ON GT needs only two market areas, then for the whole of Germany definitely significantly less than 10 market areas are needed.[66]" E.ON GT started discussions with network operators about joining the new market areas. Other transmission operators discussed co-operation to avoid becoming members of the E.ON GT market area, because they feared being dominated by the German major. Up to mid 2008, the following mergers of market areas were announced or took place:

- 1.4.2007: RWE Transportnetz Gas merged two high cal market areas.
- 1.10.2007: Wingas Transport merged the three high cal market areas to one. The merger was announced in May 2007.
- 1.10.2008: Merger of the two low cal market areas of E.ON GT and RWE Transportnetz Gas. The merger was announced in July 2007.
- 1.10.2008: Merger of the low cal market areas of Erdgas Münster and EWE with the market area Norddeutschland of BEB and ExxonMobil. The merger was announced in September 2007.
- 1.10.2008: Merger of the market areas of bayernets (network operator of Bayerngas) with the high cal market area of E.ON GT. The merger was announced in January 2008.
- 1.10.2008: Merger of the market areas of Gaz de France Transport Deutschland and ENI/GVS. The merger was announced in January 2008.
- 1.10.2008: Dissolution of the market area of Gas-Union. The network becomes part of the market areas of Wingas and E.ON GT, because it is physically connected to both networks. The change was announced in May 2008.

[66] See Gasmarkt Deutschland, January 2007, p. 28.

In addition BEB and Ontras – VNG Gastransport agreed on a closer co-operation for their two market areas. From July 2007 they implemented a joint platform for capacity booking and from October 2007 they allowed a joint balancing of portfolios over the two market areas. A merger of the two market areas would be the next logical step[67].

As a result of these mergers, the number of market areas was reduced on October 1, 2007 to fourteen and on October 1, 2008 should have been reduced to eight. The following figure shows the much more comprehensive German gas market that ought to have been in place from October 2008.

Figure 5: Announced reductions of market areas from October 2008[68]

The development shows that Bergmann's prediction could have become true. From October 2008 the number of market areas should have been below ten and all market observers expected further reductions over the next two years. The suggestions of EFET and other

[67] The two companies were in ongoing discussions about a merger of the market areas during 2008 and already signalled the regulatory authority their intention to merge their market areas. Market sources say the core problem is not technical but the reallocation of tariffs for the joint market area. Physically they are connected only at one point, Steinitz, where large volumes flow, and consequently large income is generated. In particular Ontras (to be more precise the biggest shipper, VNG Verbundnetz Gas) has problems with the compensation of the loss of income at Steinitz by adjustments of the entry and exit tariffs at other points.

[68] NetConnect Germany (NCG) is the name of the joint high cal market area of E.ON GT and bayernets

associations of traders – three German market areas – or perhaps even cross-border market areas looked as if it would finally become reality[69].

3.4.3.4 Setbacks

This rather promising picture fell apart during August 2008, when a number of these mergers were postponed or delayed. First rumours started to spread during spring 2008 that E.ON GT and RWE Transportnetz Gas would not be able to meet the timetable. One of the reasons mentioned by market sources at that time was that RWE was not willing to transfer any of the important functions to a joint operating company for the market area, after RWE agreed with the EU-Commission to sell the network to settle an EU antitrust procedure (see section 7.1.1). Finally during August three market area mergers were postponed for different reasons:

1.Gaz de France Transport Deutschland (GdFT) with GVS Netz/ENI Deutschland, mainly for technical reasons related to the new balancing regime.

2.Low cal market areas of RWE Transportnetz Gas and E.ON GT and

3.the low cal market areas of Erdgas Münster, EWE Netz and Gasunie Deutschland former BEB (see chapter 7.1.1).

RWE Transportnetz Gas mentioned three major reasons why they were not able to co-operate with E.ON GT and agree on a merger of the market areas[70]:

- Concerns that the BNetzA would not accept the cost related to the merger. The cost will occur mainly if the network operators grant the flexibility of unrestricted combination of entry and exit points for the whole new market areas. Due to physical constraints, this is only possible if bottlenecks are removed by additional infrastructure or some shippers guarantee (for payment) minimum flows at certain entry and exit points.
- Conflicts between E.ON GT and RWE about ownership shares in a joint operating company for the network area. RWE insisted on equal shareholdings to prevent any future loss of control over its own network, and E.ON GT insisted on shares according to the size of the networks.
- Concerns about loss of control over the network. RWE wanted to avoid any structure that would not allow the sale of the transmission system operator as a fully stand alone company. The company feared that in this case it would not be able to sell the transmission system operator as agreed with the EU Commission.

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[69] After the Dutch network company Gasunie took over the network activities of BEB in late 2007 many market participants expect some form of integration of the BEB network and Gasunie's Dutch network system (see chapter 7.1.1)

[70] See for a more detailed discussion the interview with the managing director Klaus Homann and Wandulf Kaufmann in my monthly publication Gasmarkt Deutschland, October 2008.

Similarly to RWE and E.ON GT, GasunieD, EWE Netz and Erdgas Münster Netz faced the problem that the regulatory authority did not guarantee to accept all costs related to the co-operation and allow them to be passed on to customers as part of the network tariffs. Sources close to the companies said that it was mainly EWE that was not willing to sign the agreement without any guarantee that related costs could be passed on to the customers by increasing network tariffs. Furthermore the companies were not able to receive formal approval from the EU Directorate of Competition and the German antitrust authority in time for the co-operation to take place[71].

Even the regulator acknowledged informally that the cost-related argument is a serious issue. One of the reasons is the organisation of responsibilities within the regulatory authority. Beschlusskammer 7 is in charge of network access and the reduction of market areas. Beschlusskammer 9 is in charge of network tariffs and did not want to guarantee a priori that all costs would be accepted. In particular if minimum flow guarantees are given by the trading divisions of the integrated companies – which are the biggest shippers and therefore best able to give these guarantees – the regulator feared that unjustified costs and excessive profits could result for the trading divisions[72]. But during autumn 2009 the regulator seemed to have presented some ideas to the network operators on how to solve this issue.

Nevertheless, the regulator reacted immediately to the announcements of the network operators and, on August 22 2008, started a formal procedure against the five operators of low cal market areas[73]. The aim of the procedure is to evaluate whether the five operators can be obliged to form one comprehensive market area. No decision had been reached by mid 2009, but this was yet another demonstration of the commitment of the BNetzA to enforce its targets. But the procedure also demonstrates the willingness of the regulator to support and reward voluntary agreements. It restricted the scope of the procedure to the low cal market areas. Although in the high cal sector, the merger of the GdF and ENI/GVS market areas was delayed, E.ON GT and Bayernets merged their market areas as announced[74]. The market area of Gas Union was also dissolved and integrated into that of E.ON GT and Wingas Transport. In its memorandum Beschlusskammer 7 explicitly referred to these activities as one major reason for waiving formal procedures in the high cal sector[75].

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[71] It is perhaps a minor but interesting point that German and, in the case of Gasunie, European antitrust authorities have to approve the co-operations because they are formally cartels, which may be in conflict with antitrust laws. All companies underestimated this legal aspect, when they started discussions about co-operation.

[72] RWE Transportnetz Gas calculated cost in a three digit million Euro range.

[73] See memorandum of Beschlusskammer 7 dated August22, 2008.

[74] On October 1 the joint operating company NetConnect Germany started operations in the joint market area. Many observers think the name NetConnect Germany signals the ambitions mainly of E.ON GT to develop this company into an operating company for a larger market area. In the press release the two owners E.ON GT (74.9%) and bayernets (25.1%) stated, that the company is open for other shareholders.

[75] "Furthermore at least some of the network operators of high cal market areas successfully reduced the number of market areas by voluntary agreements. As far as this was achieved the opening of formal procedures similar to the low cal sector would interfere with these agreements that were based on the assumption of a stable regulatory framework during the implementation phase." Memorandum of Beschlusskammer 7 dated August 22, 2008.

3.4.3.5 Number of market areas – The final outcome

3.4.3.5.1 Voluntary mergers: A new momentum in 2009

But despite temporary setbacks the pressure to reduce market areas continued. The regulatory authority went on putting as much pressure as it could on the network operators and, with the development of trading activities and competition in the larger market areas, there was increasing pressure on operators from sales companies – including at least some of the bigger incumbents - to co-operate and merge market areas which will create a more or less level playing field for all companies. In 2009 the process of reducing market areas acquired a new momentum:

- The delayed merger of the low cal market areas of GasunieD, EWE-Netz and Erdgas Münster Transport was finally completed in April 2009. During January the three companies founded a joint company, Aequamus that is in charge of organising the balancing in the joint market area "L-Gas 1". Not long before the end of March the three network operators received a letter from the BNetzA, in which the regulatory authority at least in principal confirmed that it would accept all costs related to the co-operation in the calculation of network tariffs.
- In March 2009: GasunieD, Dong Energy Pipelines, StatoilHydro Deutschland, Ontras – VNG Gastransport and Wingas-Transport announced the merger of the market areas of H-Gas Norddeutschland, Ontras and Wingas-Transport[76]. The network operators founded the joint venture company Gaspool to provide the necessary balancing services. The new market area is in operation from October 2009.
- In June 2009 finally Bayernets, Eni Gas Transport Deutschland, E.ON GT, GRTgaz Deutschland (since February 3, 2009 following the merger of Gaz de France and Suez) and GVS Netz[77]. announced plans to evaluate a market area co-operation under the umbrella of NetConnect Germany[78]. They mentioned no starting date. In late August these network operators announced that the extension of the NCG market area will start also on October 1, 2009

After the latest initiatives, and despite the setbacks in 2008, the number of market areas will be reduced to six - three high cal and three low cal market areas - from October 2009.

3.4.3.5.2 Further potential developments

In the high cal sector, most observers expect a further reduction to two market areas. The RWE Transportnetz Gas high cal market area will be either integrated in the Gaspool or NCG

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[76] See the joint press release of the five companies dated March 5, 2009.

[77] Before agreeing in principle on a co-operation with NCG, GVS Netz had discussions with Gaspool about joining this co-operation. More sources close to the network operators confirm that these discussions took place. Two versions are circulating about why these discussions were not successful. One opinion is that ENI has preferred a co-operation with NCG, other sources think BNetzA urged GVS Netz to co-operate with NCG because physical connections are much better

[78] Joint press release of the five network operators dated June 9. 2009

market area, after the RWE Group finishes the sale of its network[79]. The same argument applies to the fate of the low cal market area of RWE Transportnetz Gas. It will be either integrated into the E.ON GT or Aequamus market area.

Whether and when a further reduction of market areas takes place was, in July 2009, more speculative. The following two scenarios are possible:

- Scenario 1: amalgamation into one high cal and one low cal market area.
- Scenario 2: A more complex development where Gaspool and NCG will not merge. But the low cal market areas might be merged into the high cal market areas and/or one or both high cal market areas might be extended beyond Germany.

The first scenario is still the major target of many players in Germany that are trying to sell nation-wide gas in Germany[80]. They hope that the German government and the BNetzA will help to enforce this target. The German ministry has been working since the end of 2008 on an amendment of the ordinance provision on network access. In a cornerstone paper for such an amendment, published on April 3 2009the first of six issues mentioned is a reduction of market areas: "Stipulation of the target to reduce step by step the number of market areas to one per gas quality until (…).[81]" The deadline is left open. But in mid-2009 it was an open question whether the amendment of the ordinance provision will be done quickly and will finally contain the cornerstones published in April[82]. Concerning the merger of the three remaining low cal market areas I have mentioned already the formal procedure of the regulatory authority launched in August 2008 to enforce one low cal market area. After Aequamus was set up, the regulatory authority stopped the procedure against GasunieD, EWE-Netz and Erdgas Münster Transport. BNetzA also told RWE Transportnetz Gas and E.ON GT that, although it will not stop the procedure, it will not take further action for a transition period. "But it is necessary that RWE Transportnetz Gas and E.ON GT explain in a proper way, that the companies are in principle willing to lead negotiations with the target of merging their low cal market areas.[83]" A very lukewarm warning, said market players who pointed out in addition that the BNetzA did not take any real action to push the procedure forward after it was started.

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[79] RWE is going to sell the network operator at the latest in 2010. It agreed with the EU-Commission on this step to settle an EU antitrust case (see chapter 7.1.1). In early 2009 bayernets announced an interest in buying the company to integrate the network into the NCG market area On the other hand a consortium of 36 local and regional distribution companies has invited Gasunie to join them in bidding. In July 2009 RWE reorganised the network operator to allow all all necessary tasks to be fulfilled by transferring additional functions and staff to the company. And RWE renamed it to Thyssengas (a very traditional name. Thyssengas was one of the traditional German interregional gas companies. It was taken over by RWE completely in 2003. RWE integrated Thyssengas into its gas business and erased the name at that time).

[80] See for example E-Bridge: Gutachten zur wettbewerblichen Weiterentwicklung des deutschen Gasmarktes," study on behalf of MVV Energie, Bonn, February 2009 p. 4: Reduction of the number of market areas to the minimum possible number. Ideally one market area for high cal and one for low cal gas with the target of further development of a competitive gas market.

[81] See Bundesministerium für Wirtschaft informal paper: "Eckpunkte Gasnetzzugangsverordung"p. 1

[82] Most observers do not expect even a draft version before the general election in Germany in September 2009. I explained in my 2006 study the basic contradiction between the law and the ordinance provision (p. 58 – 63) and the reasons. But the BNetzA could in principal cope with this contradiction and improve the system of network access. Therefore some observers ask, whether an amendment is really useful. Others point out the limited competence and man (better woman) power for such a task.

[83] Letter of Beschlusskammer 7 to the lawyers of RWE Transportnetz Gas and of E.ON GT dated March 20, 2009.

The ministry of economics, and to some extent the regulatory authority, in principle back the scenario of two market areas but it is not clear whether they are finally committed to enforce it. At mid 2009, there were no signs, or even rumours, that the relevant network operators were in discussion about a merger of market areas beyond the co-operation agreements already announced.

A number of market players and even some representatives from the BnetzA[84] argue the second scenario, with two high cal market areas, may have some advantages. If transportation between the two high cal market areas is properly organised, there is transparency of available capacity and efficient congestion management in place:

- The bigger the market area the higher the cost to guarantee flexibility and sufficient firm transportation capacity across the whole market area. With two market areas these costs may be reduced[85].
- Two operators of market areas would remain, and could still compete for optimal solutions to ongoing operational problems[86].
- Cross border integration i.e a direct link with the Dutch market, might be easier[87].
- A merger of high cal and low cal market areas might be easier to organise

For the merger of high cal and low cal systems the Netherlands is the role model. From July 1, 2009 the Dutch Gastransport Services (GTS) merged the high cal and low cal market areas and socialised all costs of quality conversion, which will become completely the responsibility of GTS[88]. The regulatory authority is keen to transfer this system to Germany and network operators think that, despite the different physical conditions, this will be in principle feasible.

The second scenario shows that there are more options than just a further reduction of the number of market areas to two, that may support further market development.

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[84] Gerrit Volk, head of a sub-department of BNetzA for example said at a conference in May 2009 at Berlin, BNetzA might live with two high cal market areas (see energate, May 14, 2009).

[85] For the time being this is more an intuitive argument. The concerns of network operators of the low cal market areas about these costs have been described above. So far I have seen no quantitative analysis of the costs resulting from mergers of market areas. But the proposition that gas flows will change due to changed trading relations seems plausible. The tariffs which result from an entry-exit system give only very limited signals about such bottlenecks (see: Paul Hunt: Entry-Exit Transmission pricing with notional hubs, Oxford Institute of Energy Studies, NG 23, February 2008.

[86] I described in my first study how the changing attitude of BEB was an important element for progress in the transportation regime. Since 2006, BEB (now Gasunie), Ontras and E.ON GT have started to offer different services, tools or transparency.

[87] After Gasunie took over BEB in 2008 (see chapter 7.1.1) it operates the Dutch network through its affiliate Gastransport Services (GTS) and the adjacent network in North Germany. The integration of both networks to create a Northwest European "gas roundabout" is the strategic target of the company. The integration is not that easy and Gasunie managers complain about the necessity to cope with two legal and regulatory systems (see for example Hans Coenen, CFO Gasunie Deutschland: "Gas roundabout" presentation at Team Consult Colloquium X!,October 23, 2008 at Berlin). In principal the 3rd EU energy package , which was approved mid 2009 and among others foresees the implementation of a European Agency (ACER) for the co-ordination of cross-border regulation, should facilitate cross-border market areas.

[88] See Gastransport Services presentation at a shipper's meeting on October 7, 2008 and announcement on the GTS intenet page on July 1, 2009: "As of 1 July 2009 there will be no quality label for nominations on TTF and there will be only one TTF point."

3.4.3.6 The development of the number of market areas – a success for the regulator?

Finally four years after the new system of network access started with 19 market areas in 2010 the number of market areas will be reduced to a maximum of four. Much too late, many market players would argue. What are the reasons for this development, which was slow and had its setbacks but finally lead to the desired outcome? It was more the changed attitude of the companies than regulatory power. E.ON Ruhrgas definitely changed its attitude towards regulation. The company's views on preventing changes to the market structure and avoiding major impact from the new regulatory framework changed totally. One of the major findings of the 2006 study was that the skill of E.ON Ruhrgas' resistance to change was one of the reasons for the general inertia of German gas liberalisation and competition. An ongoing theme of this study will be to demonstrate that the change in E.ON Ruhrgas' behaviour has been, and remains, very important for overall change in the German gas market. In 2006, E.ON Ruhrgas started several initiatives under the headline "E.ON initiative for competition in the gas market[89]". E.ON Ruhrgas either recognised that changes in the regulatory framework could not be resisted, or that continued resistance would in the end be more harmful to the company than cooperation. In bilateral conversations, several senior managers from E.ON and E.ON Ruhrgas confirmed this change in strategy.

The positions of other network operators differ, but with the enforcement of the two-contract-model, which is working, at least in principle, gas companies were able to optimise their procurement depending on the market areas in which they are located. In a number of areas, the fragmentation of the German network limited these possibilities and therefore the sales departments of the still integrated companies may have put pressure on the network operators to co-operate[90].

As already said, it is not possible to assess the pressure the BNetzA was (and is) able to put on the companies to enforce co-operation. There were always intensive discussions between the operators and the regulator, and the threat of a formal procedure was perhaps always "a sword of Damocles" although representatives of network operators sometimes expressed the view that the formal position of the BNetzA was not strong. Lawyers partly confirm this view, arguing that – as described above – that market areas are not mentioned either in the law or the ordinance provisions[91].

A final reason for further co-operation was perhaps more technical. Smaller network operators, in particular, found that operating a market area was a challenging task. It was said

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[89] See for example the speech of Bernhard Reutersberg, CEO of E.ON Ruhrgas since March 2008, at the annual press conference 2008. Not all this action was undertaken voluntarily, but it demonstrates the changed attitude of the company.

[90] An example might be Bayerngas and its network operator bayenets. In summer 2007, the general manager of Bayerngas Ulrich Mössner said at the annual press conference that bayernets will have to give up its separate market area. He said, bayernets won't co-operate with E.ON GT but will most likely form a market area South jointly with ENI/GVS and GdF Transport. But – as described above – bayernets created a joint market area with E.ON GT. After intensive internal discussions, Bayerngas is rumoured to have decided that better procurement and trading possibilities for the companies outweigh the advantages of a more protected network area.

[91] This view is underlined by the already mentioned attempt of the ministry of economics to amend the ordinance provision on network access and to address explicitly the issue of market areas. See also E-Bridge: "Gutachten zur wetbewerblichen Weiterentwicklung des deutschen Gasmarktes," Bonn, February 2009, p. 4: "Today clear criteria are missing under what conditions the existence of a number of market areas above one for each gas quality is justified."

that some of the network operators had problems in coping, particularly, with the management and implementation of balancing, which also involves additional costs.

The situation for ENI and Gaz de France Transport seems a little different. Both companies operate major transit pipelines and must be able to secure and control transit capacity and flows[92]. Therefore they are less willing to form a joint market area with E.ON GT, although the TENP pipeline and the MEGAL pipeline are also part of the E.ON GT market area because E.ON GT has a share of roughly 50% in both pipelines and operates half of the capacity.

The GVS/ENI market area is another example of prevailing corporate interests. No one in Germany sees any justification for this market area. The GVS network area is accessible physically mainly from the E.ON GT and Wingas Transport network areas[93]. Therefore the GVS network should have been integrated into the Wingas Transport and E.ON GT market area already from 2006, even perhaps independent of ENI's TENP pipeline. That GVS and ENI managed to operate a separate market area at least until October 2009, if not October 2010, is a clear defeat for the regulatory authority[94].

The opening of formal procedures in August 2008 demonstrated that the BNetzA is committed to try to use formal powers if there is any chance of success[95]. But the lack of any visible action during this procedure and the reason the regulatory authority gave in the opening statement for restricting the procedure to the low-cal market areas, demonstrates again the weak position of the regulatory authority in relation to this issue: "Intensity of competition is in particular low in the low cal sector. This is not least a result of the market demarcation by the isolated market areas. The virtual trading points in these market areas are more or less illiquid. By contrast, in the high cal sector of some market areas exchange based trading has started. There, the need for regulatory action is more urgent than in the low cal sector.[96]" Not a totally convincing argument because, as I will show in the next chapter, trading in some high cal market areas is also very thin. Although the major hypothesis of this study is that regulation in Germany is a success and that the regulatory authority played a major role in designing the framework in favour of more competition, the development of market areas is not directly part of the success story of the BNetzA, because of a lack of power and competence in that sector. Interestingly enough, in the end the issue of market areas was solved. This demonstrates the huge effect of the larger market areas - H-Gas

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[92] ENI operates the TENP pipeline from the German Dutch border point Bocholtz to the Swiss German border point Wallbach; and Gaz de France operates the MEGAL pipeline from The German-Czech border point Waidhaus and the German-Austrian border point Oberkappel to the German-French border point Medelsheim. BNetzA has said informally that under the entry-exit-regime with the two-contract-model, transit flows are a problem.

[93] Shippers say that it is hardly possible to book capacity from the ENI entry point into Germany at Bocholtz (Dutch-German border) to the GVS virtual trading point.

[94] GVS-Netz is not even able to manage the market area properly. There are numerous complaints from shippers that in particular after October 2008 when daily balancing was introduced, GVS Netz was completely overburdened to cope with the related tasks and data flow requirements.

[95] After all announced mergers of low cal market areas were delayed or postponed in 2008 the regulatory authority was more or less forced to start action to save its face. And formally it could argue, the announcement of mergers demonstrated that it was feasible to merge the market areas and that the network operators do not meet their legal obligation to co-operate.

[96] BNetzA: Opening statement of the procedure BK7-08-011: Merger of low cal market areas, 22nd of August 2008, p. 2.

Norddeutschland and E.ON GT - on trading and the development of competition, (the topic of the following chapters). This finally produced a "knock-on effect".

4 OTC trading, exchange-based trading and the relevance of market prices

4.1 The emergence of OTC trading

Until October 2006 OTC trading hardly existed in Germany[97]. Very small trading activities developed at the BEB virtual trading point, which was established in July 2004, but this never had any significant impact on the German market. As a consequence of the lack of OTC trading there were no transparent gas prices, no possibilities to balance portfolios by Day-Ahead trading activities, and almost no opportunities for distribution companies to purchase volumes in a market place.

The new model of network access obliged the network operators of the market areas to establish a virtual trading point within each market area to create the prerequisites for the development of OTC trading. The two-contract model, where the distribution companies are obliged to buy their gas at the virtual trading point, should in principle induce demand at these trading points. But it was not an easy start for trading activities:

- As I have already described in chapter 3 this model was not in place until October 2007.
- The fragmentation of Germany into 19 market areas, with capacity constraints between them, fragmented potential liquidity.

It was again an E.ON Ruhrgas initiative that allowed the first steps towards more visible trading activities in Germany outside the BEB area. At the end of August 2006 the company announced that it would support OTC trading in particular in E.ON GT's market area North [98]. E.ON Ruhrgas announced that it would trade Day Ahead and other periods up to one month ahead, and introduce a "Day Ahead Choice market" to promote trading. In the Choice market E.ON Ruhrgas offered to buy or to sell gas (choice of the counter party) during a short (five minute) time window, at a price posted by the company. The net volume (sales and purchases) was limited to 4 million kWh per day. A choice market is seen as a good instrument to stimulate the start of trading activities and shows commitment of the provider to the market and gives real market signals. If the price is too low the market participants will buy from E.ON Ruhrgas and sell the gas in the market; and if the price is too high vice versa.

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[97] The most prominent example of the failure – or the unwillingness of incumbents – to establish gas trading in Germany is Eurohub. From 2002 to 2006 the hub operator in the Emden/Bunde area worked unsuccessfully on a concept to establish a hub to enable OTC trading (see my 2006 study p 160 – 163). In September 2006 the shareholders of Eurohub - Gasunie, E.ON GT, Statoil Deutschland, BEB and Wingas-Transport - announced that they would stop all further developmen t activities at the hub.

[98] See press release of E.ON Ruhrgas dated August 18 2006.

Therefore E.ON Ruhrgas has an incentive to post a price that reflects, according to the assessment of the company, the market price on the day[99].

Many traders were very suspicious of this initiative from E.ON Ruhrgas because the company never had a reputation for supporting trading. But during the months after the announcement, more and more market players recognised that E.ON Ruhrgas was serious in its support of short-term gas trading[100]. The company always emphasised that such trading is a supplement to its long-term gas business, which is obviously the backbone of the procurement strategy. And E.ON Ruhrgas became aware that with the new system of network access, it could not prevent the development of short-term trading. Therefore its focus changed in the direction of developing the virtual trading points in E.ON GT's market areas to become the leading hubs – and later hub - in Germany.

Aside from this new initiative, the development of trading activities after October 2006 was slow. Visible trading developed in the three high cal market areas of E.ON GT and the high cal BEB market area[101]. The interest concentrated – as in all emerging markets - on prompt trading, although occasional deals were done for forward periods. The following figure shows the development of the trading volumes published by the two network operators, BEB and E.ON GT, up to June 2008.

[99] Belgium's Electrabel offered a choice market in the early days of the Dutch TTF virtual trading point, which at that time, according to traders, helped a lot to promote trading activities. E.ON Ruhrgas – or more precisely the new trading company E.ON Energy Trading that was founded in mid 2008 – stopped the Choice Market at the end of 2008 arguing it had successfully achieved its goal of strengthening the German spot gas market (see E.O Energy Trading press release of December 10 2008).

[100] Obviously the development was not without difficulties. At the beginning a number of traders complained that E.ON Ruhrgas tried to enforce its preferred trading contract - a special annex to the standard contract of the European Federation of Energy Traders (EFET). And traders reported that at the beginning E.ON Ruhrgas was active only during a short time span during the day. But these were teething problems and over subsequent months these complaints disappeared.

[101] "Visible" means that trading was possible on broker' screens and price quotations for at least some delivery periods were available more or less frequently. This happened only for the BEB and E.ON GT market areas. In other market areas only sporadic bilateral deals took place.

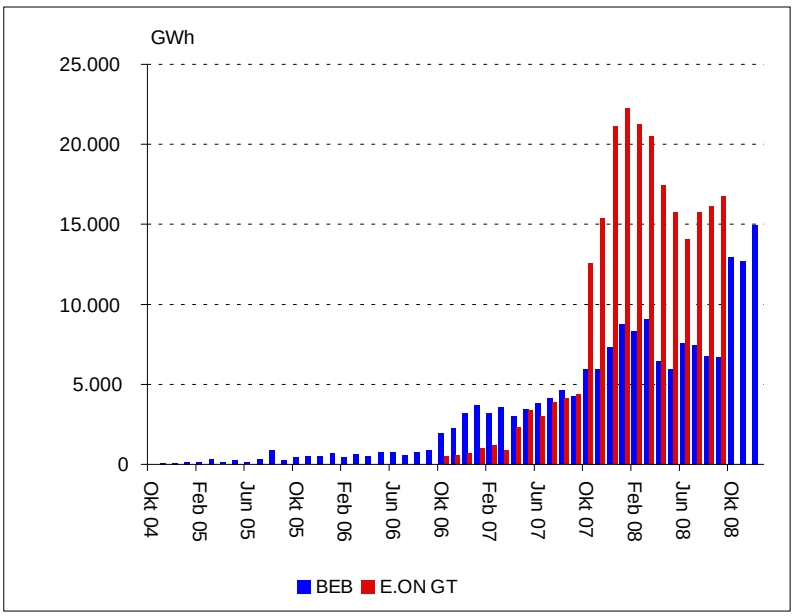

Figure 6: Monthly trading volumes at the BEB and E.ON GT hubs 2004-08 (Source: E.ON GT and BEB internet page)

OTE: Although Figure 6 gives an impression of the development of traded volumes, the data are a little misleading. They include not only volumes under short term trading arrangements but also volumes in traditional supply contracts that are nominated at the virtual trading points.

Figures 7 and 8 give a more accurate picture of genuine trading activity in the OTC market (from an independent market source) showing the development of prompt and forward trading since December 2006.

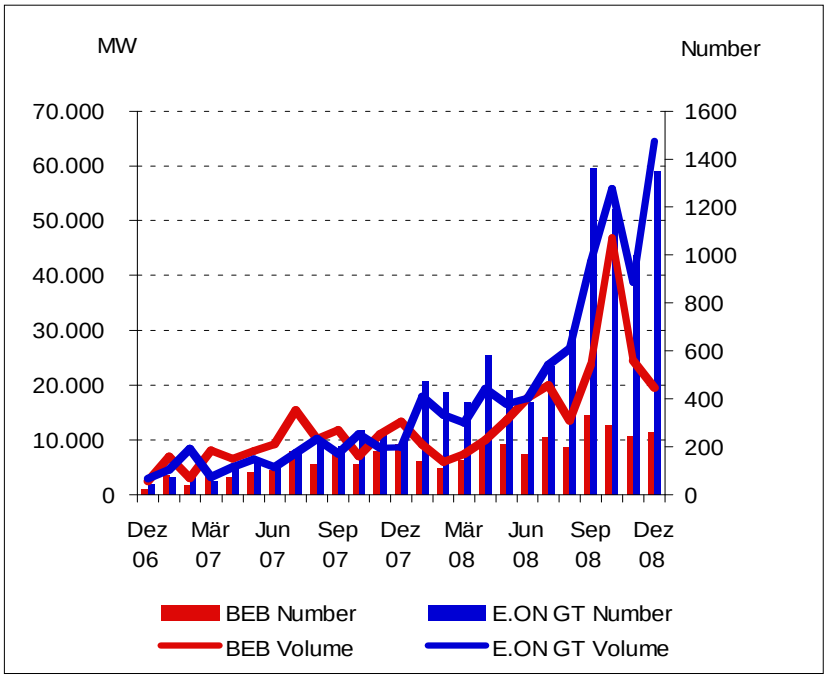

Figure 7: Development of Prompt Trading at the E.ON GT virtual trading points and the BEB virtual trading point (Source: European Spot Gas Markets Heren Energy, (since May 2008 ICISHeren Energy).)

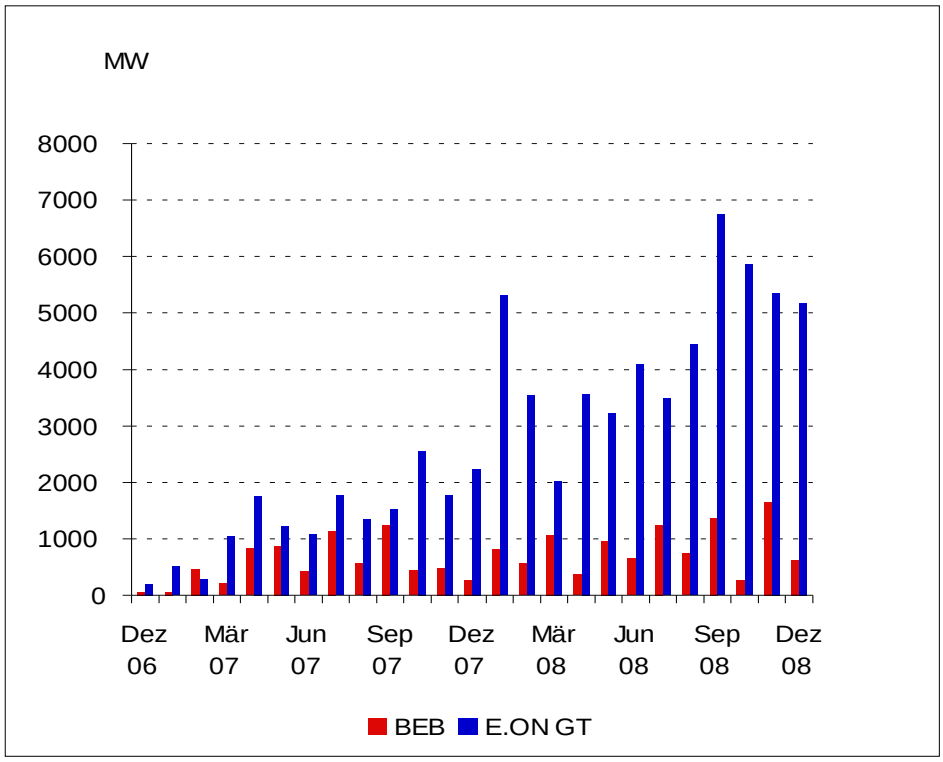

Figure 8: Development of forward trading at the E.ON GT virtual trading points and the BEB virtual trading point (Source: European Spot Gas markets)

All figures show the steep increase of volumes after October 2007 for the E.ON GT virtual trading point, which developed into the most important trading point in Germany. Two factors are responsible for this change:

- E.ON GT merged its three high cal market areas into one, which boosted trading significantly.
- The two-contract model became the only model of network access which meant that, in principle, all local distribution companies could be active at the virtual trading points.

With the merger of three high cal market areas E.ON GT's virtual trading point became directly connected with major European gas markets in the Netherlands, Belgium, France and Italy (via Switzerland). This enables international gas companies to balance their portfolios in these markets at the E.ON GT hub. This is - according to traders –one of the main drivers for OTC trading activities in Germany. Therefore these international companies became important players on the German market. As a consequence, since October 2007, the E.ON GT virtual point (VP) developed faster than its BEB-VEP counterpart. But the major German gas companies have become increasingly active. Verbundnetz Gas (VNG) is a good example. Before October 2007 VNG, the east German major, was not a visible actor in the OTC market. But the company expanded its trading team and is now a regular player at the German trading hubs.

Although, as a result of the two-contract-model, German distribution companies can purchase gas at the virtual trading point to optimise and diversify their portfolio by means of OTC

trading activities, they still play a limited role. International traders often complain about this lack of activity and the therefore still limited liquidity in the German market. Most local distribution companies still have more traditional contracts either with their traditional supplier or with new suppliers. These contracts are sometimes described as "virtual all inclusive contracts" because, although they are notionally fulfilled at the virtual trading point, they often do not give the distribution company the option to trade around these contracts[102]. But it must be emphasised that this contractual arrangement has been chosen by distribution companies voluntarily. Portfolio optimisation and OTC trading require the development of new skills and new organisational structures and expose companies to new risks. Not every distribution company is willing to take these risks. But more and more distribution companies have either already implemented, or are investigating, different strategies associated with different risk profiles to use the opportunities provided by the emerging OTC markets[103]:

- They arrange procurement contracts that allow OTC market- related optimisation bilaterally with the supplier.
- They either join existing joint venture trading companies of local distribution companies, or create new joint trading and procurement companies.
- To a still very limited extent they establish their own gas trading operations.

The first results of these changes have already been observed. German trading joint ventures of local distribution companies or regional gas companies like Syneco, actogas, SüdWestStrom, Trianel, KoM-SOLUTION or Energie Einkauf und Service (EEG), ehw – Energiehandelsgesellschaft West or Kom-Strom are trading, or buying gas at the virtual trading points, on behalf of local distribution companies and organise portfolio management approaches to procurement. Some distribution companies started their own gas trading activities, including: Stadtwerke Leipzig, GASAG Berlin, GGEW and AVU Gevelsberg.

The following graph shows that the relationship between the commodity price in the traditional oil-linked procurement contract of distribution companies and the prices at the OTC market, in principle, gave incentives to buy gas from these markets or at least to investigate such opportunities.

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[102] These contracts differ from the traditional contracts because they usually have a defined maximum capacity and maximum annual volume. But the customer does not operate its own balancing group, which is in principle the prerequisite for an independent trading strategy; the supplier handles the balancing in a so-called sub-balancing account.

[103] It is difficult to assess how many companies finally by mid 2009 had changed their procurement strategy and to what extent. But the number is growing. Two surveys of consultancies from 2008 confirm these trends. According to Team Consult, a consultancy specialised on the gas sector, 60% of the regional and local gas suppliers changed the procurement portfolio since 2005. 40% have more than three suppliers now and 7% buy part of the portfolio at the EEX gas exchange (see: Team Consult: Stadtwerke Umfrage 2008, Berlin July 2008). A survey by the PA Consulting Group gas team shows similar results. 52% of the questioned gas companies closed new contracts in 2008. And although 80% of the companies are still supplied by the incumbent supplier, 40% closed supplementary contracts with new entrants (see: PA Consulting Group: Marktstudie "Wettbewerb im Gasmarkt 2008, Frankfrurt, August 2008).

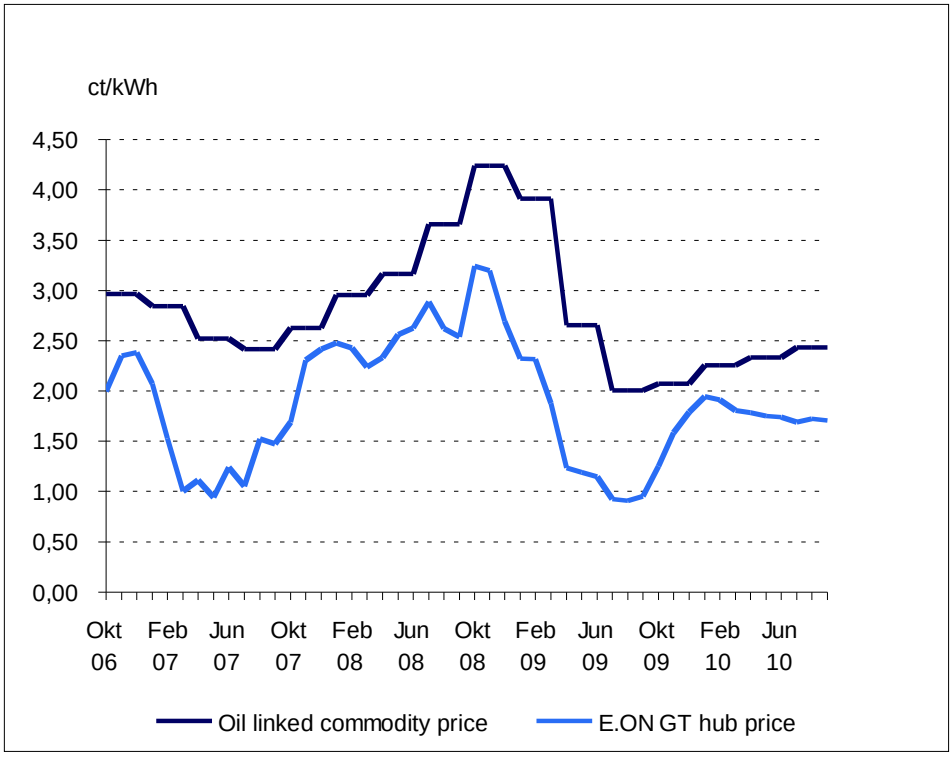

Figure 9: Development of commodity price in procurement contracts of distribution companies and monthly OTC prices (Source: Own price assessment in July 2009; heating oil forward prices and OTC prices: Metanopoly AG)

The commodity price of procurement contracts is assessed using a standard price formula, where the price is linked mainly to German gas oil quotations – the famous "Rheinschiene" quotation of the federal statistical office. The price development from August 2009 forward is based on an assessment of future gas oil and fuel oil quotations[104]. The graph shows that hub prices are always below traditional contract prices during this time-span and that the differential in particular during gas year 09 is large. But this is only half of the story because the flexibility and risk management inherent in OTC trading creates some additional cost. But the difference between the prices creates opportunities and distribution companies must more and more evaluate these opportunities and risks of different procurement strategies more carefully than previously[105].

At the end of 2008, the German OTC market was much less liquid than more developed markets like the Dutch TTF. But taking into account that gas trading was almost non-existent

[104] When the assessment was done in July 2009 the forecast for German gas oil prices for the remainder of 2009 and 2010 was at a range of around 42.00 – 50.00 Euro/hl

[105] During the gas year 2007/08 the price differential meant that a portfolio management-based procurement strategy where at least half of the gas need was covered by monthly products bought at the OTC market could lead to significant gains compared to a standard procurement strategy. Peter Becke, owner of the independent gas trader Metanopoly, who operates a market-based portfolio management approach for a number of German local distribution companies, believes that he realised a price advantage of 8.00 Euro/MWh compared to standard procurement contracts (where the average price was around 35.00 Euro/MWh), not taking into account standard rebates (see Gasmarkt Deutschland, April 2008).

before October 2006, the development is remarkable[106]. The prompt market is sufficiently liquid that distribution companies can be confident that they will be able to optimise their portfolios and find a counter-party to buy or sell gas. If the volume remains within certain limits this will not influence the price[107]. And it is possible to find traders that sell gas to distribution companies for months, quarters, seasons, gas years or calendar years, up to one or two years ahead, although this is not yet a liquid and transparent market[108]. It is still the case that some players have reservations about the traded gas market and its price volatility. But what is new in Germany is that the new system of network access and the changed attitude of some major players has enabled the emergence of such a market. This allows distribution companies more choices in their procurement decisions and facilitates market entry for new suppliers, because they are able to balance their portfolios. Remaining topics for the coming years include:

- Capacity constraints at border points and between market areas, which limit access to hubs. A further merger of market areas would reduce this problem[109]. It must be emphasised that although development of OTC Trading since October 2006 was remarkable, this was restricted to the E.ON GT and to a minor extent to the BEB hub. At the other 10 virtual trading points only sporadic bilateral exchanges of gas take place[110].
- Relations between the E.ON GT VP and the BEB-VEP. Since Gasunie took over the network activities of BEB (see chapter 7.1.1) many market observers expect a closer integration of the Dutch network and the BEB network. This could result in one joint trading area encompassing these networks, and as a result one Northwest European trading hub[111]. I have not reached a definite conclusion as to whether one comprehensive market place encompassing the Dutch and the two major German systems will finally emerge; or whether the E.ON GT hub and a separate North German/Dutch (perhaps including the Danish system) hub will co-exist at least for a period of time (see also section 3.4.3.5)
- The emergence of low cal gas trading. Trading activities concentrate on high cal gas. There had been a small number of low cal gas deals by spring 2007 at the BEB low cal virtual trading point, but these activities completely dried up. At the low cal virtual trading point in the E.ON GT system only very sporadic trades are reported. In principle the merger of the low cal market areas in North Germany into Aequamus

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[106] See for a similar assessment ICIS Heren European Gas Hub Report:Summer 2008, p. 20: "Liquidity at the EGT has still some way to go before reaching the volumes seen at TTF, but trading activity has risen considerably, since Eon merged its three market areas EGT Nord, EGT Mid and EGT Süd into one, as of 1st October 2007.

[107] At mid June 2008, portfolio managers assumed that it was no problem to sell 500 MW or buy 300 MW in one deal at the E.ON GT VP. And since that time liquidity improved

[108] A trader involved in portfolio management for distribution companies and industrial users told me mid 2009 he was already buying volumes for the gas year 2013 at the NCG VP. A UK based trader confirmed that such deals took place.

[109] Since May 2008 Day Ahead capacity at the German border points Oude/Bunde and Eynatten is provided in auction procedures on the electronic platform for secondary capacity trading trac-x (www.trac-x.de). This facilitates access to short-term capacity and allows traders to exploiut arbitrage opportunities between differrent markets. Although this is again progress and towards the end of 2008 Day-ahead capacity trading increased – a sign that is is helpful - it does not remove all capacity related problems.

[110] The only further exception is the Ontras VP, where since mid 2008 small trading activities developed and the broker Icap included the Ontras VP on its screen.

[111] Representatives of GasunieD confirm repeatedly this strategic target of the company. But they also emphasise that the operation of one integrated system physically located in two legal systems and two regulatory systems is a very challenging task.

from October 2009 should have created at least one low cal market area with enough potential players. But up to the end of 2008, no important player in Germany seemed to be able to, or interested in, sponsoring low cal trading[112]. The commercial amalgamation of low cal and high cal gas in the Netherlands demonstrates perhaps a better option of allowing more liquidity for players that use low cal gas. After the new Dutch system was implemented in July 2009, a number of German gas traders told me that they want to use a Dutch trading and flexibility portfolio to supply low cal gas in Germany.

A number of market players think that the more institutionalised trading environment of an exchange would be helpful, particularly for distribution companies to engage in gas trading. And indeed since July 2007 the EEX energy exchange has offered exchange-based trading gas trading (as described in the next chapter). .

4.2 Exchange-based trading at the EEX

On July 2, 2008 a press release from the Leipzig based German energy exchange EEX expressed satisfaction with its first year of gas trading. "Within a short time span under difficult market conditions (divided liquidity due to numerous market areas and existing long-term bilateral contracts) EEX achieved a share of 10% of the freely traded gas volumes in the two market areas of BEB and E.ON GT." Market players are not so convinced that EEX is really a success story, and the exchange itself sees possibilities for improvement. It launched seasons (summer, winter) as trading products in spring 2009 and, in response to requests from many market players, introduced inmid July 2009 a Day-Ahead auction to allow traders to place 1 MW volumes instead of the 10 MW minimum lot size in continuous trading[113]. But the fact that it was possible to establish exchange-based gas trading at all is an important symbol of market changes.

Power exchanges have been part of the German electricity market since 2000, when LPX Leipzig Power Exchange and EEX European Energy Exchange started[114]. Gas has been an ongoing topic for the exchange since 2003[115], but even in 2005 the CEO of the exchange, Hans-Bernd Menzel said publicly that gas trading was not foreseen for the next four years[116]. In 2006 the situation changed, with the introduction of market areas and virtual trading points which created a framework that, in principle, would allow the establishment of exchanged based gas trading. During spring and summer 2006, the German subsidiary of

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[112] Stadtwerke Hannover is one of the few companies that repeatedly tried to initiate low cal trading activities and quotes for low cal gas, so far without success.

[113] The reduction of the minimum lot size to 1 MW in the spot trading was a demand from market players since exchange-based trading started. They argue that for many smaller distribution companies 10 MW is simply too much to allow participation in trading and to optimise the portfolio by these activities. On the other hand the trading houses that act as market makers resisted that change because it makes market making more costly. The introduction of a Day-Ahead auction during five minutes in each trading day – during this time continuous trading stops – was the final compromise. The trading affiliate of VNG Energieunion offers on its own trading platform for distribution companies to trade 1 MW lots.

[114] It is an interesting footnote of the history of the German energy market that in 2000 EEX and LPX competed to be accepted by the German government as the official power exchange. EEX in Frankfurt won the competition but LPX decided to start its trading business anyway and in 2002, finally succeeded. The two exchanges subsequently merged, although they kept the name EEX but the Leipzig location.

[115] See press release of EEX of March 12 2003.

[116] See energate, 21.4.2005

PricewaterhouseCoopers (PwC) carried out a study and market surveys for EEX to evaluate the feasibility of such an initiative. Realisation of the – in principle – standardised terms and conditions of network access by the operator, capacity availability and gas balancing services were identified by PwC as the most important criteria to allow the establishing of gas trading in a market area. Five market areas - BEB, E.ON GT North, Middle, South and Ontras - were identified as potential areas of delivery for gas traded at the exchange[117]. On October 27 2006 – immediately after the Supervisory Board of the exchange agreed to launch gas trading - EEX held a first Workshop with traders from almost 40 companies, where an outline for the operation of a gas exchange was discussed. At the major German energy fair E-World in February 2007, EEX formally announced the launch of gas trading by October 1, 2007 at the latest. The founding principles were:

- Trading of high cal gas for the BEB and E.ON GT market areas [118].
- Prompt and forward trading. Delivery periods were Day Ahead and Weekend for prompt; the following six months, seven quarters and six calendar years for forward trading.
- Minimum lot size of 1 MW (this was later changed to 10 MW).
- Clearing by the Clearing affiliate EEX European Commodity Clearing and the Dutch Endex. Joint clearing for TTF possible. Integrated clearing with other products (power, carbon allowances and coal) possible.
- Market making for most products

From July 2007, spot trading for the BEB market area and forward trading for the BEB and E.ON GT market area started, and from October 2007, this was extended to include spot trading for the new joint E.ON GT market area. Electrabel and RWE Trading were market makers for both market areas. In addition E.ON Ruhrgas, EdF Trading and Vitol were announced as market makers for the E.ON GT market area [119]. The following graph shows the development of volumes and number of trades per month in the spot market.

[117] Unfortunately the PwC study is not available. But the consultancies E-Bridge and The Brattle Group made a similar study on behalf of MVV Energie. The company strongly supported the introduction of a gas exchange. The E-Bridge/Brattle study used mainly the same criteria as PwC and derived similar results. See: E-Bridge Consulting, The Brattle Group: Gutachten zur Etablierung einer Gasbörse in Deutschland, Bonn, January 15, 2007. Some of the principal results from the PwC study and the market surveys were presented by EEX to potential participants at a Trader Workshop Gas, on October 27, 2006 in Berlin: EEX-presentation: Trader Workshop Gas Germany, slides 3 – 14.

[118] The CEO of the EEX Hans-Bernd Menzel said the announcement of the merger of the three high cal gas areas of E.ON GT in December 2006 was an early Christmas present for the exchange.

[119] Market makers are obliged to post quotes for the delivery periods in which they act as market maker with an agreed maximum spread between bid and offer. Most respondents to the EEX questionnaires said market making was an important feature to support the development of trading. But companies are not too enthusiastic to act as market makers. In 2008 only two – RWE Trading and E.ON Ruhrgas (E.ON Energy Trading) remained. At the beginning of 2009, the trading company actogas, an affiliate of Bayerngas became an EEX market maker for some products.

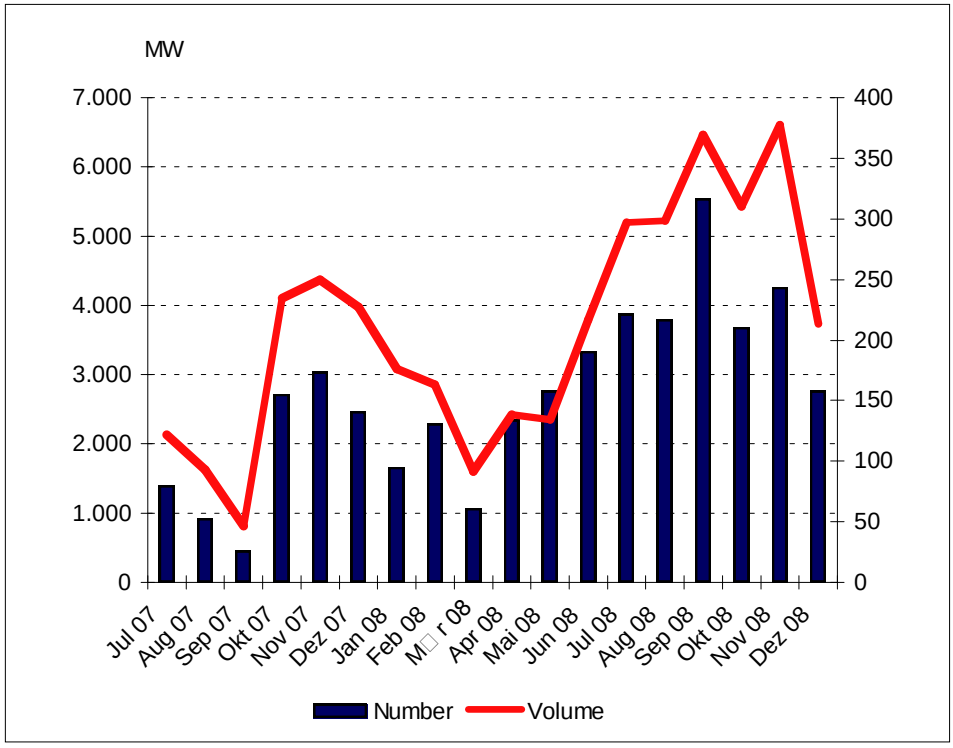

Figure 10: Spot deals and trading volumes at the EEX
(Source: EEX)

Spot trading is very much concentrated on the E.ON GT market area. After an enthusiastic start, trading at the BEB virtual point trading dried up after trading started at the E.ON GT market area. The following graph shows the development of forward trading.

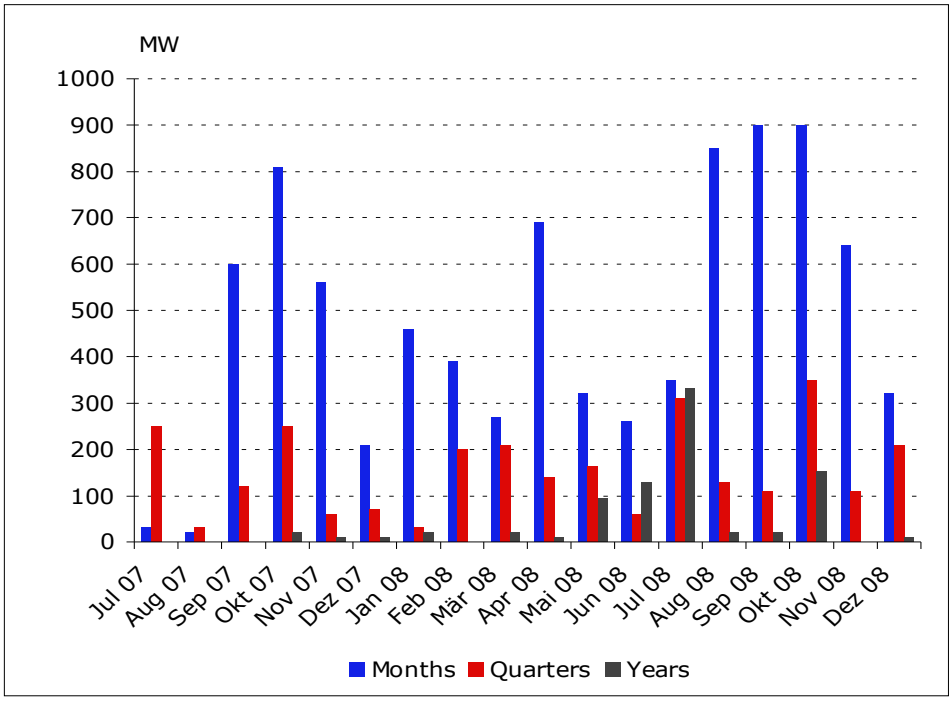

Figure 11: Forward trading at EEX
(Source: EEX)

Forward trading is concentrated more or less exclusively in the E.ON GT market area. The volumes are rather small and trading is concentrating on the front months. Until the end of 2008, no upward trend was visible in the forward market, and trading remained sporadic. In principle the development at the EEX mirrors the development of OTC trading at a much lower level, but the dominance of the E.ON GT hub is even greater than in the OTC market.

Initially, trading companies argued that there was no real need for an exchange. OTC trading was well developed, with brokers offering all the required services , enabling trading at all European hubs using one screen and one system[120]. Exchange based trading made it necessary to establish a separate trading system. And although EEX is working on technical improvements and integration with the OTC system of most traders, this remained a major issue in 2009[121]. Traders do not greatly favour anonymous trading because they want to know with whom they are doing business. A further disadvantage of the exchange is its inflexibility. In an emerging market it may be better to trade bilaterally agreed volumes rather than standard lot sizes.

On the other hand a number of participants argued that the big advantage of EEX, especially for distribution companies, is its institutional characteristics. Despite the fact that prices are rather transparent, the OTC market is anarchic. Municipal distribution companies and their boards may find the price setting mechanism and the published prices on the EEX internet page more trustworthy. Perhaps more important is the clearing and settlement mechanism in which the counterparty is always the exchange, and customers do not have to negotiate trading contracts with a multitude of different trading partners. They do not have to evaluate the credit risks of companies and are not exposed to the credit requirements of the different trading houses. This should facilitate access of distribution companies to gas trading and market-based purchasing[122]. By mid-2008, only four of the 44 registered participants in gas trading were local distribution companies. Even these safe institutional arrangements failed to attract large numbers of distribution companies for a number of reasons:

- The number of distribution companies able and willing to develop a procurement portfolio even partly based on market products is still limited (which limits the development of the exchange and the OTC market)[123].
- The advantage of clearing at the EEX is partly offset by the trading fees and the margining that requires liquidity[124].

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[120] A trader described the situation thus: yes we are registered at the EEX and have the system in place. But the screen is located on an adjacent floor and we seldom use it.

[121] The exchange uses for the spot trading the Xetra trading system, common at exchanges for all different products. Almost all trading houses have installed Trayport's Global Vision as a trading system. It is not easy to integrate Xetra into the Global Vision system. EEX hopes to have a proper interface ready in late summer or autumn 2009.

[122] The following anecdote may illustrate the point. The managing director of a trading company for local distribution companies told me that representatives of his shareholders, when they talk about market-based procurement activities, are always referring to exchange-based trading. OTC trading – although this is the place where the trading company is active – does not play any role in the minds of these distribution companies.

[123] But long-term purchase contracts, mentioned in the EEX press release cited at the beginning of this section, are no longer a key problem. Most distribution companies have contracts with a two year duration as the result of the ban on long-term contracts between gas suppliers and local distribution companies by the Bundeskartellamt in 2006 (see Lohmann 2006, p. 101 – 105).

[124] Margining requires that participants in EEX trading deposit cash or other accepted securities for all open positions to secure contract obligations.

- Although the process of negotiating EFET trading contracts and credits is a difficult procedure for local distribution companies, they are able to cope with it. Some prefer to know their counterparties than to trade anonymously.
- Many distribution companies do not trade directly, but use companies more experienced in trading on the OTC market[125].
- Market making, and consequently frequent quotes, are restricted to a very limited number of periods. Usually only the two front months, two next quarters and two next calendar years are quoted at the E.ON GT VP. For the BEB-VEP no quotes are available at all. This is not sufficient for procurement purposes but, according to the major companies, market making does not make sense at the prevailing low level of demand.
- The products offered at the EEX do not fit the needs of distribution companies. For example the minimum lot size of 10 MW is too large, and products to facilitate hourly balancing are not offered[126].

Obviously – a point, which is stressed repeatedly during this study – the EEX did not start in a perfect world. The E-Bridge/Brattle Group study noted above said: "There are a number of significant barriers that endanger the development of active gas trading.[127]" That study listed as main obstacles the issues already discussed in this study, such as the number of market areas, capacity constraints and the hourly balancing system (for detailed discussion of the balancing mechanism and its development see chapter 7). But based on the system of network access implemented in October 2007, it was possible to launch exchange-based gas trading and that already made a big difference compared to the situation before 2007.

4.3 The relevance of market prices

Although gas trading – and this means OTC trading – and as a result the availability of market prices is a feature of the German gas market, the impact on the whole pricing system is a separate question. The traditional pricing principle in Germany is the "Anlegbarkeit-principle" according to which, gas in the different sectors is priced in relation to the competing fuels, gas oil in the heating sector, gas oil and in particular fuel oil in the industrial sector, and oil products and coal in the power sector. Most of the prices in procurement contracts of distribution companies, and the industrial and power sectors, are linked to prices of oil and coal[128] . More and more these prices are linked to Rotterdam traded gas oil and fuel

[125] A rather new example is Energieunion, Schwerin a subsidiary of VNG Verbundnetz Gas. Energieunion offers distribution companies Day Ahead trading and trading of forward months in 1 MW lots. The counterparty is always Energieunion. Energieunion itself buys or sells the volumes in the OTC market.

[126] Under the system of hourly balancing in place until October 2008 hourly products would have been helpful for distribution companies. Their representatives asked for these products in several traders' workshops before the launch of the EEX. But experienced gas traders always warned that there would be insufficient liquidity for these products. The exchange evaluated the feasibility of these products and decided not to introduce them. From October 2008, after daily balancing was introduced (see chapter 6.1), there was no more need for hourly products.

[127] E-Bridge Consulting; the Brattle Group: Gutachten zur Etablierung einer Gasbörse in Deutschland, p. 1

[128] In the residential sector prices do not have a direct link to oil products but are fixed by the local distribution companies in relation to their procurement cost. The price in the procurement contracts of distribution companies is linked to gas oil at least for volumes sold in the heating sector.

oil quotations as an alternative to German gas oil and fuel oil[129]. In general the principle of "Anlegbarkeit" still has relevance in the German market, although as a result of the development of an OTC market and increasing competition the importance of this principle is starting to be eroded[130]. The following trends can be observed:

- Incumbent suppliers are trying to terminate or renegotiate coal indexed contracts for gas to power production. These contracts have prices below the current market levels[131].
- The same happens with contracts linked to fuel oil for large industrial customers, where prices are also below the current market levels.
- Prices for smaller and medium sized industrial customers that are linked to gas oil, and are usually above market prices, are coming down. In this sector fixed prices based on OTC prices become more and more common.
- The same happens with prices for distribution companies. Traditionally prices for gas they purchased mainly for residential heating customers are linked to gas oil prices and are – as shown in figure 9 - above market prices.
- As an alternative to the traditional pricing systems, the large incumbents are offering distribution companies prices related either to the Dutch TTF OTC prices or OTC prices at the German hubs[132].

This is a gradual development and unfortunately no data is publicly available about the pricing schemes. This account relies on evidence from different market players, which usually confirm these trends but say that price differentiation, especially in favour of large industrial customers, still takes place.

There seems to be a trend that although most contracts are still formally linked to oil product prices, actual price levels are more and more related to the OTC price level at the German hubs [133]. But this trend has just started. At mid 2009 the German gas market was still far away

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[129] The major reason is that prices linked to oil products traded in Rotterdam can be more easily and cheaply hedged. But the link to statistical oil prices can cause additional problems, which can be demonstrated by the following example. The federal statistical office collects prices from market participants (oil sales companies) once a month. At the end of 2007, the office recognised that there were not enough independent companies selling fuel oil in Düsseldorf, Frankfurt am Main and Manheim/Ludwigshafen to publish a seperate "Rheinschiene"price. Therefore it stopped publishing a Rheinschiene price and since the beginning of 2008 only publishes a German Fuel Oil index. But most gas contracts where the price is linked to fuel oil refer to the Rheinschiene price. In the past the German index was always higher than the Rheinschiene price and finally the suppliers agreed to subtract 5.29 Euro/t (the average difference in 2007 between the two prices) from the German index. But although there is a trend to use Rotterdam traded gas oil and fuel oil quotations as indices in contracts, many buyers still insist on statistical German oil prices because that is what they know, and where access to price information is easier. "Platts Oilgram Price Report" that publishes the Rotterdam quotations costs around 15,000 Euro/y, a lot of money to have access to the quotations, many German companies think.

[130] See on this issue presentation of Uwe Kelbaßa, RWE Key-Account dated February 12, 2009, slide 5. Kelbaßa assumes very cleary for the industrial sector: "The price formation according to the "Anlegbarkeits-principle"will strongly lose relevance."

[131] This is a very intransparent area, but market players more and more signal that this is happening. In some cases arbitration procedures for such contracts have started.

[132] Since October 2008 E.ON Ruhrgas has offered customers a choice of eight different products ranging from the traditional supply of their whole gas need with a tradtional pricing system (Vollversorgung) to supply concepts that include a market based procurement strategy for customers. Furthermore E.ON Ruhrgas offers in more traditional contracts to switch 20% of the volumes taken during the summer (April to October) from oil linked prices to TTF prices.

[133] Two consultancy surveys from mid 2008 confirm this trend, PA Consulting Group and Team Consult asked local and regional distribution companies about their purchasing behaviour. Both surveys concluded that oil linked contracts still dominated, but fixed prices

from a price system completely related to transparent wholesale prices. But the development mentioned demonstrates that the emergence of OTC and exchange based trading has an impact on the whole pricing system.

5 Development of competition

5.1 Introduction

The assessment of competition in Germany is still ambiguous. Official data on customer switches and market shares of gas companies in the different sectors are hardly available. The BNetzA is collecting data about customer switches and publishes this data in its annual monitoring report. The latest data is from 2007 and takes into account a part of the time span of this study. In 2007, customer switching organised by network operators accounted for 3.79% of the total volume of 991 TWh delivered from the networks to final customers. In the residential and commercial sector the switching rates were below 2%, which was not very satisfactory for the regulator. In the industrial sector, the switching rate was around 5%, a first indication that competition was starting to have an impact[134]. In its latest study on energy markets the German Monopoly Commission, an official advisory board of the German government, also concludes that, "it is not possible to speak of functioning competition in the German gas market.[135]"

On the other hand, market observations and some informal data show significant development of competition in all sectors of the market. The major characteristics of the changing market are:

- Increasing sales by new market players
- Changed sales strategies of major incumbent suppliers
- Significant losses of sales volumes of some incumbents
- Significantly better responses to tender processes in the wholesale and industrial sector
- Emergence of competition in the residential sector.

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and OTC market purchases have an increasing influence. (see: PA Consulting Group: Wettbewerb im Gasmarkt, Düsseldorf 2008; Team Consult: Stadtwerke Umfrage 2008, Berlin)

[134] The BNetzA presented the figures for the first time at the end of July 2008 in a press release, where it drew a conclusion after three years of gas market regulation. The president of the agency Matthias Kurth was quoted in the press release: "While competition among gas suppliers reached a visible level today (the switching rate in 2007 was around 5%) it is still necessary to create a proper market design in the residential sector, where only around 1% of the customers switched supplier in 2007. For a more detailed desciption of customer switchings in 2007 see Bundesnetzagentur: Monitoring Bericht 2008, p. 193 - 200

[135] See Sondergutachten der Monopolkommission gemäß § 62 Abs. 1 des Energiewirtschaftsgesetzes. Strom und Gas 2007: Wettbewerbsdefizite und zögerliche Regulierung, Drucksache 16/7087, 20.11.2007, p. 149.

5.2 New entrants and their successes

5.2.1 The appearance of new entrants

Although the overall market share of "new entrants"[136] to the German gas market in the wholesale and industrial sector is still low, some feel themselves to be established in the German gas market. The following table contains an overview of these players and their sales in the German market.

Company	Sales (TWh)			Sector		Gas quality	
	2006/07	2007/08	2008/09	Wholesale	Industrial	High cal	Low cal
Distrigas	0.15	0.5	2.0 –3.0	X	>100 GWh	X	
DONG	3.0 – 4.0	5.0- 6.0	>10.0	X	>100 GWh	X	
EconGas	3.5 – 4.0	4.0 – 5.0	15.0	X	X	X	
Electrabel (now GdF Suez	1.0	4.0 – 5.0	4.0 – 5.0	X	X	X	
Gaz de France (now GdF Suez)	10.0	13.0	25.0	X	>50 GWh	X	X
natGAS	4.0	7.0	9.0	X	X	X	X
Novogate (Essent/ Bayerngas	2.5	3.0 – 3.5	2.0-3.0	X		X	X
Nuon	0.8 – 1.0	1.0 – 1.5	2.0 – 3.0		X	X	X
PCC Energie	0.5	0.5	1.0	X	X	X	
Sempra (now RBS Sempra)	2.0	3.5	6.0	X	X	X	
Trianel	1.7	2.5 – 3.0	3.5	X		X	X
Vattenfall Europe Sales		0.5	2.0	X		X	
EGL	Not active	Not active	0				
Total sales	29.2– 30.9	44.5 – 49	>81.5 – >85.5				

Table 1: New entrants in the German gas market (Source: author)

Because the data is the result of my own research the true figures might be slightly different. In particular for the gas year 2008/09, data collection was difficult. But the data is in line with occasional releases from some of the companies and these confirm that the data accurately reflects developments in the German market. The number of new entrants did not change very much over the last two years. BP left the market for final customers in the wholesale and industrial sector in 2006. In 2003, the company had announced a very ambitious 15% market share as its target. But sales to industrial customers and distribution

[136] All companies that do not belong to the traditional delivery chain in the German gas industry of the pre liberalisation period are characterised as new entrants. Some of them are no longer "new" because they have been offering gas in Germany for five and more years.

companies never exceeded 3 TWh and, according to sources from BP, it was never a profitable business. BP is still active at the virtual trading points and sells flexible trading products to distribution companies. One of the weaknesses of the BP initiative was a constantly changing organisational structure and divided responsibilities for the German business.

Most of the companies listed in the table above are gradually extending the scope and scale of their business; framework conditions are improving and the number of market areas is declining. During the gas year 2008/09, the larger European players Gaz de France, Dong and EconGas significantly increased their sales volumes:

- **Distrigas** is concentrating its sales business on the market areas of Wingas and Ontras – VNG Gastransport. The company has the necessary transportation capacity to bring gas and flexibility from its Belgian portfolio into these market areas. Market sources say Distrigas is a more and more visible player in these market areas and although it is still not selling large volumes, its activities are increasing significantly. Its future in the German market will depend on the company's strategy following ENI's purchase of a 57% share from Suez. Mid 2009 ENI started to co-ordinate sales activities of ENI Distrigas – the new name of the company - and ENI's German sales affiliate ENI Gas & Power

- The German sales company of the Danish energy major **DONG**, DONG Energy Sales, from 2008 concentrated sales activities in the market areas of BEB and Ontras. The main reason is – similar to Distrigas – that the company's main contribution to these market areas is flexibility from Danish storage facilities. According to market sources, the company started to extend the business to the E.ON GT market area, but has found difficulty in offering flexibility there. For DONG, the direct sales business in Northwest Europe is part of its core strategy and the company wants to substitute large volume long-term contracts with midstream companies by more direct sales in these sectors[137]. DONG is also looking for assets in Germany. It has a 25.1% stake in the local distribution company Energie und Wasser Lübeck and is seeking share-holdings in other local utilities. Furthermore the company is involved in a number of storage projects[138], and two coal fired power plant projects.

- The German sales company of the Austrian gas supplier **EconGas** is becoming more and more successful in the German gas market. So far the company has concentrated on south Germany but a new sales office for the north German market is on the agenda, although the company itself says little about its successes.

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[137] In the business year 2007 the Danish energy company sold 1.8 Bcm in Germany to E.ON Ruhrgas, Shell and ExxonMobil under long-term contracts. 0.5 Bcm was sold to industrial customers and distribution companies.(see: Annual report 2007). In an interview with the author, the managing director of DONG Energy Deutschland explained the strategy of increasing downstream sales (see Gasmarkt Deutschland 11/06).

[138] It is understood that DONG has booked the third cavern at the Peckensen storage facility from EEG GmbH (now Storengy Deutschland) on a long-term basis. The capacity of 80 million m^3 of working gas is available from winter 2010/11. At Etzel DONG leased two caverns on a long-term basis from the owner IVG, with an option on additional caverns. The two caverns with a working gas volume of 160 million m^3 will be in operation in 2010. With Stadtwerke Kiel, DONG founded a storage joint venture for the development of an additional salt cavern at Kiel's storage facility Rönne. This will give DONG access to an additional working gas volume of 35 million m^3.

- **Electrabel** has increased sales because the company is one of the few players that sells volumes and flexibility to German distribution companies at the virtual trading points, a business often characterised as "origination". Electrabel offers volume with a certain annual and monthly swing. The flexibility comes from its European portfolio and partly from lots Electrabel bought from the E.ON Ruhrgas auctions (see chapter 7). In addition Electrabel established a nation-wide sales business with industrial customers, and has stakes in the two local distribution companies Gera and Saarbrücken. Its future business strategy will depend on the organisational structure after the merger of Suez, the owner of Electrabel and Gaz de France. In 2009 Electrabel Deutschland was renamed GDF SUEZ Energie Deutschland AG.

- **Gaz de France** is still the most successful "new" player in the German gas market and sees itself as an established player after more than five years of sales activities. GdF has a broad portfolio in Germany including gas production, storage, pipelines and shareholdings in German energy companies. The company is looking for opportunities to extend this portfolio[139]. As in the case of Electrabel, future business strategy will depend on the impact of the GdF/Suez merger. In 2009 the German sales company was integrated into the European sales organisation GDF SUEZ Global Energy. But at the time of writing, this had had no effect on the sales strategy.

- **NatGAS** is also one of the more established "new" players in the German gas market. Until 2007 the company specialised in small and medium sized industrial customers, where it was in many cases the only alternative to the incumbents. Since October 2007, the Potsdam based gas sales company has also been supplying smaller distribution companies with all their gas needs. This change is mainly the result of the alliance with a new shareholder, the energy trader Vitol[140]. Vitol has established a portfolio of gas and flexibility from storage in Germany and natGAS appears to have access to this portfolio. NatGAS has very ambitious targets and aims to sell around 24 TWh[141] in the near future.

- **Novogate** is a joint venture of the Dutch Essent and the regional gas company Bayerngas and was founded in spring 2006. The company offers distribution companies a whole range of services including consulting, gas supply, trading and portfolio management, and participation in midstream and upstream assets. Distribution companies can take shares in the company. So far only the regional gas company Gelsenwasser has taken a 10% share. The company supplies a number of distribution companies. The shareholders are, at least in public, satisfied with the

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[139] In 2007, GdF failed rather spectacularly in its attempt to buy a 49.9% share in Stadtwerke Leipzig from the city of Leipzig. The city chose GdF as the buyer but the people of Leipzig voted in a public decision against the sale, although GdF was willing to pay a high price and support the extension of the company's business. GdF (among others) wanted to provide Leipzig with 3.5 TWh of gas to develop a nation-wide sales business to smaller industrial gas customers.

[140] NatGAS was founded in 2000 by some oil trading companies and gas oil retailers. The idea was to compensate losses in the traditional gas oil downstream businesses with sales in the more promising gas market. In spring 2007, Petrogem SA Geneva acquired a share in natGAS from the Vitol group, but the exact figure was not disclosed

[141] It is not only external observers who believed this target might be too ambitious. Detlef Weidemann, who was in charge of sales on the executive board of natGAS, left the company in mid 2008. Sources close to the company say at least one of the reasons was different views of Weidemann and the supervisory board as to whether this target can be achieved in the current gas year. In late 2008 some sources said - contrary to the sceptical voices – that natGAS had already sold volumes at a magnitude not far away from the ambitious target for the gas year 2009.

company's development although some believed at least until the end of 2008 that Novogate is a very active player. At the end of 2008 Essent sold its share in Novogate to Bayerngas and Gelsenwasser. In addition the North Italian utility SEL aquired a 10% share[142]. Market observers report that since the beginning of 2009 Novogate is trying to extend its sales business successfully in some parts of Germany.

- The German affiliate of the Dutch **Nuon** is more a niche player in most market segments. It specialises in smaller industrial customers and is a reliable alternative source of low cal gas. From 2009 the Dutch Nuon Energy Trade & Wholesale will offer German distribution companies more tailor made portfolio products based on the trading experience of Nuon and the low cal storage facility at Epe (see chapter 6.2.3). But Nuon was the first mover in the market for residential customers, a segment, which is not covered by any other company mentioned in this chapter (for more details about the market for residential customers see below section 5.3.4).

- **PCC Energie** only entered the market in 2006. The Duisburg- based privately-owned trading and sales company mainly specialises in smaller industrial customers in the power market. The gas business was developed as an add-on to the power business. The company has made attractive offers to industrial customers and it supplied a small number of local distribution companies mainly in south-west Germany.

- The German sales team of the "last American"[143] **Sempra (now RBS Sempra)** started its sales business in 2005 and sales volumes have consistently grown. In addition to industrial customers, Sempra supplies a number of local distribution companies, offering high cal gas in all German market areas.

- **Trianel European Energy Trading (in 2009 renamed to Trianel)** is the pioneer in the German gas market. The gas sales of the trading company of local utilities have, over recent years, stagnated. But it hopes to increase sales significantly over the next years as a result of the changing market and changing procurement strategies of its shareholders. But Trianel is not only a gas supplier but a service provider and developer of assets for its shareholders. The company tries to organise long-term procurement contracts with gas producers, and developed two salt caverns for gas storage at Epe for a group of shareholders.

- **Vattenfall Europe Sales** is a more unknown player in the German gas market. The company is one of the majors in the German power market but has no gas position. At the beginning of 2006 the trading affiliate of the company Vattenfall Trading Services hired the German BP team and established a gas trading desk. It developed a portfolio and is in principle able to provide some gas and flexibility. The extent to which the Swedish company will develop its gas sales business is currently not clear, as they are offering only flat volumes to distribution companies. In summer 2009 Vattenfall took

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[142] The distribution of shares mid 2009 was as follows: Bayerngas 70%, Gelsenwasser 20%, SEL 10%.

[143] See the description of the appearance and vanishing of American players on the German gas market in my 2006 study. The American Sempra Energy sold all its European trading activities to Royal Bank of Scotland (RBS) in 2008. The new name RBS Sempra indicates that although Sempra still exists it is no longer an American company. The German sales team of Sempra is organised as an independent company Enerco Systems which is selling gas on behalf and in the name of RBS Sempra but is organising all related operations itself as a service provider for Sempra.

over Nuon, but my understanding is that this take over process was not mainly driven by the gas business and in particular not by the German gas business.

- The Swiss **EGL** started to offer gas mainly to local distribution companies in mid 2008. The company has a German sales office at Leipzig that is mainly doing business in the power sector. By the time this study was finished EGL had had no visible success.

Two companies that are missing from the list and that are active in Germany are Centrica and ENI. Centrica founded a German affiliate Centrica Energie, in mid 2006, but has never released any details about its business. Market players say the company established itself as a rather active player in the wholesale market and is selling gas to a number of German distribution companies at the virtual trading points. In addition Centrica is doing some business with large industrial gas users. In 2008, Centrica was successful in the last E.ON Ruhrgas auction (see chapter 7 for details) which should enable the company to also offer some flexibility which, market observers say, has been a weak point in its supply portfolio.

The activity of the gas and oil major ENI is complex and opaque. In 2002, ENI bought jointly with EnBW the German regional gas company Gasversorgung Süddeutschland (GVS), but the company's expectations from this purchase were never met. ENI expected to sell significant volumes in Germany by an expansion of the GVS gas sales in its traditional network area, because gas penetration in southwest Germany is comparatively low. But GVS' sales not only did not grow, but on the contrary declined (see section 5.3.2.2). GVS is one of the companies most exposed to competition in Germany. Sources in Germany say one of the main reasons is that GVS customers – mainly local distribution companies – are not happy with how the company has treated its customers[144]. Half-hearted attempts by ENI during the last years to sell gas directly to German customers, from its Frankfurt office, did not lead to significant success. In 2008 ENI founded a new sales company, ENI Gas & Power GmbH in Düsseldorf, which will be a serious new start for direct business to customers in Germany. The managing director is Manlio LaLoggia who was, until the end of 2007, managing director of GVS. ENI hired some experienced gas sales people and this at least looks like a new commitment and new start in the German market[145]. The consequences for the joint shareholding with EnBW in GVS are uncertain[146].

In addition to the listed sales companies there are a number of international gas traders that are explicitly trying to address German distribution companies to sell tailor made gas products and flexibility to German distribution companies. Besides those already mentioned these include BP, Vitol and the small Italian trading company Enoi.

In 2008 and 2009 some more companies entered the German gas market to offer gas or flexibility products. Enlogs – Energy Logistics and Services, Vienna an affiliate of the

[144] In informal discussions representatives from distribution companies traditionally supplied by GVS complain that GVS did not completely pass through rebates given by the major supplier of GVS, E.ON Ruhrgas, and that that the willingness of GVS to support customers in changing market conditions with more flexible contracts is low. There are also constant rumours about problems with the Italian management in the executive board of GVS and also co-operation between the two co-owners ENI and EnBW.

[145] But a number of market players reported until mid 2009 that the sales efforts are not that impressive.

[146] A number of observers expect sooner or later a divorce of ENI and EnBW in the joint control of GVS.

German GETEC Energie AG[147] offers mainly large industrial companies and power plants optimisation between fuels and different contracts. In Germany the company has customers that use gas in all market areas and, therefore Enlogs has booked transportation and storage capacity in Germany. To get access to storage the company took part in storage auctions but also leased capacity bilaterally. Enlogs is registered at the EEX and trades at the virtual trading points GasunieD, NCG and Ontras. Advanced Energy Trading (AET) has started to offer gas products to local distribution companies at the NCG VP. The company is in particular interested to offer flexibility. First deals have been done. The company closed flexible import contracts and booked storage capacity in the NCG market area. This is supplemented by gas trading mainly in the OTC market at the NCG VP. aet was founded in 2007 and further developed in 2008 after some former E.ON Sales & Trading managers joined the company. It belongs to the S4E Group (Solutions for Energy), which is privately owned. Cargill S.A. Geneva started in spring 2009 to offer gas to industrial users and distribution companies in Germany. The company hired a team from Nuon for this business. Cargill is a trader and producer of agricultural products. The company started power, gas and emission trading some years ago. After the positive development of the German gas market the company sees the potential to extend the gas activities and develop a physical portfolio in Germany. Cargill has already sold first volumes in Germany.

5.2.2 A more level playing field?

This account of current market activity by new entrants should have demonstrated that at least some of these companies are increasingly successful and more confident that they are able to operate on a more level playing field with incumbents. None of these companies would say that the market framework is optimal, but it is changing in favour of new players.

- Network access at least within each market area is in principle facilitated, although many operational problems still exist.
- Network operators are becoming more co-operative. Shippers no longer have the general impression that operators are trying to prevent network access[148]. But especially smaller network operators continue to encounter problems in coping with the challenges of network access and this is an obstacle for new entrants.
- Customers are more and more looking for supply alternatives. In the wholesale sector this was mainly triggered by the ban on long-term contracts. In the industrial sector, high and increasing gas prices induce changes in procurement behaviour.

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[147] The GETEC Group is mainly active in the CHP sector, operating and managing plants. But GETEC Energie has for years been more or less sporadically trading gas and selling gas to distribution companies or industrial and commercial users. But although market sources from time to time report some deals it is not possible to discover any strategy, in particular because the company itself is completely unwilling to comment on that business. I heard in 2009 that GETEC Energie had started to become more frequently active in particular in the commercial and smaller industrial sector.

[148] The following observation of Josef Aschauer, a former gas trader of EconGas and since 2007 managing director of enlogs demonstrates nicely how representatives of new entrants describe the situation in the German gas market and in particular the gas transportation sector in 2009: “Germany is still not an easy market. Transparency about transportation capacity is still missing and the major incumbents are still dominating the transportation and storage business. But progress is visible. In the network sector a “mental unbundling” has taken place and network operators are now committed to enable transportation for third parties.”

Perhaps more impressive than the increasing market penetration of new entrants is the changed sales behaviour of the incumbent players, which is described in the next section.

5.3 Incumbents discover gas sales opportunities

5.3.1 Introduction

Gas sales of incumbent gas companies outside their sales area, which was usually identical with the network area of the companies, is a rather new feature of the German gas market. Since the 1990s, Wingas was the most often cited example that gas-to-gas competition was possible in the German gas market. In the 2006 study, I described the ambiguous role of Wingas in the German market[149]. From 2000, Wingas started to supply customers not connected to its pipeline networks. But in many areas of Germany the company was reluctant to make offers because it supplied the regional gas company in this area, and did not want to compete with its customers.

For different reasons the incumbents changed their market behaviour starting in 2006 and more intensively in 2007. These changes are observable on all levels of the traditional supply chain: importing gas companies, regional suppliers and local distribution companies. And these changes are having an impact on all sectors of the market, wholesale, industrial and residential.

5.3.2 Importing gas companies

5.3.2.1 Shell Energy Deutschland

The front-runner of this development was Shell Energy Deutschland. It is one of the two inheritors of the sales business of BEB[150]. Shell never comments officially on its sales strategy, but from 2006 market participants increasingly felt that the company was no longer restricting its business to the traditional sales area and traditional business relationships. For many market players, two small deals in 2006 made clear that Shell was willing to play a new game. From October 2006 Shell supplied (among others) the Berlin site of Kraft Food, a company in the food industry. The volume was only 60 GWh, but Shell also supplies the Berlin based distribution company GASAG, the previous supplier of Kraft. And it was an unwritten rule in the traditional German gas world not to circumvent customers and not to "sell gas twice". The same has happened on the wholesale level, where Shell supplied from

[149] Lohmann 2006, p. 142 – 144. See also for the perception of Wingas in Germany as an incumbent the decision of the OLG Düsseldorf on the ban of long-term contracts by the German antitrust authority. In its reasoning about the existence of competition in Germany until 2006 the courts states very clearly: "Wingas therefore (because it has its own pipeline system for the supply of customers H.L.) is part of the established interregional gas companies and not a a new entrant in the proper sense." OLG Düsseldorf: Decision in the antitrust case E.ON Ruhrgas vs. Bundeskartellamt VI-2 Kart 1/06 (V), p. 24.

[150] See Ibid, p. 132 – 133. The second owner ExxonMobil is not visible in the German gas market as an expanding sales company although in 2004, like Shell, it founded a separate sales company, ExxonMobil Gas Marketing. As a typical American owned major ExxonMobil does not comment on its German gas business. Market sources say the major interest of the company is to sell large volumes either at the burner tip or the hubs, and that the company is not interested in establishing a large downstream sales unit.

October 2006 around 1.5 TWh with some flexibility to Stadtwerke Kiel[151]. The volume was supplied before by E.ON Hanse and Shell is one of the main suppliers of E.ON Hanse. In 2006 this behaviour led to some discussion in the market. But now Shell has an established business as supplier of low cal and high cal gas to industrial customers and distribution companies, where profitability, and not traditional relations, is the main criterion[152]. Data seem to support these observations: in 2006 (the latest available figures) sales increased by 9% to 98 TWh, far beyond the market growth of 1.5%. A former high ranking Shell manager informally confirmed the change of the Shell strategy and argued that the company feared greater regulation in the German market if no real competition had appeared.

5.3.2.2 E.ON Ruhrgas

But other importing gas companies are also changing their sales strategies. Again it caused discussion and irritation when E.ON Ruhrgas started, at the end of 2006, to make offers to distribution companies in the network area of Gasversorgung Süddeutschland (GVS), since E.ON Ruhrgas is the main supplier of GVS. At least four of five local distribution companies signed contracts with E.ON Ruhrgas. Two explanations were offered for the activities of E.ON Ruhrgas:

- The new customers of E.ON Ruhrgas are part of the Thüga group; Thüga is the major holding company of the E.ON group for shareholdings in local distribution companies and is controlled by E.ON Ruhrgas[153]. Therefore the E.ON Ruhrgas initiative could be judged as an attempt to sell more gas to companies in its own group. Most market observers are not convinced by this explanation, which does not fit with the "Thüga model" of partnership. And at that time these activities were limited to Baden-Wuerttemberg. Furthermore a number of "Thüga companies" including the largest utility in Southwest Germany badenova did not sign contracts with E.ON Ruhrgas.
- A large number of GVS customers were very dissatisfied with the behaviour of the company. Among other issues they accused GVS of not completely passing through rebates or price reductions received and started to look for new suppliers. E.ON Ruhrgas may have feared losing sales volumes indirectly and therefore approached the distribution companies directly.

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[151] For many years Stadtwerke Kiel had a very active procurement management, including gas trading, a legacy of its TXU shareholding from 2000-2004.

[152] Shell offers gas in all market areas of Germany where the company either has a gas position or entry capacity and the company hired new sales people. In particular in 2007 many smaller industrial customers (> 20 Gwh) in the low cal sector were very happy with the Shell offers. A number of distribution companies also switched to Shell. Shell does not "buy" market share and uses profit as its main criterion. As a result in 2008 – according in particular to representatives of industrial users - prices seemed to be not as very favourable as in 2007. Nevertheless Shell made some remarkable deals in 2008 including a ten year contract with Stadtwerke Hannover, previously supplied almost completely by E.ON Ruhrgas with an annual volume of 4 TWh, 40% of Stadtwerke Hannover's gas demand.

[153] Thüga has shareholdings in 110 local distribution companies ranging from the largest German utilities like Stadtwerke Hannover, GASAG or N-Ergie to very small companies. The average share in the companies is below 50%. After E.ON took over Ruhrgas in 2003 control switched from E.ON to E.ON Ruhrgas. In late 2008 the E.ON Group started the process of selling Thüga, because the so-called "Thüga model" of arm's length control does not fit any more with E.ON's more centralised business model. E.ON negotiated exclusively with two groups of distribution companies, Integra (N-Ergie Nürnberg, Mainova, Stadtwerke Hannover) and Kom9 (badenova and around 45 of smaller utilities), in August 2009 it reached an agrrement to sell Thuga to the two consortia (see E.ON press release from August 12 2009).

The latter explanation seems to be more convincing. In the 2007 gas year, GVS did indeed lose significant sales volumes - around 20 TWh compared to sales volume in 2006 of around 80 TWh, i.e. around 25%[154]. And GVS is not the only regional gas company supplied by E.ON Ruhrgas under volume pressure. Another company, RWE Westfalen Weser Ems, lost more than 10 TWh from 60 TWh of sales in 2007 [155].

E.ON Ruhrgas' sales to regional gas companies in 2007 decreased by 8% to 292.5 TWh; more than the corresponding reduction in demand of 4% due to a warm winter [156]. E.ON Ruhrgas only makes very general comments on potential changes in its sales strategy and the impact of competition on sales volumes. During a press conference in February 2008 E.ON Ruhrgas' new CEO Bernhard Reutersberg said: "There is competition in Germany and we offer nation-wide." There is no public information, which confirms that E.ON Ruhrgas is really offering nation-wide, but market sources confirm that at least in several areas the company is offering gas to large industrial customers and distribution companies. One of the areas mentioned particularly in mid 2008 was East Germany, where E.ON Ruhrgas is rather aggressively offering gas to distribution companies and industrial users. Furthermore in Northrhine-Westphalia E.ON Ruhrgas started in 2007 and 2008 to compete with RWE sales companies, even though they are partly supplied by E.ON Ruhrgas.

A more fundamental change in the E.ON Ruhrgas sales strategy may be on the horizon. From October 2009 Stefan Vogg will succeed Henning Deters as member of the executive board in charge of sales. In addition he was appointed member of E.ON Energie's executive board where he will also be responsible for sales. Vogg will co-ordinate gas and power sales activities more closely, in principle an aim of the group since E.ON took over Ruhrgas in 2002. But now this will become serious. At least senior E.ON Ruhrgas sales directors are thinking about attractive early retirement packages and younger sales managers are studying the housing market in Munich. Sales could be mainly concentrated in E.ON Vertrieb Deutschland, Munich, a company that was founded last year. Vogg, who remains spokesman of the management board of this sales company, started his professional career as a civil servant in the state of Bavaria, before switching to VIAG, one of the predecessor companies of E.ON. He has never worked for a gas company and has no traditional ties to the gas industry or to Ruhrgas.

5.3.2.3 VNG – Verbundnetz Gas

Slightly more transparent than Shell and E.ON Ruhrgas is the strategy shift of VNG – Verbundnetz Gas. At the beginning of 2007 the East German gas major established a sales office near Frankfurt/Main with four people to acquire systematically new customers outside

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[154] For 2007 no annual report is available. But according to a fact sheet of the company from 2008, GVS sold 61 TWh in 2007. This is in line with my bottom up assessment derived from customer losses.

[155] It is difficult to assess the data of RWE Westfalen Weser Ems because RWE publishes only one joint annual report. But according to the latest available statistics of the major association of the gas industry BGW (now BDEW), the gas sales of RWE Westfalen Weser Ems in 2004 were 67 TWh (BGW 126. Erdgasstatistik, p. 200 – 201. On its homepage, RWE Westfalen Weser shows a figure for February 2008 of 52 TWh. Sources close to RWE confirm a loss of volumes of this magnitude. For the gas year 2008/09 losses were even more severe, sources close to the company say.

[156] See for the figures the annual report of E.ON Ruhrgas and the E.ON group.

its traditional sales area. At the annual press conference in May 2007, the executive board member in charge of sales, Wolfgang Eschment, announced some small early successes. From October 2007 VNG supplied a group of local distribution companies in the RWE network areas. But although VNG communicated this change of sales strategy it is silent about concrete successes. At the annual press conference in May 2008 Gerhard Holtmeier, who replaced Eschment, said only that volumes sold outside East Germany replaced losses in the home market. Market sources say VNG is increasingly successful in selling gas to distribution companies and also industrial customers. Some of its new customers like the Nuernberg based N-Ergie, MVV Energie and Stadtwerke Rosenheim became known. In 2008 VNG opened additional sales offices in Stuttgart, Munich and Dortmund, at the beginning of 2009 also in Hamburg. I estimate the volume for the gas year 2007/08 was around 2 TWh. For the gas year 2008/09 these volumes are above 10 TWh, in 2009 the volumes will exceed 30 TWh, according to sources very close to the company.

VNG clearly needs to expand sales beyond the traditional sales area because the company is under pressure in its East German home market. Since 2007 it has lost around 20 TWh from its total sales of around 165 TWh due to competition[157]. The critical issue for the future of VNG and its strategy is the shareholder structure. In 2003 E.ON and E.ON Ruhrgas had to sell their shares in VNG as one of the obligations of the ministerial clearance of the take-over of Ruhrgas by E.ON[158]. The German regional energy company EWE acquired 47.8% of the shares of VNG and a group of 12 East German local distribution companies increased their share from around 15.79% to 25.79%[159]. EWE and the East German companies agreed in a consortium contract on joint development and control of VNG. But by 2006 major conflicts between the two groups had begun which increased in severity and are still continuing. The municipal shareholders – backed by VNG's CEO Klaus-Ewald Holst mainly accuse EWE of not supporting the development of VNG as an independent East German player (the emphasis is on independent and East German), fearing that one of the last major companies located in East Germany will become an appendage of a West German group[160]. EWE on the other hand argues that formal dominance and consolidation of VNG in the EWE balance sheet is a prerequisite for further joint activities such as a joint storage company[161]. A long list of mutual accusations can be documented since 2006. As a result the relationship between EWE, VUB and the VNG management is completely poisoned. In 2008 the situation further escalated. EWE tried to buy the 1.04% share of Stadtwerke Jena, an attempt that was successfully blocked by other VUB members by court action. And in 2008 the German energy major EnBW acquired a 26% stake in EWE. One joint target of EWE and EnBW is

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[157] VNG's CEO Klaus-Ewald Holst reported these figures in a press briefing at the end of December 2008. But he said nevertheless VNG reached new all time high sales of above 170 TWh in 2008 because the losses were compensated by additional sales in the rest of Germany and abroad.

[158] For a detaailed description of the E.ON and Ruhrgas merger and the ministerial allowance see my 2006 study p. 110 – 122.

[159] The 12 East German utilities encompassed their shareholdings in the joint venture company Verbundnetz Gas Verwaltungs- und Beteiligungsgesellschaft (VUB) and agreed to act as one group

[160] The conflict has much to do with the post reunification history of Germany and the East German sentiment of being dominated by former Western part. Klaus-Ewald Holst, who worked for VNG before the reunification was always proud of his ability to give the company an East German identity and to develop it as one of the very few remaining East German "flagships". Public engagement in Leipzig, VNG's location, and beyond in East Germany, was and is an important part of VNG's business.

[161] EWE consolidated the VNG figures until 2006 but had to stop this after EWE's CEO Werner Brinker was not re-elected chairman of the VNG supervisory board in 2007.

co-operation in the gas sector, where EnBW has a weak position[162]. A quote from a VUB press release referring to the planned EnBW/EWE partnership demonstrates the poisoned relationship: "The development of a strong independent economy in the East German states is completely irrelevant for the EWE board. The East German municipalities have expected much more from the former consortium partner. The ministerial allowance and the consortium contract that enabled the shareholding of EWE in VNG foresaw clear commitments of EWE towards VNG. No actions to fulfil these commitments followed but EWE took tactical measures and cheated ."[163]" In September 2008 VUB terminated the consortium contract with EWE without notice. EWE did not accept this termination and demanded arbitration.

After Stadtwerke Jena and a second municipal shareholder Stadtwerke Halle (3.66%) finally decided to sell their shares to VUB instead of to EWE in May 2009, EWE finally gave up and announced it would sell its VNG shares to EnBW. But although VNG, VUB and also Wingas showed satisfaction after EWE's announcement that it would leave VNG, EnBW is not welcome as a strategic partner[164]. Many neutral observers think that this would be promising for VNG because EnBW should be particularly interested in supporting VNG's strategy,taking into account its own weak gas position. Before EnBW is able to buy the share from EWE, the Bundeskartellamt and VNG' s shareholder assembly must approve. Shareholders such as Wintershall have already signalled that they might not vote in favour of EnBW if the company is not willing to reduce its share. Potential buyers could be the other remaining shareholders GdF/Suez (5.26%), Gazprom (5.26%) and Wintershall (15.79%). In particular Gazprom, but also Wintershall, have repeatedly signalled their interest in increasing their share in VNG. Obviously a solution of the conflict is essential for VNG. This very odd story demonstrates again how, with increasing liberalisation, traditional business models come under pressure. Wingas

5.3.2.4 Wingas

Wingas has never confirmed any changes in its sales strategy. But its traditional ties and commitments seem to have weakened. Many market sources say that in 2008 the company is a more aggressive player again, and Wingas has demonstrated that indeed sales efforts in the German market have been intensified. Wingas acquired at least few new customers in East Germany, where it had not made offers for many years, and in Schleswig-Holstein, where it reduced activities after the two E.ON affiliates Heingas and Schleswag merged to E.ON Hanse. Wingas was one of the suppliers of Heingas and, after the merger, now E.ON Hanse.

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[162] The acquisition of EnBW was temporarily banned at the end of 2008 by the German antitrust authority because of concerns about the competitive situation in the East German gas market. In East Germany EnBW has a majority stake of 50.1% in the regional energy company Enso Energie Sachsen Ost and a 35% stake in the Dresden based local distribution company DREWAG. In July 2009 the Bundeskartellamt finally approved the shareholding of EnBW in EWE under the condition that either EWE sells its stake in VNG or EnBW its stakes in Enso and DREWAG (see press release of Bundeskartellamt of July 6,2009).

[163] VUB press release of January 7, 2009.

[164] In a press release announcing that it was willing to buy the share EnBW made very clear its intention to be VNG's strategic partner: "EnBW is in principle willing to include the 47.89% share in a strategic partnership with VNG. EnBW thinks such a strategic partnership will strengthen Germany's energy industry (EnBW press release of May 13, 2009). But VUB said very clearly that it is not willing to close a new consortium contract with EnBW. The managing director of VUB Andreas Reinhardt told the German daily economic newspaper Financial Times Deutschland (FTD) VUB would prefer a lower share for EnBW than 47.89% (see FTD June 16, 2009).

Northrhine-Westphalia, where the company has long been active, was in 2008 one of the core areas of more aggressive sales efforts. The second core area was Rhine-Main[165]. In 2008, Wingas increased market share in Germany in 2008 from 15% to 18%. This means volumes should have been increased from 152.3 TWh to around 180 TWh[166]. But in some German areas where Wingas supplies regional gas companies, The company is still very reluctant to offer gas to local distribution companies and industrial gas users.

5.3.3 Regional and local gas companies

A number of regional and local gas companies also reacted to the new challenges of the German market environment. There are two main drivers for change in sales strategies:

- Companies looked for opportunities to compensate losses of customers and sales volumes.
- Companies started to exploit new market opportunities arising from the changed system of network access.

Examples for the first driver are Gasversorgung Süddeutschland (GVS) and RWE Westfalen Weser Ems. GVS itself does not – like all other incumbents – comment on sales policy, but in 2007 started to sell gas outside its traditional network area. There are different accounts as to how systematically this new strategy has been followed, but the company supplies a small number of distribution companies and industrial customers across Germany including: east Germany, Bavaria, Northrhine-Westphalia and Hesse. In 2008, RWE Westfalen-Weser-Ems reportedly offered gas to (in particular) industrial customers at very attractive prices, an indicator that the company is or was gas-long[167]. Other companies like Gas-Union Frankfurt followed more or less intensively the same strategy.

In 2007, a special situation has evolved in East Germany, where a number of incumbents started to compete against each other. The managing director of Gasversorgung Merseburg, Karsten Rogall, was one of the few managers of local distribution companies who has given some insight into the procurement process. Merseburg tendered jointly with a second distribution company in 2007 for deliveries in the 2008 gas year. 15 companies made reliable offers[168], among them were not only the previous supplier Mitgas but also the two other East German suppliers VNG and enviaM[169]. EnviaM is the major East German affiliate of the RWE group. But RWE is also the major shareholder of Mitgas, where VNG has a minority share of 24.6%. VNG is the major supplier of Mitgas and it is rumoured that in 2006 RWE tried to buy the VNG shares in Mitgas to consolidate its two affiliates enviaM and Mitgas,

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[165] See presentation of the general manager in charge of sales Gerhard König at the annual press conference in June 2009. In 2008 Wingas acquired around 50 new customers or extended and increased contracts. Around half of the customers are located in Northrhine-Westphalia.

[166] See annual report 2008.

[167] A consultant, who advises industrial customers, said in mid 2008: "If you have an offer from RWE forget about all other offers, it will definitely be the cheapest."

[168] Managing directors of other East German distribution companies confirm also that 10-15 potential suppliers took part in tender processes.

[169] See Gasmarkt Deutschland 01/08, p. 30.

but VNG refused – at least partly because the price was too low – and therefore enviaM entered the gas sector in east Germany. But Mitgas has also extended sales activities in East Germany beyond its traditional sales area.

So far – with one exception - no regional gas company explicitly or implicitly positioned itself as a national sales company. The sales efforts described above are more defensive, driven by a weakened position in the traditional market. The reasons are straightforward:

- The gas purchasing position of these companies is not very promising. They are usually supplied by the importing gas companies and have not established their own independent gas trading or procurement position[170]. Unlike local distribution companies this group did not profit from the ban on long-term supply contracts by the German Bundeskartellamt because this only involved contracts with local distribution companies and not with regional gas companies. Therefore a number of these companies still have long-term purchase contracts. Also most of them have only limited storage available.
- Most of the regional gas companies predominantly supply local distribution companies and have only a very limited sales force.

For these reasons many German experts think that in general the future of the regional gas companies is endangered. The only company which has been explicitly positioned by its shareholders as a pure sales company is Saar Ferngas. In 2007, the steel company ArcelorMittal took over 76.88% of the shares from the German RAG group. In July 2008, ArcelorMittal, which has also a stake in the Luxembourg based gas supplier Soteg, agreed with the other major shareholders of Soteg and the Luxembourg power company Cegedel to merge the three companies to form a new energy group, with Saar Ferngas acting as the sales company for gas and power in Germany[171].

In 2008, local distribution companies started to sell gas to industrial customers. Many distribution companies have, for many years, sold power to industrial customers outside their network area. Therefore some of them have waited a long time to replicate this strategy in the gas market[172]. The two-contract model and the emergence of OTC trading made it possible for local distribution companies to establish a sales business or include gas in their existing power sales business. Companies that either started such sales activities, or announced they would start by October 2008, include the major German distribution companies like GASAG, Berlin, Stadtwerke Hannover, N-Ergie Nürnberg and MVV Energie. But an increasing number of smaller local distribution companies are offering gas to medium sized industrial customers in some regions, or to customer groups outside their traditional sales area. The

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[170] The only counter example is Bayerngas, the regional gas supplier in Bavaria. The company has positioned itself over the past years explicitly as a procurement company for its shareholders. It established a gas trading company as early as 2003 ,has started to diversify its procurement over a number of years and perhaps most important entered the upstream business by founding Bayerngas Norge in 2006. Bayerngas Norge holds 23 licences in 2009. Bayerngas expects to have a 10 – 15% share of equity gas in its total procurement portfolio of around 65 TWh from 2014/15.

[171] See press release of Saar Ferngas of July 23, 2008. After all formal hurdles were passed the new company named Enervos started operations in mid 2009.

[172] Stadtwerke Hannover for example evaluated possibilities to sell gas in the early 2000s, and made one or two test deals in 2002. But the system of network access and the lack of gas volumes did not allow any progress.

following example of AVU Gevelsberg, a smaller regional gas and power company, nicely demonstrates the changed market environment in Germany and the opportunities for local gas companies. Since 2007, AVU has bought part of its total portfolio of around 2.2 TWh at the E.ON GT VP. The company recognised that increasing liquidity and improved access to networks, in particular in the E.ON GT market area, created new options on the sales side outside its own network area in the E.ON GT market area. For medium-sized industrial customers with gas oil-linked contracts, attractive offers based on market prices are definitely an option. AVU will compensate customer losses in its home market with nationwide sales. AVU identified the relevant customer target groups and made attractive offers. It has already acquired three well known German companies as customers in south Germany. In the 2008 gas year, AVU planned to sell 200 – 400 GWh outside its network area the company met this target[173].

Representatives from industrial customers confirm that especially smaller and medium sized industrial customers are profiting from a significant increase of competition, which is no longer only driven by new entrants but also by incumbent suppliers[174]. Local distribution companies have the necessary sales force and experience to manage this customer group. Local distribution companies are able to reduce purchase costs, either by putting their gas supplies out to tender, or by buying part of their portfolio at virtual trading points. Some of them are buying volumes for at least their new sales business directly at the E.ON GT virtual trading point. And although the successes of these distribution companies do not really change the overall market structure, in a rather short time some of them managed to sell up to 1 TWh of gas.

5.3.4 Market for residential customers

5.3.4.1 Market for residential customers and the antitrust authority

The residential sector is a little different to the rest of the market. Even in this market, competition started in 2006, which was a remarkable change for the German gas market because competition in the residential sector had not previously existed. For politicians in particular during times of steeply increasing prices, this market segment is a major focus and they still bemoan the lack of competition. The German antitrust authority (Bundeskartellamt) shares these concerns. In March 2008 it started legal proceedings against 35 German distribution companies, on suspicion of excessive pricing. The Bundeskartellamt has kept a close eye on the pricing behaviour of regional local distribution companies in the residential sector but was never very successful in proving that companies abused their dominant market

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[173] See Gasmarkt Deutschland 07/08, p. 37-38

[174] "Almost all customers with an annual gas demand of more than 5 million kWh and significant gas offtake during summer now receive alternative offers for gas supplies. The prices that can be achieved depend on company-specific load factor and the level of transportation tariffs. The gains are in some cases more than 1.00 ct/kWh." VEA – Newsletter dated April 24, 2008, p. 1. VEA is an association of small and medium sized industrial gas users that organises gas tenders on behalf of the customers. Prices for these customers – traditionally linked to German gas oil quotations – are very heterogeneous and on average, without tax, among the highest in Europe (see Energy Advice: Electricity and Gas Price Comparisons: January 2009. Energy Advice is providing a European price comparison every quarter. Over the last years smaller and medium sized industrial customers always had the highest prices in Europe). The BNetzA also sees some progress in the market for industrial customers. According to a press release from end of July 2008 already in 2007, 5% of the industrial customers switched their supplier (see BNetzA press release of July 29, 2008).

positions by charging overly high prices or in enforcing price cuts[175]. But at the beginning of 2008, § 29 of the antitrust law came into force, designed to control prices of power producers. For many years there have been discussions about excessive power prices, due to the strong market position of the four dominant players E.ON, RWE, EnBW and Vattenfall. Although almost all experts in Germany, and even new entrants, opposed the introduction of any kind of price control, in late 2006 the ministry of economics started a legal initiative to endow the antitrust authority with more power to evaluate and ultimately control gas and power prices. The basic principles of the new law are:

- The power of the antitrust authority to ban any pricing behaviour of dominant companies if prices significantly exceed costs, or prices of comparable companies.
- A change of the duty of proof. The antitrust authority does not have to prove that the pricing behaviour is anti-competitive but the companies have to prove that differences between prices and costs, or prices of comparable companies, are justified.

The second point gives the antitrust authority particularly strong legal powers and the Bundeskartellamt is using the gas market to test these powers. The gas market was perhaps the easiest market for the new department of the Bundeskartellamt, which was explicitly founded to execute the new law, to examine[176]. Residential gas prices vary significantly and, since 2005, increasing prices created a lot of public debate and legal action by gas customers[177]. And, as already noted, before 2006 gas-to-gas competition in the residential sector did not exist.

The Bundeskartellamt analysed gas prices for residential customers of all German distribution companies at the beginning of 2008. To have a sound basis for the comparison it deducted from the final price published by the local supplier all taxes, public duties and the published network tariffs from the virtual trading point to the final customer. It identified 35 suppliers whose prices were more than 40% above the prices of the cheapest suppliers, which were Stadtwerke Kiel and Stadtwerke Jena-Pößneck. The Bundeskartellamt argued:

- Each supplier in Germany in the residential sector is locally in a dominant position and, due to the still not finally settled system of network access, the market for residential customers must be demarcated locally[178].
- Net prices are comparable across all companies in Germany.

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[175] In December 2004 and December 2005 the Bundeskartellamt started formal procedures against some local distribution companies. All procedures ended with agreements. In some cases the suppliers agreed to refrain from price increases for some months (see press releases of the Bundeskartellamt from the 6th of April 2005 and the 28th of April [ALSO 2005?]. In another procedure started in January 2006 the BKartA announced in February 2006 very proudly a big success under the headline: "private gas customers can now switch supplier." Seven regional gas companies, all affiliates of E.ON and RWE, agreed to facilitate market entry by providing gas for new entrants in their local network (Beistellung). This procedure was rather effective in the power sector at the beginning of liberalisation but had no effect in the gas sector. It was one of the typical "Pyrrhic victories" of the Bundeskartellamt in this sector.

[176] Many observers say although the Bundeskartellamt is independent from politics, it has to demonstrate its ability to apply the new law, and was given ten additional staff that have to be kept busy.

[177] The German civil law stipulates special requirements for the justification of prices and price increases if basic goods are offered not in competition. This § 315 was the basis for a large number of legal cases over the past several years with different results.

[178] As a consequence local suppliers have a market dominant position in their local distribution network.

- Prices more than 40% above those of other companies are an example of abuse of market power.

The approach of the Bundeskartellamt was fiercely criticised by the gas companies and the authority extended and amended its price analysis during 2008. In October 2008 it agreed a settlement with six regional companies of the E.ON Group. The six suppliers refunded 35 Euro to every customer and delayed a price increase of around 10% from October to December 2008. The antitrust authority estimated the value of this package at 55 million Euro[179]. The outcome was not a big success for the anti-trust authority because it ultimately has no real influence on the pricing behaviour of the E.ON affiliates. In December 2008 the antitrust authority settled the procedures with most of the other 35 companies with similar agreements[180].

5.3.4.2 Suppliers in the residential sector

Again it was the E.ON group that made the first step. It created a new affiliate named E WIE EINFACH (S FOR SIMPLE, which refers to "simple" switching procedure in gas and electricity) to offer gas and power nation-wide directly to residential customers by phone and internet. In the gas sector E WIE EINFACH offered a price 2 ct/m3 below the standard price of the local supplier in the sales area of each German distribution company. The start of E WIE EINFACH caused a lot of discussion among German distribution companies and market observers. Many people asked whether it was a serious business model or only intended to relieve the policy and regulatory pressures by demonstrating to the regulatory authority and the politicians that competition was possible. To ease regulatory and political pressure was one motive at least for the timing but E WIE EINFACH is part of E.ON's strategy of centralising its business at the expense of its regional sales companies. And E WIE EINFACH acquired significant numbers of new customers, around 300,000 by mid 2008. For many local distribution companies the appearance of E WIE EINFACH was a shock, not because they feared customer losses but because they felt this new approach was a serious blow to the traditional sales partnership in the gas sector.

E WIE EINFACH is still one of the few suppliers which offers gas nationwide. For various reasons most companies which offer gas to residential customers in Germany have concentrated on certain regions:

- The system of market areas makes it difficult to offer gas to residential customers nation-wide, because suppliers have to organise gas procurement and balancing separately in each market area.
- Many companies have only limited ambitions and marketing budgets.

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[179] See press release of the Bundeskartellamt of October 6, 2008. Settlements are not unusual in these kinds of procedures. Both parties avoid long-lasting legal procedures where the outcome is not predictable.

[180] See press release of the Bundeskartellamt of December 1, 2008. The Bundeskartellamt says in this release the total value of the settlements is 127 million Euro. Half of this value comes from direct refunds and half from delayed price increases or earlier price decreases.

- Some companies offer gas to residential customers as a local retaliation strategy because they lost the local distribution company as a customer.

In August 2008, more than 40 companies offered gas to residential customers. The overwhelming majority are local distribution companies[181]. Most of them are rather small companies that have extended their business locally[182].

The only international gas company which is offering gas to residential customers in Germany is Nuon. The company started to offer the trademark "wakker" gas at Berlin and Hamburg mid 2006. In mid 2008 it also started to offer gas to residential customers in Cologne and Düsseldorf and other cities.

Companies with no experience in the gas sector that offer gas to residential customers are Lichtblick, Teldafax, Goldgas and Montana Gas. Lichtblick is a provider of "green" power to residential and commercial customers. In October 2007, Lichtblick started to offer gas to residential customers in North Germany. Lichtblick offers customers "green gas" with a five 5% share of biomethane[183] and since November 2008, it has offered gas more or less nation-wide. Teldafax, which is also a supplier of power to residential customers, started to offer gas from mid 2008 to most of the German high cal gas market areas. Goldgas, a totally private owned company, started in February 2009 to sell gas to residential customers and shocked local distribution companies by offering gas with a discount of 300 – 400 Euro on a yearly basis compared to the basic tariff of established suppliers[184]. Montana Gas was founded in 2008 by the Munich based heating oil trader Montana, jointly with the local Bavarian utility of Rosenheim. Montana gas offers gas to residential and industrial customers in the Munich area.

5.3.4.3 The residential sector – a developed market?

Although a rather large number of companies have entered the market for residential customers it must be emphasised that the framework conditions in this sector are still not well established. As well as the general constraint of segmentation between different market areas the necessary communications between suppliers and network operators are not yet established. Therefore for most of the more ambitious companies that entered the market it is still an experiment. It is still not possible to develop a sound and sustainable business model based on the current framework[185]. When Nuon entered the market in Berlin and Hamburg one of the targets was explicitly to help develop the framework conditions based on operational experience. The company had endless discussions with the network operators in Berlin and Hamburg for example about the correct application of standard load profiles. Lichtblick, a rather aggressive supplier that enforced improvements of the framework

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[181] See energate: Wettbewerbsmonitor: Der Haushaltskundenmarkt für Strom und Erdgas im Überblick, Ausgabe 3, August 2008.

[182] As a consequence of these strategies there are only a limited number of cities or regions like Dortmund or Hamburg where more than ten suppliers compete.

[183] For more details about the development of the market for biomethane see chapter 7.3.4.

[184] Goldgas used the very favourable price conditions at the OTC markets in early 2009 compared to oil-linked prices to purchase gas.

[185] Even E wie einfach has numerous operational problems with different local distribution network operators. Typically none of the new entrants release any targets concerning number of customers or market share.

conditions in the power market by legal action, said several times that compared to the power market in 2007, network access in the gas sector is in the "mediaeval age". But even Lichtblick acknowledges that it is mainly not a question of active obstruction by network operators, but a lack of competence, IT infrastructure and standardisation of processes.

In principle the situation should have improved since August 2008 when standardised procedures for customer switching processes dictated by the BNetzA were put in place, similar to the same processes in the power sector[186]. And although a number of market players say the procedures are not optimal, they are in general judged as a sufficient basis to conduct business. But – typically for the gas sector – although they are in place, it takes a lot of time to implement them properly and allow a smooth and completely IT-based switching process[187].

From October 2008 one of the major risks for suppliers in the residential sector, balancing, was completely resolved by the new balancing regime (see chapter 7), which should increase competition in this sector. Operational problems related to switching procedures should be resolved over time. Some suppliers have already reported that network operators are behaving more co-operatively.

As long as different market areas exist, competition will remain restricted. But compared with the situation in 2006, it is now possible to supply residential customers and this is starting to have an impact on market structure and company strategies.

And indeed particularly since the daily balancing regime has been in place, the number of suppliers has increased sharply. The data service provider Ene't reported in April 2009 the number of suppliers had increased to 114, 81 of them local distribution companies[188]. Due to the different market areas that still exist, competition is still locally concentrated, but the number of areas where ten suppliers and more are offering gas is increasing. Therefore I think that, despite the remaining problems which I have described, the still very negative evaluation of competition by the BKartA in 2009[189], and the very restrictive market demarcation where each local distribution network is defined as separate market, is exaggerated and neither takes into the changed framework conditions of network access nor the changed market dynamics.

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[186] See decision Beschlusskammer 7 of the BNetzA from 20.08.2007: Geschäftsprozesse/Datenformate für den Lieferantenwechsel im Gassektor (GeLi Gas).

[187] Although there are no formal complaints to the BNetzA about resistance of network operators to implement the decision of the BNetzA on standardised switching procedures **GeLi Gas**, almost all suppliers report severe operational problems in applying these procedures with the local network operators.

[188] Ene't newsletter number 12, April 2009

[189] See chapter 5.3.4.1 and the very latest document from the Bundeskartellamt the action report for the years 2007/08. Bericht des Bundeskartellamtes über seine Tätigkeit in den Jahren 2007/08. Deutscher Bundestag, Drucksache 16/13500, June 23, 2009 p. 104: "After the last reporting period no noticeable increase of competition in the power and gas sector was testified. A sound improvement of the competitive situation is at present still pending." Over the last years the Bundeskartellamt repeatedly bemoaned lack of competition in the gas sector and based its decision on this observation. It seems to be that the authority is very reluctant to recognise that changes take place.

5.4 Gas-to-gas competition in Germany – big improvements

Whether the German gas market is sufficiently competitive, and the criteria by which this should be evaluated, will not be discussed here. But the previous paragraphs should have demonstrated that, compared to the pre-2006 situation, major changes have occurred.

- Most of the "new" market entrants have not only increased their sales, but have increasing confidence in their ability to establish a sustainable business.
- Competition between incumbents has emerged. This might not be sustainable but shows that the structures of the market are changing and many incumbents are exploring their position in the market and whether they are able to improve it.
- As a result, in the wholesale and industrial sector, customers have choice. Usually five to fifteen suppliers respond to tenders, and most of these offers are reliable.
- In the wholesale sector almost all distribution companies tender their gas supplies. And an increasing number of companies engage in informal or formal co-operation to organise these tender processes or to develop more sophisticated supply strategies[190].
- The emergence of competition in the residential sector shows that framework conditions have improved to make this kind of competition feasible, although further improvements will be needed.

In 2007, switching rates – one of the possible indicators of competition - were still low. But especially in the industrial sector, much higher switching rates can be expected to be reported in the next BNetzA monitoring report for 2008 and especially for 2009

6 Balancing and flexibility

It has already been noted a number of times that lack of access to flexibility and the balancing regime have been major obstacles to the development of liberalisation and competition in the German gas market. The issues are related because with the demanding system of hourly balancing, access to flexibility (storage or flexible supply contracts) was more crucial to the ability of shippers to supply their customers, or a distribution company to manage its portfolio, than the much easier system of daily balancing introduced in October 2008. This was the major topic for the BNetzA in 2008 and I will describe its development in the next section.

[190] In chapter 4.1 I mentioned a number of trading companies of local distribution companies that mainly support local distribution companies in buying gas at the OTC markets or develop portfolio management strategies. Companies or co-operations like EnPlus, Quantum, Beschaffungsplattform Südbayern or Dynega were mainly founded to support joint tendering procedures of gas volumes. But they may develop more towards trading arms.

6.1 The gas balancing system

6.1.1 Hourly balancing as a starting point

Hourly balancing, including a free of charge basic balancing service, was already "agreed" in the first association agreement that regulated third party access from October 2000[191]. This balancing regime was transferred into the energy law from 2005. Therefore it was one of the few remaining legacies of the system originally developed by the ministry of economics for the 2005 energy law. The ordinance provision (see Glossary) on network access[192], which contains the prescription on the balancing system, stipulates that the hourly nominated injection and withdrawal volumes "must be balanced if possible at the same time". To facilitate this balancing the network operators had to provide a so-called "basic balancing service" free of charge. This balancing tolerance is 10% of the hourly capacity and cumulated one hourly volume of the relevant capacity[193]. These tolerances are applied either to the total of booked entry capacity into the market area or – if the total entry capacity is less than the total booked exit capacity – to the total booked exit capacity multiplied by the quotient of entry and exit capacity[194]. Network operators have to offer an additional service to clear imbalances beyond the basic tolerances for a separate non-discriminatory fee.

When the BNetzA and the network operators agreed on the co-operation agreement II, it was clear to the Beschlusskammer 7 that this hourly balancing regime was one of the remaining weaknesses. But due to time constraints and the complex discussions about the basic model of network access, it was not possible to solve this issue at the start of the process[195]. Nevertheless, in spring 2007, the BNetzA asked the consultancy KEMA to carry out a general study of balancing[196]. On October 1, 2007 the regulator held an introductory workshop for the development of an improved balancing system, which more than 100 representatives of German and foreign companies attended. The following topics were identified by all speakers at the workshop as the core issues for the development of the system[197]:

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[191] See my 2006 study, p. 28.

[192] I described in my 2006 study, p. 58 - 63 in detail that concerning the basic model of network access the law itself and the ordinance provisions are contradictory as a result of a chaotic law making process. Nevertheless the system of hourly balancing stipulated in the ordinance provision was in principle applicable even under the two-contract model.

[193] In principle this basic balancing service has been in place since 2000. Only the tolerance limits were adapted. Under the regime of negotiated third party access the hourly tolerance was 15% of the hourly capacity and the cumulated tolerance 15% of the maximum daily capacity. The lower tolerance in the ordinance provision was justified with the regime shift from a point-to-point system to an entry-exit system. In the latter it is easier for shippers to balance gas flows because it can be done over the whole portfolio.

[194] This "BBA-factor" was different for every market area and varied between 0.5-1.0]. It was one of the topics that led to major conflicts between network operators and shippers. One shipper – Sempra Energy Europe Limited – started a formal complaint against the application of the BBA factor by E.ON GT; but the complaint was finally rejected.

[195] See for example a presentation by the head of Beschlusskammer 7, Kurt Schmidt, for the 21st meeting of BGW's main committee on gas transportation on March 2, 2007, slide 10: "Expectations of the BnetzA: Further development of KoV by formal decision procedures (switch of supplier, standard load profiles, **balancing energy** (emphasis by H.L.) and others) with consultation of the market.

[196] KEMA: Der deutsche Regel- und Ausgleichsenergiemarkt Gas, study on behalf of the BNetzA. The final version of the study was not published until November 2007. One note on terminology. The German "Regelenergie" is used to describe the need for the physical balancing by the network operators. I use for this the term "system balancing". "Ausgleichsenergie" describes the volumes for the balancing of the portfolios of shippers for which I use the term "portfolio balancing".

[197] At the workshop KEMA presented the results of its study. Representatives from BGW, GEODE, EFET, bne and VIK presented the views of the different stakeholder associations. In addition international experiences and views were presented by speakers from the European Commission, the UK regulator Ofgem and the Dutch regulator Dte.

- The size of balancing areas or market areas.
- The length of the balancing period (hourly or daily).
- Procurement of gas for the physical balancing of the system.
- Pricing of balancing portfolios for shippers.
- Transparency requirements.

The question of market areas was beyond the scope of improving the balancing system. I described in chapter 3.4.3 the reduction of the number of market areas that also facilitates balancing and reduces related risks. The improvement of the balancing regime itself could only lead to harmonised rules across the different market areas. Although the ordinance provision of network access provided a general framework, neither the rules nor the prices and pricing systems for portfolio balancing were uniform across all market areas.

The shift from hourly to daily balancing was a demand of many speakers at the workshop and was one of the main topics of the discussions that followed the workshop, which I will describe below.

Procurement of gas for the physical balancing of the system was, and to some extent still is, a black box, due to a lack of transparency. In particular it is not transparent to what extent line-pack is available and used to balance the system. And no transparent harmonised procedures for the procurement of system balancing energy have been established. Therefore besides the question of the need for, and organisation of, market-based systems for the procurement of system energy, the role of line pack and how it could be included in the framework was one of the crucial issues[198].

The most critical aspect of the German balancing system was pricing of portfolio balancing. Most pricing systems had no relation to market prices and very high spreads between buying and selling prices for portfolio balancing. The following table shows the pricing systems of the different network operators in October 2007.

[198] In the above-mentioned study, KEMA made an extensive analysis of these issues and proposed a rather complex model as to how the linepack of the different operators should be used and how the remaining need for system balancing should be satisfied by a market-based mechanism.

Network operator	Price	Spread
BEB	Basket of Day Ahead prices APX Zeebrugge, APX TTF, APX UK OCM SAP, EEX BEB	1.1 times maximum of basket price 0.9 times minimum of basket prices
E.ON GT	Average German border price published by Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA)	2.7 times BAFA-price 0.5 times BAFA-price
RWE Transportnetz Gas	2.95 ct/kWh (system reference price)	3.0 times reference price 0.3 times reference price
EWE Netz Erdgas Münster Netz Gas-Union Transport Wingas Transport	Average German border price published by Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA)	2.0 times BAFA-price 0.5 times BAFA-price
GVS Netz	Average German border price published by Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA)	2.5 times BAFA-price 0.4 times BAFA-price
bayernets	3.45 ct/kWh system sales price 2.45 ct/kWh system procurement price	2.0 times 3.45 ct/kWh 0.5 times 2.45 ct/kWh
Gaz de France Transport Deutschland	System price: Zeebrugge Day Ahead + 2 Euro/MWh	1.5 times System price 0.5 times System price
Ontras VNG	Monthly published price	September 2007: 5.2989 ct/kWh sales price 1.5525 ct/kWh purchase price

Table 2: Prices for portfolio balancing of the different operators of market areas (Sources: Terms and conditions of the operators)

T**Table 2**shows that only BEB implemented a pricing system related to European gas market prices, with a price spread that was judged as "reasonable" by many market participants. Most of the other network operators used the more or less mysterious statistical artefact of the monthly German average border price, published by the Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA), and a price spread that was fiercely criticised by many market participants[199]. Shippers formally challenged the pricing and other rules of the balancing system of RWE Transportnetz Gas and E.ON GT at the BNetzA. In both cases the network operators agreed in informal settlements to change their pricing systems[200]. In November 2007, RWE Transportnetz Gas introduced a pricing system with the TTF Day Ahead price as the reference price and a price spread of 0.75 and 1.50 times the reference price. In May 2008, E.ON GT switched to the Day Ahead settlement price at the EEX for the E.ON GT market area as a reference price and applied a price spread of 0.8 and 1.3 times the Day-Ahead price for the buying and selling of portfolio balancing. Finally even Wingas Transport changed its pricing system during September 2008 (!) retrospectively for the gas year

[199] The managing director of VIK, the association of large industrial users, characterised the hourly balancing system with asymmetric prices as "a licence to print money". Unfortunately this assessment could not be verified even in summer 2008 because, due to the operational problems (described above in Chapter 3.4.2), almost no balancing accounts had been cleared since October 2007. But even BEB with the comparably low spread, which at least cleared the accounts for October and November 2007, had to admit that for October and November 2007 the clearing of hourly balances would have led to profits of 15 million Euro. BEB refrained from applying hourly clearing and only cleared and cashed out remaining net balances at the end of each of these months.

[200] The informal settlements of these cases were never openly announced. Both network operators silently changed their terms and conditions after the cases were brought to the formal decision body of the BNetzA by Nuon (RWE Transportnetz Gas) and the service provider KoM-SOLUTION (E.ON GT) and they had discussions with the respective complainants.

2007/08. The price spread was reduced to 1.2 and 0.8 times the reference price. Instead of the average German border price (BAFA-price) the monthly average bid and ask price at the TTF or E.ON GT-VP was taken as the reference price[201].

Transparency needs were a major topic in particular because one of the main problems with the existing balancing system is the lack of transparency and timely data to properly manage balancing requests.

6.1.2 From hourly to daily balancing or: It's finally "GABi"

6.1.2.1 Discussions between stakeholders about a new balancing system

At the introductory workshop of the BNetzA, the president of the agency asked the relevant associations to present the BNetzA a joint proposal for a new balancing system. In principle the same old story of discussions and negotiations between the associations started. I have reported these "games" repeatedly in both this, and the 2006, study. The associations of the network operators established workshop sessions (Netznutzer Forum) with the associations of network users where different concepts were discussed. The atmosphere was described by participants as "friendly", but the usual different interpretations of concepts appeared. All associations agreed rather quickly that in principle a system of daily balancing should be introduced[202]. But there were very different views as to what extent, even under a system of daily balancing, shippers should be responsible for an hourly balancing of volumes to create incentives to keep the need for system balancing from network operators low. The association of the network operators (BDEW) argued for the retention of hourly nominations for system balancing purposes and for all hourly imbalances beyond a certain tolerance to be penalised.[203] The two other associations of network operators, GEODE and VKU, and most of the associations of network users demanded a "true" system of daily balancing where at least equal volumes could be injected over a 24 hour period and the network operator would be responsible for the remaining within day load balancing and hence system balancing.[204]

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[201] Market sources say Wingas Transport agreed on these changes in negotiations with some single shippers.

[202] The position of the association of large industrial customers (VIK) was more ambiguous. During the first meetings, the association in principle agreed to a system of daily balancing but later abandoned this position mainly due to pressure from the chemical and paper industries. These industries argued that due to the high volumes and high load factor of their members, they were able to cope with the existing system of hourly balancing. They feared that, under a system of daily balancing, they would subsidise other customer groups.

[203] This principal position was presented in all the meetings with the network users and developed over time. One of the main reasons was to avoid having to spread the costs of storage across all users. If network operators would be responsible for the whole within day balancing they must be able to purchase the necessary energy for system balancing from storage operators. Storage operators would be forced to sell gas to network operators instead of selling it to their sales companies. "Sales companies that have today access to storage should not be forced to release storage," the representative of a major German incumbent group said for example at the first meeting between network users and network operators, according to the unpublished minutes of the meeting.

[204] There was one major difference in the discussions about the balancing system compared to the previous discussions between the associations. Coalitions and alliances started to change. The association of the more traditional local network operators VKU clearly shifted from supporting BDEW to the GEODE camp. As already described in footnote 203, VIK, or more precisely some members of VIK in particular from the chemical industry left the camp of the shippers' associations and presented – to the annoyance of EFET and bne the other main associations of shippers – a dissenting view on an efficient balancing system. I will describe later how additional dividing interests became important for the whole development of the system of balancing. The starting position of the associations of network users was presented at the kick off workshop. See also for the position of GEODE: "Vorschläge der GEODE zur Weiterentwicklung des Regel- und Ausgleichsenergiemarktes Gas in Deutschland (Stand 25.10.2007).

The second major point of dissent was the pricing system for portfolio balancing. BDEW strongly supported asymmetric prices, i.e. a price spread between the buying and selling price for portfolio balancing, arguing that only these asymmetric prices give incentives for shippers to try to balance their portfolios. If a shipper has a long position he has no incentive to balance this position by selling Day-Ahead volumes if he knows the network operator will pay him the market price and vice versa. On the contrary if the shipper expects that the final settlement price will be lower than the market price during any time of the day, he might sell volumes and increase imbalances. Most other associations thought such asymmetry was not necessary and would create unjustified extra profits for network operators.

On December 12, 2007 the different associations presented their proposals to the BNetzA[205]. At this meeting presentations were given for the network operators by BDEW, GEODE and for the network users a joint presentation from bne, EFET, VEA and Verbraucherzentrale Bundesverband (an association of residential customers), a joint presentation from VIK and BDI (the main association of the German industry), and a separate presentation from the association of the chemical industry VCI.

The following table summarises the principal proposals for a new balancing system and the positions of the different stakeholders at that time.

[205] Contrary to the expectations of the regulator, the associations were not able at that time to agree on one joint paper or presentation with the cornerstones of a model and an explanation of remaining differences.

Topic	BDEW	GEODE	Bne et.al. and similar VIK	VCI
Balancing period	Daily Daily cash out No tolerances	Daily	Daily No tolerances Daily cash out Extended balancing service as long as access to flexibility is limited	In principle daily. But hourly until cost allocation of daily balancing system is settled Daily balancing as an additional service
Dealing with hourly imbalances	Hourly nominations 0.4% of the daily volume as hourly tolerance Undisclosed penalty for imbalances beyond tolerance (x% of average price for daily balancing energy	Small hourly penalties of 1% of the market prices only acceptable for a transition period	Hourly nominations for a transition period. Nomination of equal volumes over the day possible No penalties for hourly imbalances	No suggestions
Use of line pack	Line pack is used for system energy but offered to the market by each network operator	Should be used for hourly balances	Transparent use of line pack from operators of the market areas	Complete use of line back for system energy. To achieve transparency certification of line pack. Cost of linepack is part of network tariffs
Prices for portfolio balancing energy	Asymmetric prices (spread not mentioned)	Bid/offer spread would be acceptable as price difference	In principle symmetric prices. Bid/offer spread would be acceptable as price difference	Symmetric prices
Procurement of system balancing energy	Market oriented price for portfolio balancing	Link of prices for portfolio balancing to trading market (EEX prices)	Target: A liquid within day market for system energy Daily tenders of small lots for a transition period	Tender process on a central joint platform
Ex post balancing	Should be possible	Should not be possible		Should be possible
Implemen-tation	It is aimed to implement the system on October 1, 2008 Proposal of a transition regime if the necessary data for the new system is not available and markets are not liquid enough	October 1, 2008 completely in BEB and E.ON GT market areas. In other market areas as much as possible	October 1, 2008	October 1, 2008

Table 3: Positions of the different associations concerning the cornerstones of a new balancing regime (Source: Presentations by the associations at the BNetzA on December 12, 2007)

At the workshop the BNetzA asked the associations of network operators again to deliver a joint paper on the founding principles of the new model. A deadline of the end of January 2008 was set but the paper was finally delivered on February 15, 2008[206]. But on the major

[206] "Regel- und Ausgleichsenergiemarkt in Deutschland – Modellkonzept BDEW/VKU/GEODE"

controversial topic of responsibility for within-day load profiling the paper presented two different models:

- BDEW - participants in the discussions of these models (also refer to this as the E.ON GT model) – proposed a penalty (scheduling fee) for hourly imbalances beyond a certain tolerance. The idea of this concept is based on the proposal from December 2007 at the BNetzA, but it was further developed and refined. BDEW suggested a tolerance threshold of 20% of the withdrawal capacity included in a balancing group. For hourly imbalances beyond this tolerance a fee of 20% of the daily price for portfolio balancing would be charged. According to the assessment of BDEW, this would allow true daily balancing for most of the balancing groups. This assessment was not shared by the two other associations of network operators VKU and GEODE.

- GEODE developed a rather complicated dual system, where daily balancing and hourly load management are completely separated. All balancing groups would be balanced daily, based on daily nominations. In addition, parts of the physical network would be identified where hourly balancing would take place. All shippers active in these areas (for example at certain withdrawal points) would be included in this system of hourly management. The network operator would demand hourly volume nominations for load management. Every shipper, included in this system could, as an "active" market participant, offer these volumes in a price/volume table similar to the EEX pricing system in the spot market for power. The network operator would then use these offers to create a merit order. The remaining open question is how the cost of this load management should be allocated to the balancing groups. From the perspective of GEODE, the advantage of this system would be to allow most market participants true daily balancing. Furthermore the cost of within-day load management would be derived from a market-based procedure and allocated according to the cost driver(s). BDEW believed this model was too complex and would result in a high cost of implementation. Furthermore, due to its complexity, it could not be implemented until October 1, 2008. VKU supported the GEODE proposal.

According to participants at some meetings of the network operators there were tough discussions about the GEODE proposal. Only because it was strongly supported by some representatives from network operators of the VKU camp was it included in the concept paper.

At this stage two major issues must be emphasised:

- The proposed separation of transmission system balancing and portfolio balancing was an important new element in the concept of a new balancing system;

- Discussions among associations ended in the usual deadlock after months of debate, delays and various phases of constructive discussions, but finally disagreement, about major issues.

But what then happened – again - was that the BNetzA took the steering wheel, which again confirms my main hypothesis as to why the German gas market is changing: framework conditions are no longer defined by the stakeholders and their associations themselves, but by

a regulatory authority committed to a framework that is favourable for the development of competition, and which will not tolerate endless inconclusive discussions.

6.1.2.2 The formal BNetzA procedure

On February 25, 2008 the formal decision body of the BNetzA responsible for network access gas, Beschlusskammer 7, started a formal procedure to define the services necessary for balancing (Festlegungsverfahren)[207]. The target of the procedure was to define binding rules for certain aspects of the model of the balancing regime including:

- The content and duties of the contract for the organisation of balancing groups, in particular the methods of clearing balancing groups, the pricing system for imbalances, and the function and calculation of penalties
- The publishing of essential information
- A new percentage for the tolerance boundaries of the basic tolerance service
- Harmonisation of the nomination and re-nomination procedure
- Harmonisation of the obligations in the contracts for the interconnection between networks.

In the opening statement Beschlusskammer 7 set the following time-table:

- March 5, 2008: meeting with the associations of the stakeholders to present, discuss and evaluate the BDEW, GEODE and VKU concepts.
- By the end of March 2008 at the latest, operators of market areas should present a proposal for a standardised balancing group contract, or concrete suggestions for publication of data, tolerances and nominations.

In the opening statement the BNetzA did not publish a deadline for the final decision but told the associations at the meeting in March, that this would be released by the beginning of May at the latest, to give the network operators enough time to implement the system by October 1 2008.

The meeting on March 5 was one of the most remarkable in the history of network access. Aside from presentations by the "usual suspects", (representatives from BDEW, GEODE, EFET, VIK) Jens Schumann, at that time head of the business unit transportation at BEB, and one of the best German experts in the transportation sector gave a presentation on behalf of "a number of large German network operators.[208]" Schumann presented a model intended to build a bridge between the positions of GEODE and BDEW. As a result of the different positions, these network operators feared a deadlock even within the associations. Furthermore they were afraid that a very complex system would be introduced which would be difficult to operate. Obviously these network operators were not able to convince the

[207] BNetzA: Az BK/-08-002 Festlegungsverfahren Ausgleichsleistungen Gas (Bilanzkreisvertrag u.a.)

[208] The masterminds behind these network operators were never formally disclosed, but my understanding is all major network operators including E.ON GT, Ontras and Wingas developed and backed these proposals.

whole BDEW negotiating group – which also included regional and local network operators – and therefore, taking into account the decision-making power of the BNetzA, they decided to adopt a pro-active position and were very successful. The outline of the model Schumann presented corresponded almost exactly to the rules the BNetzA published on March 20 in a paper titled: "Basic model for the balancing rules in the gas sector.[209]" During May, with only minor changes, this was formally endorsed as the new model for the balancing regime. The model is known now in Germany under the name "GABi Gas (**G**rundmodell der **A**usgleichsleistungs- und **Bi**lanzierungsregeln im **Gas**sektorBefore I describe the major principles, one main differentiation should be emphasised which is very important for the total system. The new system sharply distinguishes between the balancing of the portfolios of the shippers and the physical balancing of gas flows by network operators to maintain the stability of the system. Therefore in the following "portfolio balancing" (in German: Bilanzausgleich) is strictly related to the portfolios of shippers. In relation to physical flows the term "system balancing" (in German "Regelenergie") is used[210]. The major principles of the new system were described as[211]:

- For all shippers a system of daily balancing will be introduced.
- The following volumes are relevant for balancing:
    - Nominated hourly volumes at the entry and exit points of market areas, border points, connection points to storage and virtual trading points.
    - Metered withdrawal volumes for all final customers with metering devices.
    - For non-metered customers where standard load profiles are applied (SLP-customers) the daily volume of this standard load profile is relevant. If the analytical procedure to calculate the load profile is applied the relevant volume is determined with a time-lag of 48 hours. The balancing is based on the effective temperature measured two days before the balancing day. As a result there are no temperature-related balancing risks.
- Daily imbalances are settled on the basis of the following pricing system for portfolio balancing.
    - The basis is the reference price at four trading hubs that are judged as "liquid hubs" by the BNetzA. These hubs are TTF, NBP, Zeebrugge and E.ON GT. Network operators buy volumes for 0.9 times the second lowest price at these

[209] BNetzA – Beschlusskammer 7: Festlegungsverfahren Ausgleichsleistungen Gas. Hier: Grundmodell der Ausgleichs- und Bilanzierungsregeln im Gassektor. One day before the BNetzA published the paper BDEW, GEODE and VKU told the regulator that they supported the model presented by Schumann.

[210] For a detailed discussion see KEMA: Der deutsche Regel- und Ausgleichsenergiemarkt Gas im Rahmen des neuen Energiewirtschaftsgesetzes und des darauf aufbauenden Gasnetzzugangsmodells. Gutachten im Auftrag der Bundesnetzagentur, Bonn November 2007, p. 9 – 11. See also the definitions in the glossary.

[211] The definitions of the different terms related to the physical balancing of the transmission system and the "commercial"balancing of shipper's portfolios are very important. To clarify these terms they are explained in the glossary in annex 1.

hubs and sell volumes for 1.1 times the second highest price[212]. This system is intended to avoid arbitrage by the system operator.

- There are no tolerances for the daily settlement and ex post balancing among balancing groups is not allowed.
- The daily balancing system is supplemented by an "hourly incentive system[213]" to minimise the need for within day system balancing.
- For hourly imbalances of a balancing group, shippers must pay a kind of scheduling fee, called an hourly structuring fee. There are two ways to calculate this fee:
  - A fixed fee of 15% of the average of the prices for negative and positive daily balances.
  - A variable fee for every hour between 5% and 25% of the average of the prices for negative and positive daily balances. These variable prices are intended to give shippers an incentive to optimise the use of the whole system.
- Hourly volumes that are the basis for the hourly incentive system are calculated in three different ways depending on the customer group:
  - For all nominated entry and exit points, and the exit points of large industrial customers (more than 300 MWh/h), the effective hourly allocated volumes are taken. There is no tolerance between injection and withdrawal because the BNetzA assumes that for these entry and exit points, precise balancing of injected and withdrawn hourly volumes is possible. As a consequence the corresponding exit points are not included in the cost sharing mechanism for system balancing.
  - For all other industrial customers, one 24th part of the metered daily volume is taken as the relevant hourly volume, i.e. the effective off-take is distributed equally over the day. To meet the requirements of the hourly incentive system shippers can inject a flat daily volume at the level of the average off-take. Imbalances beyond a tolerance of 20% are penalised with a scheduling charge. Supply to these customers involves a forecasting risk because the metered volumes can deviate from the projected volumes, which are the basis for the entry nominations. The tolerance should take into account this risk. Other industrial customers can opt out of this system and choose the real hourly system of large industrial customers. In this case they are also not included in the cost sharing mechanism.
  - For SLP-customers also one 24th part of the daily profile is the relevant hourly volume. For these customers no tolerance is granted for the hourly system.

[212] The reference to the basket of prices should make sure that the prices at the trading hubs are always cheaper than the price for portfolio balancing, i.e. shippers have an incentive to buy gas at the trading hubs to avoid imbalances (see BNetzA Beschlusskammer 7: Az.: BK7-08-002 Beschluss in dem Verwaltungsverfahren wegen der Festlegung in Sachen Ausgleiochsleistungen Gs (Bilanzkreisvertrag u.a.), p. 36.

[213] Some shippers wonder whether "incentive system"is the right wording, because it contains no positive rewards for shippers but only the obligation to pay a kind of scheduling fee in cases of certain hourly imbalances.

Because the daily profile is calculated on measured temperature (with a time lag) there is no forecast risk for the nomination of injections.

- All other industrial customers (below an annual demand of 300 MWh/h) and SLP customers must bear the cost for system balancing. The network operators must purchase to balance the system physically during the day.

The BNetzA prescribed no detailed model for the procurement of gas for system regulating but provided some major principles[214].

- The main source of system balancing will be line pack which will be provided from all networks within a market area and from neighbouring networks. Network operators get no separate fee for the provision of line pack because it is included in network tariffs.
- External system balancing gas will be purchased by means of tenders conducted on a transparent and non-discriminatory basis. Two kinds of external system balancing gas are distinguished:
  - Temporary within day volumes where these volumes are leased for a period of hours during the day.
  - Gas to balance insufficient or excessive volumes.
- All costs and revenues related to system regulating and portfolio balancing are collected in a separate account called a contribution account[215]. The balance of this account is projected for six months (from October 2009 one year will be possible). If the expected costs are higher than the expected revenues the deficit is allocated on the basis of the physical withdrawal volumes to all exit points that are included in the cost mechanism (other industrial customers, SLP-customers). This expected cost is charged as a separate fee. Differences between the forecast and actual figures are taken into account in the following six month period. If the projected revenues exceed the projected costs, the surplus is allocated to all offtakers (including large industrial customers and nominated exit points).

[214] Unlike the regulation of the balancing regime the proposals for the procurement of system balancing energy were not part of the binding decision. The introduction of the model description states clearly: "Guidelines for the use of system balancing energy can not be prescribed ex ante by the regulatory authority." (see Beschlusskammer 7 Az.: BK7-08-002: Beschluss in dem Verwaltungsverfahren wegen der Festlegung in Sachen Ausgleichsleistungen Gas (Bilanzvertrag u.a.) Appendix 1, p.1. But of course the BNetzA can evaluate whether the processes and products chosen by the network operators are in line with the law.

[215] The German wording in the decision of the BNetzA is "Umlagekonto". GasunieD translates this in the English language version of the General Terms and Conditions as "socialised account"a translation that nicely describes the impact of the new system.

The following figure tries to visualise the features of the system.

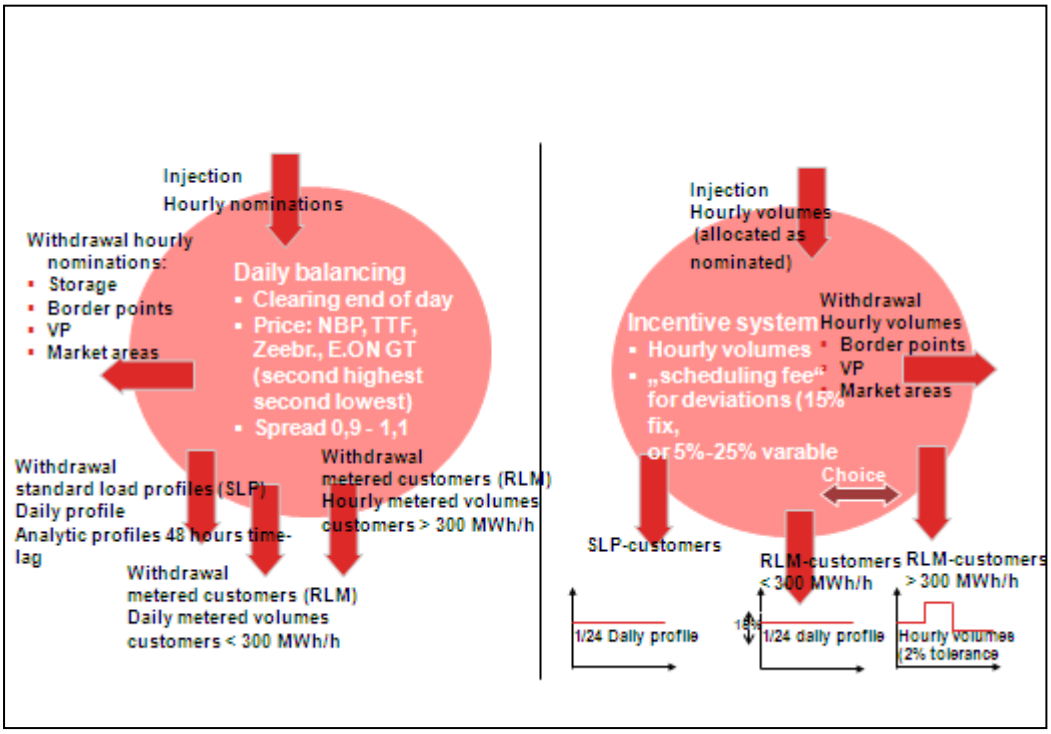

Figure 12: The model of the new German balancing system (Source: author)

The most important element is – as already mentioned - the separation of the regime for portfolio balances from the regime to ensure gas for system regulating. This was the basic idea of GEODE's proposal. Balancing is carried out on a daily basis. The application of analytical standard load profiles, with a 48 hour time-lag for the temperature data for the load profiles, is an extra bonus for suppliers of non-metered customers. As a consequence all temperature related balancing risks for shippers are eliminated.

Most shippers are relieved of the responsibility for system stability because they only have to match a flat daily profile. Network operators have to handle within-day load management to regulate the system. But although shippers (or customers) are relieved of responsibility for within-day system stability they have to bear the related cost, which is collected in the general contribution account and allocated to all shippers in proportion to their offtake. Only very large customers have individual responsibility for hourly load factoring and consequently do not contribute to the general balancing account. Industrial customers can choose between the different systems. The industrial customers that have to match the flat daily profile can opt for an hourly load factoring. And very large customers that are responsible for precise hourly load factoring can in principle switch to the matching of daily flat profiles[216].

[216] The network operator can refuse to allow this if he can demonstrate that it would lead to an unacceptable adverse effect on network stability. The option for both customer groups to switch from one regime to the other was only included in the final decision from May. The first draft allowed only smaller industrial customers to opt to the hourly system.

On May 28, 2008 the BNetzA published the final decision[217] which contained only minor changes. Some of these dealt with regulations for a transition period. This was done because network operators made clear that the management of standard load profiles and the implementation of the processes for the necessary data transfer could not be in place before October 1, 2008. Changes in the general framework included:

- The possibility for large customers to opt out of the hourly within day load factoring as long as hourly balancing was not necessary for network stability.
- A small tolerance of 2% for shippers in the system of hourly load-factoring.
- A reduction of the tolerance band for smaller industrial customers from 20% to 15%.

Most market participants accepted the new regime as a significant step in the direction of a system which facilitates competition and correctly allocates responsibilities for, and the costs of, system stability. Only the association of large industrial customers VIK, and the associations of the chemical and paper industry, had general concerns. VIK's basic argument was that this system would subsidise in particular residential customers at the expense of large industrial gas users[218]. But all groups of stakeholders had individual concerns that are listed below:

- For shippers the biggest concern was the unknown level of the general contribution for system balancing. They feared this contribution could be very high, in particular because the decision contained no specific directions about the tender processes for system gas[219]. They were also concerned that the market for system gas will be dominated by the major incumbent storage providers with foreseeable consequences for prices, i.e. very high prices.
- Network operators had two major concerns:
  - Data management is a huge challenge in particular for distribution network operators. They need new IT-systems and organisational procedures to cope with the requirements of the new systems[220].

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[217] BNetzA Beschlusskammer 7: "Beschluss in dem Verwaltungsverfahren wegen Festlegung in Sachen Ausgleichsleistungen Gas (Bilanzkreisvertrag u.a). The decision contains three parts: The decision itself and the reasons, which together run to 63 pages; an annex with the standard contract for balancing groups and an annex with the outline of the basic model for the balancing regime.

[218] See VIK, VCI, vdp: Stellungnahme der Verbände zum Festlegungsverfahren der Bundesnetzagentur zu Ausgleichsleistungen Gas vom 20.3.2008, Essen, Frankfurt, Bonn April 22, 2008, p2. "The model has some massive weaknesses. Its implementation would lead to significantly higher network tariffs for industrial users than justified by the ordinance provision of network access gas and the energy law. The main reason is that industrial customers have to bear penalties and asymmetric balancing prices for imbalances, to a much larger extent than is justified by the cost caused by these customers." One large industrial user Industriepark Wolfgang therefore started legal action against the decision of the BNetzA. The higher court of Düsseldorf (OLG Düsseldorf) will not decide before autumn 2009 on this complaint. Most observers do not think that it will be successful (see also footnote 221).

[219] Therefore most market participants were surprised when network operators published the preliminary figures for that contribution in September. From October 1, 2008 to April 1, 2009 the contribution ranges from 0.00 ct/kWh (GdF Transport) to 0.017 ct/kWh (North Germany low cal gas). The average contribution is 0.0085 ct/kWh. But these prices for the contribution were based on calculations not on experience. Many network operators emphasised they needed a lot of assumptions to calculate the contribution. A lot of shippers feared significantly higher prices in the second period. To some extent these fears were justified. A number of operators of market areas (NCG, E.ON GT, RWE Transportnetz Gas and GVS/ENI) increased the contribution significantly in some cases by 100% and above. But the overall level is still rather low. But there were also operators (GasunieD, Wingas Transport and Ontras) that left the contribution unchanged.

[220] See for examples GEODE press release of June 2, 2008: "It is stipulated that operators of local networks register volume data of the final customers during the day and pass this data to the operators of the market areas. This data transfer can't be implemented in the short-

- Regional and local distribution companies fear that their small stores – line pack and underground stores which they mainly use for short term load factoring, will be devalued. Because the operators of the market areas are in charge of within day load profiling, the main option for local and regional gas companies is to use this storage in the market for system regulating as internal or external system regulating gas. If they offer linepack they must hope that the regulator will accept the cost under the regime of network tariff regulation, but this cannot be taken for granted. The lot sizes and other conditions in the tenders for external gas for system balancing are often too onerous for smaller providers[221].

- VIK and other associations complained about the asymmetric prices for portfolio balancing. By contrast, the criticism of network operators was that instead of the highest and lowest prices in the basket, the second highest and lowest prices would be used as the reference prices. They believed that arbitrage would still be possible. Others said that the application of a basket was simply too complicated.

There are a number of additional operational problems. For example the operators of the market areas will be responsible for applying standard load profiles if the local network operators are unable to cope with this task.

Because of these challenges, no one expected that the system would be fully operational from October 2008. In particular smaller network operators had neither the management competence, nor the manpower, nor the systems, to implement the new model within the required schedule[222]. But this will be a transitory problem. The pressure on network operators is substantial since, from April 2009, the names of the network operators that are not able to cope with the system were posted on the internet pages of the operators of the market areas. And although these lists included only a very few companies, the threat of being posted gave network operators incentives to work hard to implement the system.

After the final decision was published, the associations of network operators had to adapt their co-operation agreement to the new framework. Here again is a nice little example of the interaction between the regulator and the network operators.

On June 24 2008, the associations of network operators delivered a draft version to Beschlusskammer 7, which was discussed at a meeting on July 11. At the beginning of the meeting, the head of the decision body Kurt Schmidt expressed great dissatisfaction about the

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run." Also Ontras –VNG press release of June 12: "Ontras assumes the new balancing regime will need additional staff and new IT-systems".

[221] For these reasons, two regional gas companies, Saar Ferngas and Gas-Union challenged the decision of the BNetzA in court. Most market observers do not think that these actions will be successful. Gas Union was very quiet about the initiative. Saar Ferngas said in a press release: "Network operators and the trading of local distribution companies are affected by the new model because most likely their short-term stores will be devalued and their data transfer obligations can't be implemented by October 1 2008. (see Saar Ferngas press release of July 4, 2008). The complaints will be decided by the responsible Düsseldorf court in parallel with the complaint of Industriepark Wolfgang (see footnote 218).

[222] Network operators must at the same time cope with the new incentive-based model of tariff regulation scheduled to be in place from January 2009, the implementation of the standard processes for customer switches and now the implementation of the new balancing regime. Most of them are still struggling with the implementation of the two-contract model. In summer 2008 many market sources said that most smaller network operators did not even recognise or understand the new challenges. According to one market player: "Many small network operators will simply ignore the deadline because of this overload."

transfer of the decision on the new model of balancing into the co-operation agreement[223]. During the meeting ten major issues were discussed. Later the BNetzA sent the associations a list of 30 minor additional issues. Finally the associations had to back down and changed the agreement according to the requirements of the BNetzA. The new co-operation agreement III (KoV III) was finalised on July 29, 2008.

Tenders for system regulating gas started around the end of August and the beginning of September 2008 . Two main products were tendered:

- Short-term flexibility, where gas volumes are provided for certain hours during the gas day;
- Longer-term flexibility where day-ahead gas volumes are bought or sold to balance lasting imbalances.

The terms and conditions and tendering procedures vary, not all of them completely follow the basic requirements of the BNetzA model. This may not be a disadvantage because tendering procedures for the current market phase still need still to be improved. The results showed that concerns about the potential market for system regulating might be justified:

- The first tender of Gasunie Deutschland[224] did not produce enough offers of long-term flexibility in particular for the low cal market area. One reason was the pricing system prescribed by the BNetzA[225].
- RWE Transportnetz Gas had the same experience. "The number of offers was significantly lower than expected," the company said in a press release[226].
- Even E.ON GT complained about a lack of suitable offers.

All companies repeated the tenders and changed the pricing system[227].

By the end of 2008, a "market for system balancing gas" did not exist and it will be one of the main challenges for the BNetzA to create a framework that allows such a market to develop. The issues that must be addressed include:

- Lot sizes
- Pricing systems
- Contractual arrangements

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[223] "Schmidt wondered with what "mindlessness" the associations ignore the guidelines of the BNetzA or propose contradicting regulations," the unpublished minutes of one of the associations say.

[224] In July 2008 BEB Transport & Speicher was renamed Gasunie after the Dutch Gasunie finished the take-over of the transportation activities from Shell and ExxonMobil (for a more detailed description see chapter 8).

[225] See Gasunie press release of September 3. But at least 24 companies were registered as bidders. And among the successful bidders were not only international and national gas traders but also distribution companies.

[226] See RWE Transportnetz Gas press release of September 8, 2008

[227] The critical issue concerning pricing is whether – as the regulator insists – the pricing system should be 100% commodity, with no capacity element to compensate traders for their ability to provide the necessary volumes.

- Transparency about the need of system energy and lead times for its provision.

In June 2009 the EEX started an initiative to establish an exchange based market for system balancing energy for the high cal market areas Gaspool and NCG. Day-Ahead trading (long-term flexibility) is already established and EEX proposed at a traders' workshop to introduce a rolling end-of-the-day product. At each hour the remaining hours of the day would be traded with a lead-time of two hours[228]. EEX could be technically ready to launch such a product by October 1, 2009. Discussions at the workshop showed that a number of questions need to be answered[229]. October 1 2009 is much too ambitious as a starting date. But the BNetzA in principle supports the EEX initiative. It might be an interesting approach to develop a transparent and liquid market for system balancing energy.

6.1.2.3 Summary

The change from hourly to daily balancing is a very important step for the further development of the German gas market. It shifts the main responsibility for system balancing from the shippers to the network operators. To the extent that it relieves shippers from within-day load factoring and the need to get access to storage or other flexibility instruments to cope with these tasks, the new system provides universal access to flexibility, because the network operators in charge of the market areas have an obligation to provide this flexibility for all market players. The discussion process between the regulatory authority and the different stakeholder groups demonstrated again the role of proactive local distribution companies organised in GEODE in pushing developments forward[230]. The first proposals for the distinction between portfolio balancing and system balancing were made by GEODE. The discussion process demonstrated also that the major transmission system operators finally recognised their changing role in the German gas market as independent service providers, and finally proposed the system that was adapted by the BNetzA.

The change in the balancing regime will accelerate the development of competition. It will facilitate the operation of balancing groups and decrease balancing risks. This should induce local distribution companies to opt out of the remaining "all inclusive" procurement contracts and develop more complex procurement portfolios. The Day-Ahead trading market should become more liquid because of the opportunity which it gives for portfolio balancing. Supply to most final customers, in particular residential customers, becomes much easier.

But the system is complex and the operational challenges are enormous. Perhaps the most important unknown variable is the development of a market for system balancing gas. The amount of available line pack is not really known – except perhaps by network operators. Access to storage is partly, but indirectly, opened to all market participants because it is no

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[228] See EEX presentation "Roadmap EEX: Regelenergiemarkt an der Börse", held at the 3rd trader's workshop on June 3 at Düsseldorf.

[229] One of the main problems seems to be internal organisation of network operators. Dispatchers are not traders and do not have the right to trade. Other open issues discussed were transparency, ability of traders to trade the within-day product, and trading organisation over the weekends.

[230] I have pointed out several times in this study and in my 2006 study GEODE's willingness and ability to propose innovative ideas to design the framework for network acccess.

longer used in the sales and trading market but should be offered to the network operators. How this will work, and at what cost, is not yet known.

October 2008 in particular, but also the following months, was chaotic. Shippers said that at the beginning of 2009 the situation improved. According to shippers almost all data that was provided by the network operators was wrong or incomplete. Furthermore the application of standard load profiles caused problems because the profiles did not correctly reflect the gas demand of the users[231]. BNetzA, network operators and shippers must agree on solutions to cope with the consequences for the balancing status of shippers resulting from this data chaos[232]. But I personally agree with the position of the regulator that, instead of agreeing on a transition period with the risk that implementation by network operators would be delayed, it was preferable to accept some degree of chaos and require the network operators to implement the new system on schedule[233].

The BNetzA will keep a close eye on developments. The agency has a number of options for fine tuning:

- It can reduce or widen the price spread for portfolio balancing.
- It can change the price level for the "scheduling fees".
- It can harmonise the conditions for the tender processes for system balancing gas.

The balancing regime remains a "learning process"[234]. But this is also the case in other EU countries. In principle, the new system of daily balancing and the network operator's responsibility for the within-day balancing creates a more level playing field for all suppliers in the German gas market.

6.2 The market for storage and flexibility

For many observers access to flexibility, either to enable new entrants to supply customers or for wholesale companies to optimise a procurement portfolio, is one of the remaining barriers to market entry and the further development of competition in the German gas market. In relation to short-term within-day flexibility this issue has been "solved" by the new daily balancing regime described in the previous section. But for all other seasonal load

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[231] The calculation and application of standard load profiles is a special problem related to the two-contract system and in particular to the balancing regime. The network operators may either apply analytical or synthetic load profiles. The network operators decide how to calaculate the load profiles. Most rely on profiles developed by the Technical University of Munich, but these load profiles are to some extent misleading. To optimise and standardise this issue is one of the remaining important operational tasks related to network access.

[232] Indeed network operators started late in 2008 and early in 2009 to suggest different solutions for a facilitated settlement of balancing for the first three months. In May Beschlusskammer 7 formalised these proposals and suggested for the time until April 1, 2009 a data clearing between network operators and shippers that includes: Ex post clearing of data, waiver of hourly structuring fees, settlement of portfolio balancing with symmetrical monthly average prices for portfolio balancing energy and extension of the balancing period to one month (see Beschlusskammer 7: AZ.: BK7-08-002 Mitteilung Nr. 3 zur Umsetzung des Beschlusses "GABi Gas", May 11, 2009). The first network operators started clearing balancing groups for the 4th quarter of 2008 using these proposals.

[233] Previous experience suggested that many network operators would attempt to delay implementation because they did not believe that change would really occur. But on the other hand even very experienced and competent network operators told me the deadline was very challenging. For example some had to introduce new IT infrastructure without properly testing it.

[234] Ralph Bahke from Ontras – VNG Gastransport said at a conference in October 2008: "On October 1 the learning phase and not the implementation phase of GaBi Gas started."

management, market players either need physical access to storage or to a market for flexibility. Next, I describe the latest developments in these two different sub sectors.

6.2.1 The storage sector

At the end of 2008, 47 underground storage facilities with a working gas volume of 20.2 Bcm were in operation in Germany[235]. 91% of the storage volume in 40 storage facilities is for high cal gas. Around 34% of the working gas volume is in salt caverns and 66% is in aquifers. The following graph shows the ownership structure in the storage sector.

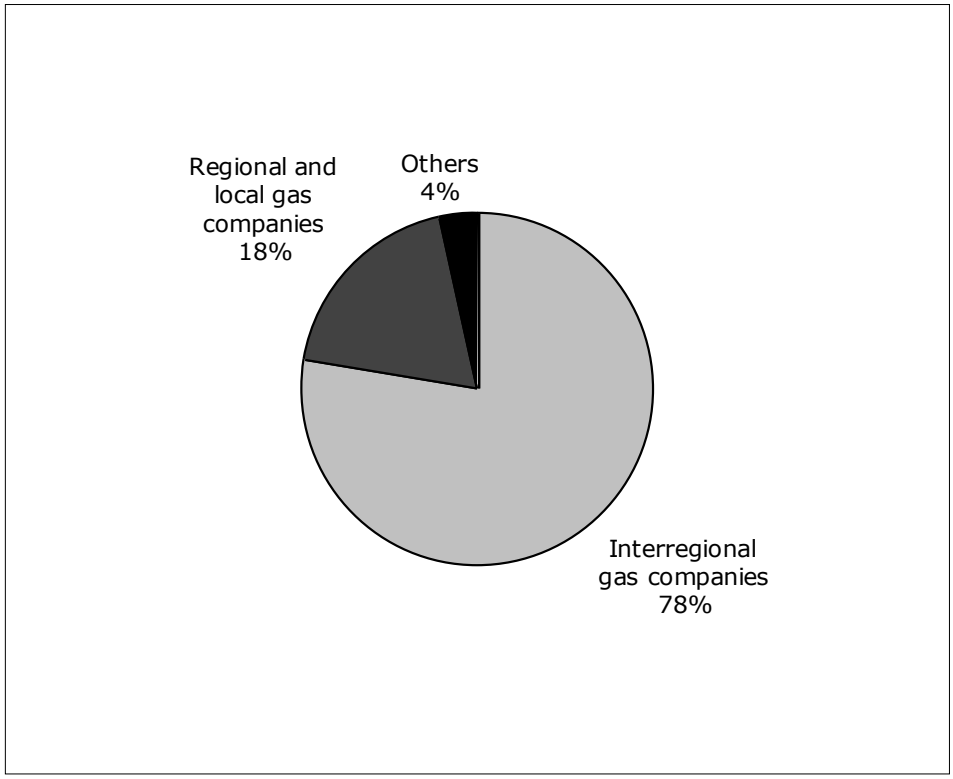

Figure 13: Ownership share of German working gas volumes in storage (Source: Sedlacek: Untertage-Gasspeicherung in Deutschland, p. 426 and 427)[236]

[235] German ministry of economics: Jahresstatistiken zur deutschen Gaswirtschaft Erlöse, Investitionen, Speicherkapazitäten. The statistics of the ministry are based on data provides to the Landesamt für Bergbau, Energie und Geologie Hannover. See Robert Sedlacek Untertage_Gasspeicherung in Deutschland, Erdöl, Erdgas, Kohle 123. Jg. 2007 Heft 11, p 422- 432. Sedlacek has been collecting and updating statistical information on storage on behalf of the Landesamt für Bergbau, Energie und Geologie of the state of Lower Saxony for many years. The publications of different years can be downloaded from the internet page of the institution http://www.lbeg.niedersachsen.de. It is the most authoritative source of data on storage in Germany. See also BNetzA: Monitoring Bericht 2008, p. 169

[236] The interregional gas companies are E.ON Ruhrgas, Wingas, BEB (storage operator for ExxonMobil and Shell), VNG and the RWE group. Among the regional and local gas companies are two E.ON affiliates (E.ON Thüringen and E.ON Hanse). The other companies are Gaz de France Erdgasspeicher Deutschland (renamed storengy Deutschland at the beginning of 2009 after the merger of Gaz de France and Suez), Essent and IVG. IVG is the operator at Etzel. The current working gas volume is leased to Etzel Gaslager consortium, where E.ON Ruhrgas (around 75%) and StatoilHydro (around 22%) are the main shareholders

Figure **13** shows that most of the working gas volume is concentrated in the hands of the major incumbents. Their incentive to release storage volume to third parties is limited. Nevertheless, as I will describe below, a secondary market for storage has emerged, although it is not a very transparent one. Access to storage in Germany is not regulated and the energy law only requires negotiated access[237]. It has little to say on storage access and is silent about which products storage operators are required to offer. Transparency requirements in the law are rather general. Most of the German storage operators committed themselves to comply with the voluntary Guidelines of Good TPA Practice for Storage System Operators (GGPSSO) that were agreed at the Madrid Forum in 2005[238]. The major German operators have complied more or less completely with the guidelines, while the regional and local distribution companies have found compliance more difficult[239].

6.2.2 Proposals for storage regulation

Although in principle there is a lot of storage capacity, hardly any working gas is available for new entrants on a firm basis. According to BNetzA statistics, only 5 of the storage facilities were not fully booked on October 1, 2008 and the working gas volume available for firm bookings was only 0.24 Bcm or 1.3% of the total working gas volume[240]. Because access to flexibility is one of the prerequisites for the further development of competition, some international and German institutions have demanded a storage release programme to make capacity available for new entrants[241]. Another proposal is to apply a "rucksack principle" (see Glossary) to storage, and assign storage volume and related injection and withdrawal capacity to every customer with temperature-related demand. If the customer switches supplier, it can transfer this "storage rucksack" to the new supplier[242]. But by mid 2009, there was no evidence of tighter regulation of storage being on the agenda. The BNetzA itself – although it bemoaned the lack of firm capacity – proposed no regulatory action in its

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[237] § 28 of the German energy law (EnWG). For the history of negotiated third party access to storage in Germany see my first study The German Path to Natural Gas Liberalisation, p. 83 – 85.

[238] ERGEG: Guidelines of Good TPA Practice for Storage System Operators, March 23, 2005.

[239] See ERGEG Final 2006 Report on Monitoring the Implementation of the Guidelines of Good TPA Practice for Storage System Operators. Ref: E06-GFG-20-3, December 6 ,2006, BNetzA: Monitoring-Bericht 2008, p. 173-178. In 2007 the German Ministry of Economics made an internal report on the compliance of 16 German operators. According to that report, compliance for 82% of the working gas volume in Germany was more than 85%. Unfortunately that report is not in the public domain. The results were presented by Bernd Protze from VNG in a presentation at a conference in autumn 2007.

[240] See BNetzA: Monitoring Bericht 2008, p. 170. The available capacity increases only slightly to 0.57 Bcm or 3.1% by April 2013. This shows that working gas volume is almost completely booked on a long-term basis.

[241] IEA: Energy Policies of IEA Countries, Germany 2007 Review, p 117: "With such a wealth of storage capacity in Germany, it should be possible to auction this service on an annual basis to all market players rather than to let companies book the majority of capacity on long-term contracts." The German Monopolkommission, a government advisory board, in its 2007 report on the gas and power market, came to the same conclusion: "Besides a temporary auctioning of significant volumes from indigenous production and long-term import contracts of interregional gas companies, the Monopoly Commission recommends a temporary auctioning of significant working gas volume of the incumbent storage operators." (own translation). Monopolkommission: Strom und Gas 2007: Wettbewerbsdefizite und zögerliche Regulierung, p. 185

[242] See Benedikt Schuler, Bettina Tugendreich: Gasnetzzugang. Grundprobleme nur mit Speicher-Rucksack zu lösen, bne Kompass 02/08 Der Druck steigt – Aktuelle Entwicklungen auf dem deutschen Gasmarkt, p 10-11. Also Benedikt Schuler, Bettina Tugendreich: Status Quo und Regelungsdefizite beim Gasspeicheruzugang in Deutschland, InfrastrukturRecht, 7/2007 and 8/2007. There are such rules for example in Belgium and France for the supply of residential customers.

monitoring report. The Monopoly Commission also did not advocate full regulation of the storage sector[243].

On the European level there also seems to be no move towards tighter regulation of the storage sector. The original proposal of the EU Commission's third energy package of September 2007 was to make the GGPSSO binding by including them in the amended EU regulation 1775/2005. This would establish legal and functional unbundling of storage operators, and enhance the powers of national regulatory authorities to oversee access to storage[244]. And although there seem to have been discussions in the European parliament about mandatory regulated access, the final agreement on the 3rd energy package did not go beyond the original proposals.

The next section deals with some developments in the storage sector towards more supply of flexibility that may be sufficient for the further development of the German gas market:

- Investment in new storage capacity is taking place.
- A secondary market for storage has emerged.
- Flexibility products are being offered.

6.2.3 Investment in new storage capacity

In principle there are many possibilities to develop new storage capacity. Particularly in north Germany there are many potential salt caverns, aquifer formations and depleted gas fields. In locations where salt cavern storage facilities already exist, such as Epe or Etzel, more caverns can be developed and the necessary approvals and technical facilities to receive water and offload the brine are in place[245]. In the 2006 study, a number of new storage projects at different stages of planning and construction were listed. Since that study was published, the list has become much longer, as shown in Table 4.

[243] See Monopolkommission: Strom und Gas 2007: Wettbewerbsdefizite und zögerliche Regulierung, p. 184. Although the monopoly is very critical about the status quo in the storage sector it argues: "Taking into account the recent positive development in investment in storage by local and regional gas companies and trading companies, the monopoly commision thinks a regulation of storage is currently not justified."

[244] See Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/55EC concerning the common rules for the internal market in natural gas, explanatory memorandum, p. 16-17.

[245] At Epe the Salzgewinnungsgesellschaft Westfalen, an affiliate of the Belgian chemical company Solvay is constantly leaching caverns because the salt brine is used in chemical plants. The leached caverns are offered for gas storage. At Etzel IVG thinks it can develop 60 more caverns in addition to the 70 caverns that are already leased (see IVG annual report 2008, p. 24).

Location	Operator	Working gas volume (Bcm)	Storage Type	Status
Kiel Rönne	Stadtwerke Kiel/DONG	0.07	Salt cavern	Extension of existing storage. In operation 2012. DONG and Kiel founded a joint venture. Each company will use half of the working gas volume.
Peckensen	Storengy	0.06 0.08 0.08 0.08	Salt cavern	EEG already operates one salt cavern. The second cavern will be in operation in 2009 (leased to GdF). The third will be in operation in 2011 (leased to DONG). A fourth and fifth cavern will be in operation in 2013 and 2014. Five more caverns can be developed.
Moeckow (Mecklenburg Vorpommern)	EWE	0.5 - 1	Salt cavern	Planning. Start of construction not before 2010.
Hinrichshagen	Gazprom Germania	Up to 5	Aquifer	Planning. Investment decision earliest in 2009.
Schweinrich	Gazprom Germania	8 - 10	Aquifer	The storage project was stopped in August 2009..
Sewekow	Gazprom Germania	Up to 10		Very early planning stage
Bernburg	VNG	0.20	Salt cavern	Extension of existing storage. In operation 2011.
Bernburg	VNG/Gazprom	0.5	Salt cavern	Development step by step until 2022.
Etzel	Etzel Gaslager Consortium (E.ON Ruhrgas, StatoilHydro)	0.6	Salt cavern	Conversion of caverns from oil to gas storage.
Etzel	E.ON Gas storage	2.5	Salt cavern	In operation from 2011 step-by-step.
Etzel	BP/DONG/Gaz-prom	0.5	Salt cavern	BP/DONG/Gazprom founded a joint company for the operation. Each company will have access to 2 caverns (around 0.16 Bcm). The companies have an option for six more caverns. The store will be connected to Bunde. (The three companies plus EdF and EnBW founded a joint pipeline company.)
Etzel	EdF Trading/EnBW	0.3	Salt cavern	See above. The companies also have options for further caverns.
Etzel	OMV	0.2	Salt cavern	Although neither OMV nor IVG officially confirm the deal, sources close to OMV confirm that the company has leased four caverns at Etzel
Jemgum	Wingas	1.2	Salt cavern	First construction steps (preparation of leaching). In operation from 2013 – 2016 stepwise. Marketing of first caverns (300 million m^3 working gas volume) started in mid 2009.
Jemgum	EWE	0.4	Salt cavern	First construction steps (preparation of leaching). In operation from 2013. Marketing of first caverns (150 million m^3 working gas volume) started mid 2009.
Jemgum	E.ON Gas	n.a.	Salt cavern	E.ON Gas Storage announced the project in September 2008 without

Location	Operator	Working gas volume (Bcm)	Storage Type	Status
	Storage			further details.
Nüttermoor	EWE	0.14	Salt cavern	Extension of existing storage.
Epe	Trianel	0.13 0.11	Salt cavern	First three caverns in operation October 2008. Fourth cavern in operation 2009.
Epe	Essent	0.2	Salt cavern	In operation since 2005. Currently only connected to the Netherlands. Connection to the German network under negotiation with German network operators (low cal gas).
Epe	Essent / RheinEnergie	0.2	Salt cavern	In operation 2010. Essent and Rheinenergie founded a joint venture (51% Essent) (low cal gas). Mid 2009 RheinEnergie left the project. Essent will continue.
Epe	Nuon	0.14 0.08	Salt cavern	First phase in operation 2007. So far only connected to the Dutch network. Connection to the German network 2009(low cal gas). Nuon has the option to develop more caverns.
Epe	Gelsenwasser/ Dortmund/ Bochum	0.2	Salt cavern	In operation 2012.
Epe	Eneco	0.2	Salt cavern	In operation 2012. Only connected to the Dutch network (low cal gas).
Epe	RWE	0.07	Salt cavern	Under construction. In operation 2010.
Epe	EnBW	0.1 – 0.2	Salt cavern	Details about the project are not known.
Haidach	RAG/Wingas/ Gazprom	1.2	Depleted gas field.	1.2 Bcm in operation since 2007. Second stage in operation 2011.The Austrian storage is connected to the Austrian/German border point Burghausen.
Anzing	Storengy	0.165	Reservoir	Planning
Wielen	Storengy	0.180	Reservoir	Planning
Behringen	Storengy	1	Reservoir	Planning
Ohrensen	Storengy	0.4	Salt cavern	Four caverns in operation step-by-step from 2015. Marketing for first two caverns started mid 2009.
Empelde	Stadtwerke Hannover	0.11	Salt cavern	Extension of an existing storage. In operation 2015.
Wolfersberg	RWE Dea on behalf of Bayerngas	0.04	Depleted gas field	Extension of existing storage. In operation 2010.
Kraak	E.ON Hanse	0.12	Salt cavern	New cavern at an existing location.
Seven-Fields	E.ON Gas Storage/RAG	1.7	Depleted gas fields	First phase (1.1 Bcm) in operation 2011. Second phase in operation 2014. Further potential of 0.35 Bcm working gas volume.The store is physically located in Austria, but connected to the German network.
Total		Around 26 – 28.6		

Table 4: New storage projects related to the German market (Sources: GSE database, Sedlacek, author's research)

Figure 14 shows the major locations for storage investment

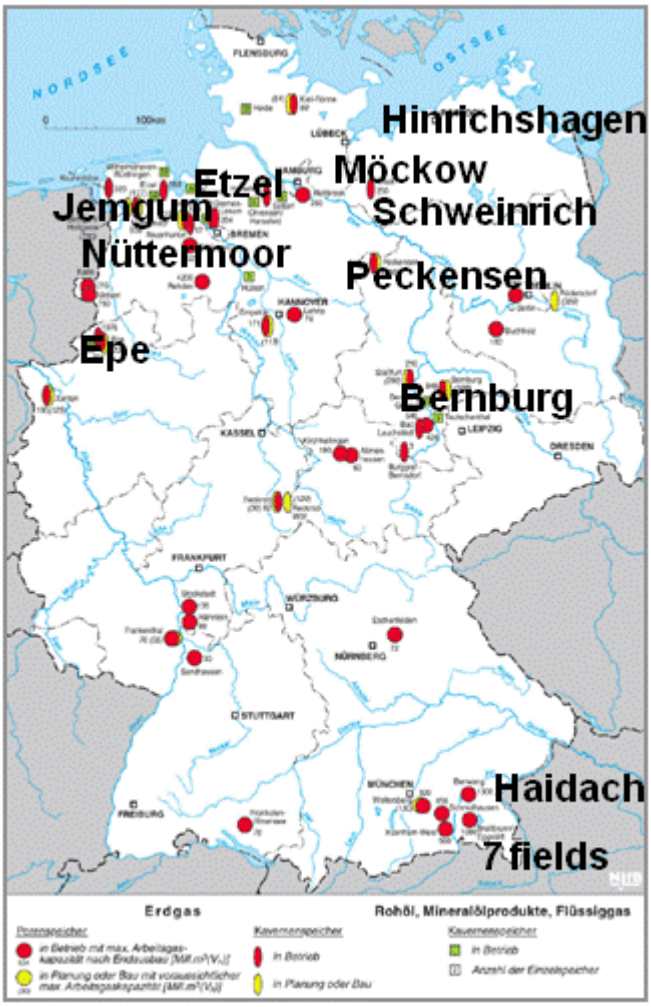

Figure 14: Storage locations in Germany and locations for new investment (Source: Sedlacek with additions by the author)

If all the projects in Table 4 were to happen, and taking into account the relevance of the Austrian storage facilities Haidach and Seven-fields for the German market, working gas volumes would more than double. Even leaving aside the two giant Gazprom projects – although Gazprom is working seriously on the projects and committed to complete at least one[246] – working gas volume will increase by more than 50% over the coming years[247].

There are two major reasons for the large number of storage projects in Germany:

- The expectation of increasing demand for flexibility in northwest Europe, because flexible sources of supply (in the UK, Netherlands and Germany) are decreasing and more baseload supplies from more remote sources will be needed to replace them.

[246] Obviously the Gazprom projects are related to the Nord Stream pipeline project.

[247] In particular against this background there is no serious discussion about a need for strategic storage in Germany.

- Storage is an important element of a portfolio that enables wholesale companies to organise procurement flexibly and independently, and allows them to offer full–service to end-customers.

Although the major German incumbents are among the investors, Table 4 shows that investment in storage is possible for new entrants. Among the other companies that are working on projects is Gazprom (the largest producer of gas in the world), but also local distribution companies like Gelsenwasser or traders serving local distribution companies like Trianel that develops projects on behalf of its shareholders[248]. At some of the major locations for the development of salt caverns like Epe, Etzel or Peckensen the owners of the mining rights are developing storage facilities for the market, i.e. in principle any market player can book storage capacity on a long-term basis[249]. But in all new projects capacity is offered to the market. For example a major incumbent like Wingas has offered storage capacity at (its Austrian facility at) Haidach for third parties[250] and started to offer capacity to third parties in its new Jemgum project. But although investment in new projects is in principle possible, major problems remain for new entrants in this sector. Connection of new facilities to existing pipeline is usually possible but booking of firm exit and entry capacity has been refused in several cases[251].

Investment in new storage projects takes time. The first new projects started operating in 2008, but most of them will not be in operation before 2010 and therefore are not available to cope with short-term flexibility requirements. But since 2006, a small but growing secondary market for storage capacity has developed.

6.2.4 The secondary market for storage

February 2006 saw the start of an electronic platform for the secondary trading of storage capacity. It was created by E.ON Ruhrgas and VNG Verbundnetz Gas under the name "store-x". But it was not until February 2007 that the first auction took place. And it was again E.ON Ruhrgas which made the first move. On February 16, 2007 the company auctioned 20 lots, each with a working gas volume of 10 million m^3, a maximum withdrawal capacity of 8,350 m^3/a and a maximum injection capacity of 2.982 m^3/h. Duration was April 1, 2007 to April 1, 2008. There were some restrictions on the flexibility of capacity usage. For example the volume could be cycled only once and physical storage characteristics restricted withdrawal rates below a certain working gas volume. The starting price for each lot was 1

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[248] Trianel European Energy Trading has founded a separate storage investment company, Trianel Gasspeichergesellschaft mbH & Co KG. 13 local distribution companies are shareholders in this company and will get a share of the storage.

[249] The business models are different in different locations. At Epe, Salzgewinnungsgesellschaft an affiliate of the Belgian chemical group Solvay, is using the brine for chemical processes. The leached caverns are leased on a long-term basis for gas storage. The companies that lease the empty caverns are responsible for preparing the caverns for gas storage and investment in the technical equipment. At Etzel, the real estate company IVG is offering different models for the development of salt caverns. Gaz de France Erdgasspeicher Deutschland is developing and operating caverns and offering to lease the storage volume and related injection and withdrawal capacity; the fourth and fifth caverns have been auctioned. One of the two successful bidders is a joint venture of German utilities.

[250] But although the storage is connected by a pipeline to the German border point at Burghausen, firm entry capacity into the German network is not available, which makes booking of capacity at Haidach not very attractive.

[251] Essent, Nuon and RheinEnergie are complaining about these problems, in particular with E.ON GT. But Trianel has had similar problems (for a more detailed description see section 7.2).

million Euro. The storage characteristics and the starting price were roughly in line with E.ON Ruhrgas' standard service offers on its web page, but without any capacity availability.

This auction was part of E.ON's market initiative, which also included the merger of market areas. The main purpose was to support short term trading at the E.ON GT virtual trading point. A number of traders had complained that the lack of available storage volume was one of the impediments to the development of trading activities. Demand for the auctioned lots was huge. 29 companies took part and seven were finally successful. Because store-x was initially not a perfect tool for simultaneous auctioning of such a number of lots, the final minutes of the auction became a little chaotic and a single clearing price was not achieved[252]. The lots were sold in a price range between 1.426 million and 1.607 million Euro. As always after auctions of gas or storage capacity, market players had very different opinions about the clearing prices. Some argued the summer/winter spread at that time did not justify such high clearing prices, but nevertheless some international and German trading companies were among the successful bidders. Also successful were at least two German gas trading companies that purchased storage volume on behalf of local distribution companies as part of their procurement portfolio. One was Syneco, the trading affiliate of the Thüga Group, which acted on behalf of some of its shareholders[253] and the other was SüdWestStrom that was starting at that time to develop a portfolio approach to gas purchase[254].

The high prices show the demand for flexibility at that time, and the successful participation of Syneco and SüdWestStrom shows the ability for pro-active groups of distribution companies to get at least some access to flexibility.

During the rest of 2007 a number of very small storage packages were offered at store-x, usually not using an auction procedure but a fixed price or a similar mechanism. These small volumes were usually sold minutes after the offer was published. In 2008, momentum in the secondary market increased when a number of auctions were made on store-x. RWE Trading started with an auction of eight lots, each with a working gas volume of 100 million kWh with a three-year duration. Although the characteristics of the product were criticised by a number of market players as insufficiently flexible,[255] 18 parties finally took part in the

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[252] In principle it worked like an Ebay auction. But because bidders had to bid separately for each lot and response times of the system were slow towards the end of the auction, a number of traders reported afterwards that they used several computer screens and were still finally not sure whether they had been successful. For a very critical appraisal of the auction and a description of the technical deficits see Benedikt Schuler: Speicherauktion als Prüfstein potenziell diskriminierender Zugangsmethoden, Energiewirtschaftliche Tagesfragen, ET 6/2007.

[253] Interestingly Thüga is controlled by E.ON Ruhrgas, which took over control from E.ON after the take-over of Ruhrgas by E.ON. In theory E.ON Ruhrgas should be able to force Syneco and its shareholders not to opt out of traditional procurement strategies, but many of the roughly 110 distribution companies in which Thüga has shareholdings and Syneco always acted more or less independently of E.ON and later E.ON Ruhrgas. In most cases Thüga only has minority shares and the operational independence of these LDCs was always the major element of the so-called "Thüga model". This model may not fit any more with the targets of the E.ON group, and in 2008 the group started attempts to sell Thüga or parts of it.

[254] Südwestdeutsche Stromhandelsgesellschaft (SüdWestStrom) was founded in 1999 by 30 local distribution companies as a power trading company. In 2007 the activities were extended to gas trading and gas portfolio management. In the gas sector SüdWestStrom relied mainly on the expertise of the Swiss company Metanopoly AG. Metanopoly was founded in 2006 by the German gas trader Peter Becke. He is one of the most experienced traders in the German market, and with his support SüdWestStrom developed a portfolio of around 7 TWh on behalf of a group of 10 local distribution companies. The portfolio included in the gas year 2007/08 flexible supply contracts, monthly products from the OTC market and the E.ON Ruhrgas storage for peak flexibility.

[255] Volumes can be nominated only daily without within-day re-nomination. The storage volume can only be cycled once during each storage year. At the end of each storage year the storage must be completely empty. For volumes left over RWE Trading pays only 20% of the market price. The use of withdrawal is constrained below a certain percentage of remaining working gas volume, depending on the physical storage characteristics.

auction and all lots were sold to five bidders. But this time the premium on the starting price of 2.775 million Euro (for the three-year period) was almost negligible and ranged between 4,500 and 30,000 Euro. It was the last auction where all lots were sold. The next table contains all auctions in 2008 and also for comparison the E.ON Ruhrgas 2007 auction. Two price assessments are made:

- A price in Euro/MWh is given. This price expresses the basic value for traders that want to use the storage to arbitrage the summer/winter price spread on the OTC market.
- A price in Euro/KW is given. This price expresses the basic value for companies that want to manage their winter demand. This price can be compared with the capacity price in the traditional procurement contracts of distribution companies, which is mainly the price for load management.

Com-pany	No. of lots	De-livery point	WG (GWh)	WC (MW)	Dura-tion in years	Base price (mil. €)	Prem. (mil. €)	Sold lots	Price in Euro/ KW	Price in Euro/ MW h
E.ON Ruhr-gas	20	E.ON GT VP	110	92	1	1.0	0.5	20	16.3	14
RWE Trading	8	E.ON GT VP	100	75	3	2.775	0.015	8	12,4	9
RWE Trading	4	E.ON GT VP	100	75	1	1.05	0.007	3	14	10.5
RWE Trading	4	BEB-VEP	100	75	1	0.95	0.004	1	12.7	9.5
RWE Trading	2	Ontras VP	100	75	1	0.95		0	12.7	9.5
Exxon	25	BEB VEP	160	75	1	1.2	0	7	16	7.5
Nuon	10	E.ON GT low cal	12.5	50	3	1.455	0	1	9.8	39.2

Table 5.: Storage auctions in Germany(Sources: Company releases and store-x. E.ON Ruhrgas February 16, 2007, RWE Trading February 18, 2008 (eight lots E.ON GT VP) and March 7, 2008 (ten lots E.ON GT VP, BEB VEP, Ontras VP), ExxonMobil April 23, 2008, Nuon May 27, 2008)[256]

The table shows that only the 2007 E.ON Ruhrgas auction and the first RWE Trading auction were complete successes. In particular all auctions where the delivery point was not the high cal virtual trading point of E.ON GT were a failure. The "wrong" delivery point was one of the reasons for the failure. Only the E.ON GT VP was liquid enough to attract a sufficiently large number of traders, and to allow the combination of a portfolio of gas from storage and volumes bought at the virtual trading point.

[256] WGV is working gas volume and WC withdrawal capacity. Duration of the Nuon lots started on April 1, 2009. The design of the products showed some differences.

There were always discussions after the auctions as to whether the market situation justified the price, either for arbitrage or load management. In almost all auctions, trading-oriented and procurement–oriented companies participated. If one compares the three simultaneous auctions of RWE Trading at the E.ON GT, Ontras and BEB virtual trading points it seems that traders saw opportunities at the E.ON GT VP to earn money, while this was not the case at the two other hubs. And in 2006, companies were willing to pay 16 Euro/KW to manage peak load at the E.ON GT VP but were not willing to pay the same amount in 2007 at the BEB-VEP (ExxonMobil auction)[257]. Over the same period, distribution companies paid around 13 – 15 Euro/KW for load management in traditional procurement contracts[258]. Particularly disappointing in this respect was the Nuon auction, where a product specifically for peak shaving was offered at a rather low price, compared to the capacity price in procurement contracts. But without a market for low cal gas, local distribution companies were not prepared to develop a portfolio-management strategy for procurement. And suppliers such as Shell, Essent or GdF/Suez, that offer gas in the low cal market, had other sources of flexibility.

But if one looks at the second RWE Trading auction at the E.ON GT VP it seems to be that, even in the most liquid German market area, the demand for flexibility was limited. Only three of four lots were sold, although the clearing price in capacity terms was only 14.00 Euro/KW. Obviously product specifications were one factor, but also in comparison with 2006, there was less demand. One of the reasons might have been that, starting in 2007, as well as at auctions, storage began to be offered bilaterally by a range of different market players. This was not a transparent business but at least provided a greater variety of options[259]. There are constant rumours in the market that not only trading companies like Vitol or Enoi are offering storage, but that Gazprom Germania or its trading affiliate ZMB is also offering storage products from time to time. ZMB has at least a department responsible for such business[260]. Although Vitol and Enoi officially do not talk about their business they confirm informally that they are offering virtual storage products. Trianel has also started to offer storage products after its Epe storage began operating.

But increasingly flexibility became available indirectly through a variety of flexible gas products offered in the market as well as from storage.

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[257] In fact some market participants said that they would have much preferred the ExxonMobil auction to have taken place at the E.ON GT VP.

[258] This is only a rough estimate. The traditional contracts contain a capacity charge, which mainly covers transportation and load factoring for maximum hourly or daily capacity, either booked from the supplier or utilised.

[259] For example natGAS, one of the most successful new entrants, said explicitly that it could start in 2007 to offer supply contracts to distribution companies that covered total gas and flexibility requirements because the company had acquired storage on the secondary market. No details have been released, but most likely it was supported by its shareholder Vitol. Like some other trading companies, in 2005 Vitol booked storage from BEB. At that time BEB offered a significant part of its storage portfolio to third parties. VNG also sold small storage volumes to third parties.

[260] In October 2008 ZMB hired the former natGAS executive board member in charge of sales Detlef Weidemann. Weidemann is in charge of gas sales and storage marketing at ZMB. When this paper was finished a clear marketing strategy of ZMB was not yet visible.

6.2.5 Flexible gas products

6.2.5.1 E.ON Ruhrgas gas release programme

6.2.5.1.1 The release programme – a source of flexibility

From 2003 to 2008, one of the most fascinating events for international and German gas players each May was the E.ON Ruhrgas gas release programme[261]. It had the same routine every year:

- A Summary Information Memorandum was published in February.
- Around 60 interested companies registered for the auction, received the complete information memorandum and took part in the bidders' conference (including good food!).
- Between March and May, traders speculated about the correct clearing price.
- The auction took place during May.
- After the auction many market players expressed astonishment about the level of the clearing price, followed by a game of "guess the successful bidders".

The auction conditions remained more or less unchanged for the last five rounds of the auction with two exceptions:

- Starting from 2006, E.ON Ruhrgas offered all successful bidders firm exit capacity from the E.ON GT system at every exit point. The provision of firm exit capacity was enforced following a complaint to the BNetzA by EnBW Trading [262].
- The formula for the base price was changed slightly in 2007 taking into account developments during 2004 – 2007[263].

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[261] For a general description of the reasons for the E.ON Ruhrgas release programme and its conditions see Lohmann 2006, p. 124 - 126

[262] During the first three rounds, E.ON Ruhrgas offered firm transportation capacity only in cases where former customers of E.ON Ruhrgas were supplied with gas purchased in the auction. EnBW Trading bid successfully for a number of lots in the 2005 auction and sold the gas at Zeebrugge. EnBW Trading had only interruptible exit capacity at the German-Belgian border point Eynatten and was interrupted during late autumn 2005. As a result EnBW Trading could not deliver the gas at Zeebrugge and lost a significant amount of money. The company started a formal complaint at the BNetzA arguing that, according to the energy law, and the conditions in the ministerial approval for the gas release programme, E.ON Ruhrgas was obliged to offer firm capacity. The BNetzA decided in favour of EnBW Trading (see BNetzA, Beschlusskammer 7, Az: BK7-06-008, 05.05.2006). And although the decision legally only applied to the particular case of EnBW Trading, in the subsequent auctions, E.ON Ruhrgas offered firm exit capacity to all successful bidders at all possible exit points.

[263] The price formula since 2004 was given in my first study. For the sake of completeness, here is the amended price formula: P = P0 + 0.0030 * (GO-GO0) + 0.00175 * (FO-FO0) ct/kWh. P0 = 2.07252 (determined as 95 % * 2.1816, BAFA value December 2006). GO = the arithmetic average of the daily quotations for Gasoil 0.2 PCT FOB Barge Rotterdam in US-Dollar in the "Platt's Oilgram Price Report". The average is taken of the eight months ending one month prior to each Recalculation Date. Recalculation is done every second month starting from January. The quotations in $US are converted to Euro with the monthly average exchange rate published by the European Central Bank. GO0 = 478.811 Euro/ ton. FO = the arithmetic average of the daily high and low quotations for fuel oil 1 PCT FOB Barge Rotterdam in $US/ton as published in the "Platt's Oilgram Price Report"of the four (4) values of the product FUELOIL multiplied by $US. The average is taken for the four months ending immediately prior to each Recalculation Date for FO. Recalculation Date for FO is the first day of each delivery month. FO_0 = 214.082 Euro/ton

The following table shows my assessment of the results of each auction.

Year	2003	2004	2005	2006	2007	2008
Location	Emden	Waidhaus	Emden	Emden	Waidhaus	Waidhaus
Number of lots sold	15	35	39	39	33	32
Number of bidders	2	7	7	7	13	7
Auction bid component (Euro/MWh)	0	0	1,001	6,002	2,85	3,651
Bidders and numbers of lots						
actogas					1	
Bayerngas		7 - 9			1	
BP	11	3 - 5		8-13	3	< 5
Centrica						< 5
Citiworks		2				
Dong			4			
EdF Trading		1				
EGL			4			
Electrabel			13	5		>5
EnBW Trading		4	6			
Energie E2	4					
Essent				5		
Gaselys		3				
Iberdrola					1	
Nuon			4	7 -12		
PCC Energie				2		
Sempra			5	3	3	>3
Syneco					3	3
Total					No figure	
Trianel					1	
Vitol		13	3	4	3 - 5	
VNG					No figure	

Table 6: Results of E.ON Ruhrgas' gas auctions 2003-2008, Source: author[264]

In terms of access to flexibility, the last two rounds of the auction are interesting. The auction product contained the following flexibility:

- The annual take-or-pay obligation for each lot was only 80% of the total annual contract quantity.
- Daily volume could be reduced to 50% of the daily contract quantity (annual contract quantity divided by 365).

During the first four rounds this flexibility played a minor role in the calculations of traders. Their benchmark price was the price at the liquid European trading hubs and the final clearing price (basis price plus auction bid component) mainly mirrored market prices at the

[264] E.ON Ruhrgas only published the number of lots sold and the number of successful bidders after each auction. My assessment of the clearing price and the successful bidders is based on market research. Reliable information about the clearing price became known very soon after each auction and was published by a number of specialised newsletters. Information about successful bidders was always more opaque.

time of each auction[265]. The 2007 and 2008 auctions took place after OTC Trading began to develop and gas volumes were, in principle, available at the German market. Although the auctions were made at Waidhaus, the volumes were delivered at the virtual trading point. The auctions took place at a time when distribution companies were starting to change their procurement strategies (as described in chapter 5). Companies were therefore looking for some flexibility to manage their gas portfolios and traders were looking to sell more flexible products to distribution companies. The prices at the OTC markets at the time of the last two auctions did not justify any significant premium on the base price. Nevertheless Table 7 shows that in 2007 and 2008, prices of 2.85 and 3.65 Euro/MWh respectively were achieved. Successful participants confirmed that these prices reflected their valuation of flexibility, but as always, there were different opinions as to whether this was the right price for flexibility. At least one of the bidders in the most recent auctions emphasised the importance of flexibility for establishing a sales portfolio. Another interesting feature of particularly the 2007 auction, but also to a lesser extent in 2008, was that it was impossible to identity all successful bidders[266]. In 2007 the number of successful bidders was unusually high. It is likely that a number of distribution companies are among the unidentified successful bidders, because they are not part of the usual trading community.

The willingness to pay these prices for flexibility demonstrates both demand for the product but also the opportunity to meet this demand by utilising the E.ON Ruhrgas gas release programme for a transitory period.

[265] This is a simplified assessment for the following reasons: Market prices on the different more liquid hubs TTF, Zeebrugge and NBP differ, and the ability of bidders to ship gas to these different markets (and the related costs) were also different. Therefore the market value for different parties was different. Some of the successful bidders had a specific interest in supplying customers in Germany; others had different priorities and were principally interested in flexibility.

[266] As already described, E.ON Ruhrgas never released the names of the successful bidders. But intensive discussions among trading companies after the auctions usually gave a rather accurate picture about the distribution of lots among players.

Did the auctions increase liquidity and foster competition in the German gas market – the targets mentioned in the ministerial allowance.[267] When the obligation was placed on E.ON Ruhrgas, network access was based on a point-to-point system, trading points were not established; trading virtually did not exist. Trading only became established in late 2006 and has become more visible since October 2007. The drivers were not the volumes from the gas release programme, but the introduction of entry-exit-systems and the establishment of virtual trading points. E.ON GT with the merger of the three high cal gas market areas and E.ON Ruhrgas with a more pro active trading strategy and support for short-term gas trading, were mainly responsible for the changed market conditions and the more positive environment for trading activities, as described in this study. The success of each annual gas auction depended more on the possibility of bidders selling gas at liquid trading hubs. For example before the 2004 auction, a number of players needed to take a position at Waidhaus, taking into account the transportation constraints at that time. Vitol – for many observers very surprisingly – took that risk and managed to ship most of the gas to the more liquid trading hubs at Zeebrugge and TTF. It was rumoured that E.ON Ruhrgas provided firm transportation capacity to the west but also to Italy after the auction. The 2004 Waidhaus auction also saw the establishment of a small secondary market, but this was never the nucleus for a more liquid and transparent trading hub at Waidhaus.

But although – as explained - particularly between 2003 and 2006 the auction prices were compared with prices at the trading markets TTF, Zeebrugge and NBP, and a significant part of the volumes were sold in these markets (in addition volumes were shipped to Italy and France), the gas release program had an impact on competition in Germany. After the 2004 auction an increase of competition in South Germany took place: BP intensified its sales activities in Bavaria and Baden-Wuerttemberg; EcoSwitch and natGAS bought volumes at Waidhaus on a secondary market and sold these volumes in south Germany. But the effect was limited because the volumes were rather small. The 2005 and 2006 auctions were used by Sempra and PCC Energie to procure volumes (and flexibility) to supply end customers - consistent with the intention of the ministerial allowance (see footnote 267). Sempra's sales volumes in Germany, even in 2007, did not exceed 3.5 TWh and PCC's were much lower. But Nuon also sold at least part of its volumes in Germany. This demonstrates again the limited impact, but the above description of the 2007 and 2008 auctions regarding the incentives of the bidders shows that it was not so much the volumes – as assumed in the ministerial allowance – as the flexibility which had an impact on competition.

[267] See Der Bundesminister für Wirtschaft und Technologie Gesch.-Z.: 1 B1 – 22 08 40 /129 Verfügung auf Erteilung der Erlaubnis zu einem vom Bundeskartellamt untersagten Zusammenschluss von Unternehmen (ministerial allowance) of July 5, 2002, p. 92: "Furthermore E.ON is obliged to offer gas volumes procured by Ruhrgas to the market in an auction procedure (gas release). Ruhrgas has by far the biggest share in German gas imports and is market dominant in the market segment of interregional gas companies. According to the German antitrust authority the takeover by E.ON strengthens this position. To ease this constraint of competition it is justified to introduce an obligation that allows competitors in the interregional and regional market segment direct access to a part of Ruhrgas' volumes. **This will increase liquidity in the German gas market and stimulate competition** (emphasis H.L.). A number of companies involved in the procedure – in particular companies that do not import gas themselves – demanded such a gas release programme. In addition the monopoly commission assumes that a release of Ruhrgas' import capacity through an auction procedure is suitable to initiate competitive procedures."This first allowance was amended (see my 2006 study p –110 – 118) and the conditions for the gas release programme were tightened. Most important was an increase of the overall volume from 75 TWh to 200 TWh. The second ministerial allowance of September 18, 2002 says (p. 46): "It is expected that the release of gas volumes in the mentioned magnitude (200 TWh H.L.) will have a noticeable market impact. In particular market entry for companies that do not have their own gas available is facilitated. Therefore this magnitude is necessary and sufficient from the perspective of competition."

To conclude, the final lesson of this episode is that proper framework conditions and the market behaviour of the major players is much more important for the development of the market than gas release programmes. The assumption of the ministry of economics that a gas release programme of 200 TWh would have "a noticeable impact on competition" (see footnote 267) was false.

Box 3: Assessment whether the E.ON Ruhrgas gas release programme was a success

6.2.5.2 Other flexible products

Gas traders offer gas products with a flexibility similar to the flexibility of the E.ON Ruhrgas gas release programme at the major German virtual trading points. Some of these trading companies took part in the auctions, others provide the flexibility from their portfolio. But they also offer flexibility products with a different design. Like the bilateral secondary market for storage it is not a transparent business, but it offers further options. One transparent example is the offer advanced energy trading (aet) made in mid 2009[268]. The Munich based energy trader offered distribution companies and industrial gas users at the NCG VP flexible gas volumes. In total 50 lots each with an annual volume of 17,520 kWh were offered in an auction procedure. Minimum take-or-pay is 80% of the annual volume. The daily flexibility is 50% of the average daily volume of 48,000 kWh without any further restrictions on hourly nominations, i.e. hourly nominations can be between 0 and 2,000 kWh. The maximum hourly volume can be exceeded by 1%. The contract is offered with durations of one or two years from October 1, 2009. Companies could choose between three different pricing systems for the basis price. As a first option a link to Rotterdam quotations of gas oil (GO) and fuel oil (FO) is offered with the following formula: 0.22 + 0.00329*GO + 0.00174*FO ct/kWh. Gas oil is adapted following an 8/1/2 rule and fuel oil following a 4/0/1 rule. The second option is a link to the average German border price (GUEW) published by BAFA. The price formula is: P_GUEW + 0.28 ct/kWh. Thirdly a link to the traditional statistical quotations for German gas oil (HEL) is possible. The pricing formula is: 0.35 + 0.0477*HEL ct/kWh. HEL is adapted following a 6/1/3 rule.

Another example is a Trianel product offered since February 2009. Trianel offers under the label "Offener Vertrag Gas" a pure flexibility product based on Epe storage capacity. The customer procures itself or using Trianel portfolio management flat volumes. Trianel is offering a 20% tolerance on the forecast annual demand. The management of the load factoring, demand forecast and management of the balancing group is provided by Trianel. Missing volumes are bought, excess volumes sold at predefined EEX price quotations. The customer pays for the product a service fee related to the load factor of its demand.

6.2.6 Developments in the primary market for storage in late 2008/early 2009

Developments in late 2008 and early 2009 related to the primary market for storage confirm the view that the market for storage and flexibility has some emerging dynamics. Again, E.ON Ruhrgas was involved. The German gas major reorganised the storage business from mid August 2008 in a separate storage company E.ON Gas Storage. In December 2008 E.ON

[268] For a short description of aet see chapter 5.2.1

Gas Storage announced a new marketing concept for storage capacity. Until then E.ON Ruhrgas had offered one standard bundled service based on the complete storage portfolio including the necessary transportation (system storage). But this was more or less a formal offer because the capacity was completely booked. Since December 2008 E.ON Gas Storage has offered bundled services for each storage facility separately, taking into account different storage characteristics (salt cavern, depleted gas fields). Perhaps more important, E.ON Gas Storage has offered a total of 5 TWh of working gas volume to the market[269]. Capacity was offered for four different storage facilities (salt caverns at Etzel and Epe, depleted gas fields at Bierwang and Breitbrunn) with contract durations of one year, three years and fifteen years. Terms and conditions were judged by most market participants as fair and the mid-term and long-term bundled services at Etzel, Bierwang and Breitbrunn were booked around one month after the launch[270]. The one year capacity was auctioned on the platform for secondary trading of storage capacity store-x on March 3, 2009, but only one of the total of 28 lots was sold in the auction. This lack of demand also demonstrates that there was no extreme shortage of flexibility at the beginning of 2009. E.ON Gas Storage is committed to offer the market more storage capacity over the next years and according to the first impression of market players it is looking for services the market wants and is customer oriented[271].

BEB Erdgas und Erdöl the storage company of ExxonMobil and Shell also tendered primary storage capacity in March 2009. 230 million m^3 were offered as a bundled service in 230 lots with one year duration.[272]. BEB said the new capacity at Uelsen could be offered after the extension of the store. It is a remarkable development that the capacity is being offered to the market.

6.2.7 A short summary

To what extent restrictions on access to flexibility has limited the development of the German gas market is a difficult question to answer. Short-term primary storage capacity is available only to a limited extent and some believe that action will be necessary to change this situation. But, at least to some extent, a dynamic market characterised by new investment, a secondary market or markets in different products and even new offers in the primary market has evolved. Supply seems to satisfy short-term demand although only partly in a transparent market environment. In the long-term a lot of new supply – at least to some extent from new players - is coming to the market. Whether there is related demand to satisfy this supply is a subject of controversy in Germany. At least some market observers expect a supply bubble

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[269] In a press release E.ON Gas Storage mdentioned three reasons for the release of capacity: The transition to facility-specific storage capacity marketing, optimisation of capacity use and the effect of competition on E.ON Ruhrgas (press release of E.ON Ruhrgas, October 27, 2008).

[270] Among the successful bidders were Saar Ferngas, VNG, Erdgas Ostschweiz, SüdWestStrom, advanced energy trading. The only weakness of the new products is that transportation capacity has to be booked seperately from E.ON Ruhrgas, the previous storage capacity holder. But E.ON Ruhrgas itself only booked interruptible transportation capacity and is therefore only offering interruptible transportation capacity. But if the storage is used for seasonal swing the risk of interruption is negligible. Furthermore E.ON Ruhrgas offers a costless back up service at the virtual trading point to provide firmness.

[271] A manager of E.ON Gas Storage described the company as a "start up", an interesting self description of a company of the E.ON Ruhrgas Group, which nicely characterises changes of attitude.

[272] Each bundle has a working gas volume of 1 million m^3, firm withdrawal capacity of 600 m^3/h and injection capacity of 420 m^3/h (300 m^3/h firm and 120 m^3/h interruptible). See BEB release of February 16, 2009.

after 2012 or 2015. It is remarkable that companies are starting to rethink their investment plans. When RheinEnergie Cologne stopped a joint salt cavern development project with Essent at Epe (see Table 4) the RheinEnergie CEO gave two reasons for the decision: As a result of the shift from hourly to daily balancing the need for flexibility for a gas supplier decreases. There are more and more attractive virtual storage products available on the market[273]. Therefore I am not fully convinced that compulsory storage auctions are really necessary and also unsure that obstacles in access to flexibility are a critical factor for the development of greater liberalisation and competition.

7 Further trends

7.1 Ownership in networks and regulation

"Ownership unbundling" is a topic that has overshadowed the entire European debate about the future of regulation and competition. It is the dominant element in the EU Commission's 3rd Energy Package launched in September 2007. Ownership unbundling arrived on the European agenda mainly as a consequence of DG COMP's Sector Inquiry into European energy markets[274]. Not surprisingly Competition Commissioner Neelie Kroes is one of the major advocates of ownership unbundling. The German energy industry, which is dominated by integrated companies, always fiercely opposed the idea of ownership unbundling. German politicians and – it must be emphasised – also the German regulator, backed this resistance. Germany together with eight other countries fought hard – and finally successfully - for a so called "third way", an alternative to ownership unbundling and the independent system operator – the second option of the Commission. The 3rd Energy Package includes the possibility for the Member States to opt for an "Independent Transmission Operator"[275]. But I will argue below that for the German gas sector, this discussion is no longer relevant. Five years ago, political enforcement of ownership unbundling would have been a big improvement for the German gas market. And all the crazy and fruitless discussions about network access, described in my first study, were at least partly the result of the integrated structure of the gas industry. Within this structure, the companies had no incentive to create efficient, transparent and non-discriminatory third party access rules for networks, because they wanted to defend their market positions. In the 2006 study, it was shown that the only network operator which took serious steps to facilitate third party access in the early years was BEB, after the two shareholders Shell and ExxonMobil demerged their sales activities from the former integrated company. But in 2008 the situation changed:

- The strategic value of the networks for the integrated companies began to decline. As a result ownership unbundling is already taking place.

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[273] See energate June 18, 2009

[274] The sector inquiry was launched in June 2005 and the final report was published in January 2007. The main conclusion was that there were severe obstacles for the development of competition in European power and gas markets. One of the main remedies proposed by the Directorate of Competition was ownership unbundling of supply and network activities: "The Sector Inquiry confirms the finding that it is essential to resolve the systemic conflict of interest inherent in the vertical integration of supply and network activities. (…) Economic evidence shows that full ownership unbundling is the most effective means to ensure choice for energy users and encourage investments." (Communication from the Commission COM (2006) 851 final, p. 12

[275] See chapter 4 of the amended EU directive that was finally approved by the parliament in April 2009 and by the Council in June 2009.

- Ongoing regulatory pressure has reduced the attractiveness of network operation for integrated companies.
- Pressure on network tariffs, even for the interregional gas companies, has led to returns on capital below the aspirations of stock exchange-listed energy companies.

The two conclusions from this are:

- Even without ownership unbundling the changed regulatory framework allows effective enforcement of third party access and a level playing field.
- Ownership unbundling is happening and will continue because network operation is no longer a core business for the major energy companies. Specialised transportation groups will emerge and grow.

7.1.1 First steps to ownership unbundling

During summer 2007, ExxonMobil and Shell offered the transportation part of BEB for sale; ExxonMobil included its own small low cal network in the package. The sales process was finished in 2007 and the network was sold to the Dutch gas company Gasunie[276]. The sales process demonstrates two interesting developments:

- ExxonMobil and Shell, which both sell gas in Germany, no longer see any strategic advantage in network operation. They feel comfortable with the regulatory framework and the possibilities to obtain network access sufficient for their sales activities.
- Gasunie established itself as the first specialised infrastructure company[277] with network assets in more than one country. The strategic aim is to operate an integrated cross border network: a "Northwest European gas roundabout". Such an integrated network is in the interest of the Dutch government, the owner of Gasunie, because it guarantees optimal access to different gas sources for the Netherlands but also the optimal marketing of gas and services such as storage and, in the future, LNG regasification capacity. It also seems to be a very attractive business model.

A second initiative towards ownership unbundling will be RWE's sale of its transmission system operator RWE Transportnetz Gas, which owns and operates the group's high pressure network. Whether this move shows a changed attitude towards network operations is a matter of opinion. The company did not start the sales initiative voluntarily. It agreed with the DG COMP on the sale of the network in order to settle infringement proceedings brought by the Commission[278]. But the decision of RWE showed that the company did not believe it was any

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[276] The merger of the network activities of BEB and Gasunie was completed in June 2008 and in July the company was renamed Gasunie Deutschland. It should be emphasised that ExxonMobil and Shell did not sell the storage business. The storage business remained in the joint company BEB Erdgas und Erdöl GmbH.

[277] Because Gasunie is involved in an LNG regasification project it is more than a network operator. Gasunie and Gasunie D are also interested to develop storage on behalf of customers - a further extension of the business

[278] In May 2007 the EU Directorate of Competition opened infringement proceedings against RWE. The Commission accused RWE of "possible exclusion of potential customers from the market (i.e. so-called market foreclosure) through the putting in place of artificial obstacles to access by other companies to its gas transport network." More concretely the Commission believed that network tariffs were too high, the network was fragmented artificially, and RWE refused to release network capacity (see MEMO/07/186, Brussels, May 11, 2007). I never found these accusations very convincing although it is correct that RWE was never perceived as a very co-operative

longer worth fighting for ownership of networks, because they are no longer essential to the gas sales business.

7.1.2 Regulatory pressure

One of the main aims of this study is to show how regulation has made a difference in the German gas market. From the perspective of network operators, regulation makes the business less predictable – because it is no longer the operator itself that makes the rules of the game – and imposes extra costs and reduces returns. The regulator will remain particularly suspicious of network operators as long as they are part of an integrated group. One example of this concerns flow guarantees by shippers to maintain flexibility within enlarged network areas. These minimum flow guarantees at entry or exit points or interconnection points are one means to provide unrestricted flexibility in combining all entry and exit points within one market area. But shippers do not offer these guarantees for free: network operators have to pay for them. Usually the sales and trading affiliate of an integrated group has the largest gas portfolio in the network and is in the best position to provide such guarantees. But in this case the regulatory authority is not very inclined to allow the cost because of the suspicion of cross-subsidy (see section 3.4.3.4)[279].

Further mergers of market areas of different network operators will eventually reduce owners'control of their networks. Some functions will be transferred to the operators of the market areas which will most likely be joint venture companies of the participating network operators. The BNetzA and finally also the operating company of the market area will mainly focus on efficient transportation within the whole market area. This will limit the ability of integrated companies to manage transportation in ways which favour their sales activities.

But the greatest change for the major interregional network operators is pressure on network tariffs from the BNetzA.

7.1.3 Network tariff regulation of interregional pipelines

Until autumn 2008, the tariffs of interregional pipeline operators were not cost regulated. The ordinance provision on network tariffs, which is part of the 2005 energy law, allowed all interregional pipeline operators to apply for an exemption from cost based tariffs if their networks were exposed to competition. Interregional pipeline operators are all companies with pipelines connected to German border points or to indigenous production. In January 2006, a total of 12 companies applied to the BNetzA for such an exemption[280]. Unfortunately the ordinance provision did not stipulate any time frame for the evaluation of these applications and decisions from the regulator. And – conveniently for the companies –

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network operator. In principle, the company's behaviour was in line with the framework for Third Party Access at that time. The Commission based its investigation mainly on findings following dawn raids in 2006.

[279] RWE Transportnetz Gas estimates the cost for such flow guarantees in the case of the merger of the low cal market area with the low cal marklet area of E.ON GT at a two digit million Euro level.

[280] Exemption from cost based tariffs does not mean complete absence of control over tariffs. The regulator should benchmark these tariffs against comparable national and international operators. But such a procedure was never applied, although some concepts were developed by the regulator.

rejections of the applications have no retrospective consequences, so that companies do not have to pay back the difference between cost based tariffs approved by the regulatory authority and the tariffs they charged shippers in the past. It took the BNetzA almost three years to make and issue these decisions[281]. In September 2008, it rejected the applications of E.ON GT, Wingas Transport and Gasunie Deutschland (formerly BEB)[282]. Around a month later it also rejected the applications of the other seven operators - Dong Energy Pipelines, Eni Gas Transport Deutschland, Erdgas Münster Transport, Gaz de France Deutschland Transport, Ontras – VNG Gastransport, RWE Transportnetz Gas and StatoilHydro Deutschland[283]. As a result, all these transmission system operators started formal court action against the BNetzA decisions[284].

Although the transmission system operators started legal action this did not delay the impact of the BNetzA decisions. The companies had to apply for cost based tariffs and deliver all cost related information to the regulatory authority. From 2010 cost based tariff regulation will be replaced by incentive based regulation based on a revenue cap[285].

I will not try to answer here the question of whether there is genuine competition between different pipeline operators, or what should be the correct conceptual approach to address this issue[286]. From my point of view what is important is that at least some of the major operators – and in particular Wingas – stated repeatedly that cost-based tariffs and regulated returns are not a proper basis for their business because at least one of its shareholders, the chemical group BASF, would not be satisfied with these returns[287]. The legal proceedings started by the operators underline the relevance of the issue. If the view of BNetzA ultimately prevails – as

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[281] The main reason for the delay was that the BNetzA formal decision body responsible for formal decisions was completely preoccupied with decisions about the applications of cost-based tariffs for local and regional distribution companies. It simply did not have the resources to deal with this rather complex issue and develop a proper concept. As a consequence, in late 2007 an additional formal decision body (Beschlusskammer 4) was transferred from telecommunication to the energy sector and took over responsibility for these procedures.

[282] See BNetzA press release, September 23, 2008.

[283] Due to the merger of Statoil and Hydro, the number of network operators which applied for an exemption was reduced from 12 to 11. The application of Gas-Union Transport was rejected in 2007 because Gas-Union did not fulfil the criteria for an interregional pipeline operator.

[284] The first court hearings are scheduled for September 2009, after this study will have been finished but, at least in informal discussions, representatives of network operators signal that they themselves do not really expect to be successful in the court action. Their main argument is that the concept of competition applied (see footnote 286) is not correct, but they and most market observers think the court will not investigate such concepts deeply, evaluating only whether the decision of the BNetzA was properly derived from the energy law.

[285] In principle incentive-based tariff regulation in Germany has been in place for all energy network operators since January 1, 2009. But for the gas transmission system operators cost-based regulation will continue through 2009, because a cost basis is needed to apply incentive-based regulation.

[286] The 2006 study briefly described the different views on this issue (Lohmann 2006, p. 63 – 64). The main concept applied by the BNetzA is that competition among network operators is more or less impossible because it restricts the relevance of competition to each market area separately. In applying this concept even Wingas – perhaps the most likely example of a competitive network operator – could never be judged as a competing TSO. The BNetzA presented a number of additional arguments against the relevance of competition in the transportation sector. (See for example the paper of the Beschlusskammer 4 for a hearing with Wingas Transport from January 2008: Anhörungsschreiben Wingas Transport GmbH & Co. KG, 23.01.2008 and the final decisions of the Bundesnetzagentur, for example: Bundesnetzagentur Beschlusskammer 4: Beschluss in dem Verwaltungsverfahren nach § 3 Abs. 2 und 3 GasNEV und § 65 EnWG der Wingas Transport GmbH & Co KG of September 22, 2008.)

[287] See for example below in Section 7.2.2.3 the discussion about regulated return on equity capital for new investment. In November 2008 Wingas Transport announced that it would stop the planning for the SEL pipeline project. Wingas Transport mentioned explicitly the decision of the BNetzA not to approve exemptions from cost-based tariffs as the reason for this decision (see Wingas Transport press release, 19.11.2008). The SEL pipeline project, to connect the German/Austrian border point at Burghausen with Wingas' MIDAL pipeline at Lampertheim (north of Mannheim) was launched in 2001. Formal planning procedures started in 2003. But during the last years the Wingas management told me repeatedly that there is for the time being no need for this pipeline, although formal planning procedures were continued. Nevertheless the public abandoning of the project could be used to demonstrate dissatisfaction with the regulation of the network tariffs.

most observers expect – it will be less attractive for integrated companies to operate networks, especially if they are stock exchange-listed.

Combining these arguments leads me to expect changes in the ownership structure of network operators over the coming years. I would not be surprised if even the E.ON Group will either sell its gas network or include it in a joint venture company[288]. The credit market and economic crisis that began during the fourth quarter of 2008 overshadows this reasoning because of: its influence on investment, the financing of such deals, and the aspirations for return on capital employed. But I think it does not detract from the argument that the transportation business is becoming more and more separated from the sales business and is being operated independently.

7.2 Capacity issues

7.2.1 Congestion management – the last big challenge for regulation

A lack of firm transportation capacity at the major German border points and the major interconnection points between the different market areas is judged by many market participants and the regulator as the biggest remaining challenge to liberalisation and competition in the gas market. The BNetzA estimates that nationwide, only 7% of the technical transportation capacity is available to the market[289]. According to data from the regulatory authority for the Gas Year 2007, in 91 cases network access at interconnection points was denied in the year 2007 mainly because of a lack of capacity. In the same year, network access was denied in more than 30 cases for each of the coming Gas Years up to 2011[290]. For the regulator these refusals showed "a high demand for firm capacity at interconnection points relevant for competition which could not be satisfied.[291]" This observation is confirmed by anecdotal evidence from many market participants.

The regulator believes that the major reason for this lack of capacity is contractual. The agency collected the flow data (nominations) for all German interconnection points and all border points. On average the utilisation of the German network in 2007 was 35% and 65% at the border points. For around 60% of the total booked entry capacity at the German border points the peak utilisation was more than 90%. For the interconnection points between the market areas the figures are similar. The BNetzA argues in the report that the low rate of

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[288] In autumn 2008, the discussion was more advanced in the German power sector. In spring 2008 the E.ON Group announced that it would sell its power network as a result of an agreement with DG COMP to settle EU infringement proceedings. The settlement evoked a lot of criticism from other network operators and politicians in Germany. The major concern was that E.ON's initiative weakened the German government's fight in Brussels for a "Third Way" in respect of unbundling (see above section 7.1.1). But during 2008 the German government initiated discussions about a German "Netz AG" i.e. a joint network company of all major network operators. And Vattenfall started a sales process for its high voltage power network. Up to autumn 2008, no similar discussion had started in the gas sector. Officially E.ON has always stated that it has no intention of selling its gas networks but, as I explained above, I am not convinced that it will continue to hold this position. What is important for E.ON Ruhrgas is securing the entry capacity at the major German border points for the volumes under its long-term purchase contracts. Taking into account the development of the regulatory framework. the ability to secure this capacity will no longer depend on network ownership.

[289] BNetzA: Monitoring report 2008, p. 145.

[290] Monitoring report p. 139 – 141.

[291] Monitoring report p 145

average annual utilisation shows that there is still capacity available in the German networks that was not released to the market.

The analysis in the monitoring report is preliminary, but the regulator announced several times during 2008 (and confirmed this intention in the monitoring report) that the improvement of capacity allocation and congestion management are top priorities for 2009. As a first step, in mid 2008, the BNetzA asked the consultancy KEMA, the same consultancy that studied the balancing regime for BNetzA - to carry out a study on congestion management. The KEMA study was not available as this study was completed, but in the early months of 2009 discussions became more intense:

- On January 26, the European Regulator Group for Electricity and Gas (ERGEG) launched a consultation process for a European Approach to the regulation of congestion management. BNetzA provided significant input to the paper published by ERGEG as the basis for the consultation process[292]. Therefore the paper gave a first idea of BNetzA thinking about necessary changes in the system of capacity allocation and congestion management.
- In mid February RWE Supply & Trading introduced at a workshop its own proposal for an improvement of congestion management[293].
- The associations of German network operators BDEW, GEODE and VKU and the association of network users BNE have demanded (in cornerstone papers) that the German ministry of economics should deal with the topic in the planned amendment of the ordinance provision on network access[294]. On April 3 the ministry of economics released an informal cornerstone paper on an amendment of the ordinance provision, where a new system of capacity allocation is one of the mentioned issues[295].
- Last, but definitely not least, the German Bundeskartellamt (BKartA) has started a German sector inquiry into the transportation sector of the gas market. The target of this investigation is to detect possible illegal barriers to competition by long-term booking of transportation capacity, in particular by sales companies belonging to the same Group as the transmission system operator. If illegal barriers are found, the BKartA could start formal antitrust procedures against particular companies and try –

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[292] ERGEG principles: Capacity allocation and congestion management in natural gas transmission networks. An ERGEG Public Consultation Document, Ref: E08-GFG-41-09, January 15, 2009. See also notice on the ERGEG internet page www.energy-regulators.eu, January 26, 2009.

[293] RWE Supply & Trading: Grundsätze für die Entwicklung eines Markts für Kapazitätsrechte im Gasmarkt, informal paper without date. The main ideas of the paper were published in the following article: Claus Fest, Ralf Presse, Norbert Verweyen: Die Weiterentwicklung der Gaskapazitätmärkte in Deutschland und Europa, Zeitschrift für Energie Markt Wettbewerb, February 2009, p. 53 - 58

[294] The ministry of economics started in late 2008 a discussion with the BNetzA and the stakeholder association about an amendment of the ordinance provision on network access. I described in my 2006 study in detail that the provision – that should in principal regulate in more detail the general framework of the law – did not fit with the law due to a very hectic law making process (see Lohmann 2006, p. 58 – 63). The decisions of the BNetzA since 2006 made the provision even more irrelevant. Therefore the BNetzA and the ministry had an interest to adapt the provision to the law and the decisions of the regulatory authority and define more clearly the power of the BNetzA on certain aspects like the merger of market areas. In late 2008 BDEW/GEOFE/VKU and bne provided their ideas about such an amendment. See: BDEW/VKU/GEODE: Eckpunkte zur Änderung der Gas NZV, Berlin, December 19, 2008; Bundesverband Neuer Energieanbieter (bne): Eckpunkte des bne zur geplanten Novellierung der Gasnetzzugangsverordnung, Berlin, November 12, 2008. The ministry intends to finish a draft of the amendment before the 2009 summer break but, for several reasons, observers are seceptical that this deadline will be met.

[295] Ministry of economics: Cornerstone ordinance provision on network access gas, Berlin, April 3, 2009

as in the case of long-term procurement contracts – to define general principles for the booking of transportation capacity by market dominant players[296]. Alternatively the BKartA could simply recommend how the ministry of economics should change the system of capacity allocation in the ordinance provision.

The BNetzA finally started a consultation process with the German stakeholders on April 1, 2009 with a workshop at Bonn, where the regulatory authority presented its concept of "intelligence instead of steel". This wording should underline the conviction of the authority that the main problem is contractual not physical congestion. Based on the proposals presented at the workshop and on discussions with stakeholders during and after the workshop BNetzA published a cornerstone paper on May 22 about the new design for capacity management in the German gas market[297]. The major cornerstones are:

1. Maximisation of available capacity.
    - Calculation of available firm capacity separately for different durations (year, quarter, month) and co-operation among network operators in the calculation.
    - Commercial means for maximisation of offered capacity such as physical gas flows, tender of restrictions of flexible combination of entry- and exit points (i.e. the shipper commits itself to combine a certain entry and a certain exit point for example for gas transit) and excess booking (beyond technical capacity) with buy back mechanism.
2. Design of capacity products.
    - Harmonisation of the offers of capacity, operational and nomination procedures at interconnection points.
    - Offer of firm capacity with different duration, ranging from daily capacity to long-term capacity with harmonised starting dates to avoid overlapping durations.
    - Improvement of transparency about gas flows to increase the value of interruptible products.
    - Introduction of the right of an interruptible nomination at all entry points of a market area independent of the booking of capacity.
3. Capacity allocation.
    - Abandonment of the first-come-first serve allocation procedure. Standardised booking schedule and auctioning of capacity products if less than 10% of the technical capacity is available.

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[296] The Bundeskartellamt did not publicly announce the launch of the sector inquiry. But it sent at the beginning of February a questionaire to all interregional and regioanl transmission system operators where the operators were asked to give detailed information about the network, capacity, transportation contracts, bookings. Bundeskartellamt: B10-7/09 – Anlage 1 zum Auskunftsbeschluss vom 2.2.2009.

[297] BNetzA: Neugestaltung des Kapazitätsmanagements im deutschen Gasmarkt. Eckpunkte der Bundesnetzagentur zur Konsultation, Bonn 22.05.2009

4. Transfer of capacity.
    - Design of secondary capacity.
    - Introduction of the rucksack-principle at the entry points in certain restricted cases.
5. Short term capacity management.
    - Auction of capacity not nominated on the day before transportation takes place as firm Day-Ahead capacity without a minimum price by the network operator. As a consequence re-nominations are only possible on an interruptible basis. Alternatively a small amount of capacity for firm re-nomination may be granted for each shipper. Change of nomination deadlines to an earlier time (10:00 am instead of 2:00 pm).
    - Introduction of a non-utilisation fee that is charged for non utilised capacity that was not offered on the secondary market.

Based on this paper a consultation process will start but it is not expected that a new system of allocation management for the interconnection points will be in place before October 2010. Harmonisation of the German initiative with ERGEG's EU-wide approach might also be an issue. Although a number of market players are sceptical whether in particular short-term capacity management will definitely improve the general situation., A new regime, based on the proposals of the BNetzA, will release more capacity to the market. BNetzA thinks that the regime will also prevent long-term capacity hoarding, because every day non-utilised capacity must be released to the market and non-utilisation is penalised. But perhaps the ministry of economics and the Bundeskartellamt may supplement the BNetzA approach by direct restrictions on long-term capacity contracts. The already cited cornerstones of the ministry of economics for an amendment of the ordinance provision contain the following proposal: "The decision of the Bundeskartellamt to restrict duration of long-term gas supply contracts, which was confirmed by the German High Court, will also apply to transportation capacity by introducing similar rules; i.e. **Duration of transportation contracts will be restricted** (emphasis in the text). It must be **evaluated**, whether this will be **extended to existing contracts** (emphasis in the text). There must be adequate consideration of Import dependence.[298]" At least on paper this is an extremely tough challenge to the position of the incumbents. But it remains to be seen whether this proposal finally becomes part of an amended ordinance provision – if there will be one[299].

If the substance of the above mentioned proposals were to become part of the German and/or European regulation the impact would be far reaching:

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[298] See Ministry of Economics: Cornerstones ordinance provision network access gas, Berlin, April 3, 2009, p. 2. For a detailed description of the restriction of long-term gas sales contracts see my 2006 study p. 96 – 105.

[299] I have already mentioned concerns of stakeholders that the competence and manpower in the ministry is too weak to finalise an amendment of the ordinance provision in reasonable time, in particular because general elections in Germany in September 2009 may interrupt the work.

- In the long run the position of the established major players would be weakened because they cannot book capacity as they wish and interference with existing capacity contracts would become possible.
- The role of network operators would change. They would lose all connection with their sales companies in the still formally integrated groups and would finally become market partners for trading and sales companies. In the end this would not perhaps be a bad position, but it is an additional argument against the potential strategic value of networks for integrated companies.

The discussion is only at the beginning but, taking into account the general commitment of the BNetzA to enforce its view of the proper framework, it would be surprising if the BNetzA does not enforce the main the proposals of the cornerstone paper. But the overall institutional environment is complicated because European (ERGEG) and national institutions, antitrust authorities, regulatory authorities and politics are involved. The new regulatory design of a German system of capacity management will be most likely embedded in a European system and new rules for long-term transportation contracts enforced either by antitrust authorities or an amended legal framework[300].

7.2.2 Investment in transportation capacity

Even with improved congestion management in the foreseeable future, demand for additional transportation capacity might not be satisfied. The major reasons for this demand are:

- New supplies from Russia to Germany and northwest European markets (Nord Stream project).
- Connection of new storages and gas fired power plants to the German and European networks.
- Cross-European trading interests.

The network operators and the regulator are still learning how to organise investment under the changed regulatory framework:

- Wingas and E.ON Ruhrgas are trying to connect the Nord Stream pipeline to the German and European pipeline system using a traditional network extension approach. RWE is following a similar approach for its pipeline from Sayda at the German-Czech border, to Eynatten at the German-Belgian border.
- E.ON GT and Gasunie Deutschland are testing the demand for new capacity in an Open Season.

[300] The ERGEG proposals are stated as amendments of the direct EU regulation 1775/2005 on conditions for access to the natural gas transmission networks. The annex of this regulation already contains general principles underlying the capacity allocation mechanisms, congestion management procedures and their application in the event of contractual congestion. This annex could be changed in principle directly by the EU-Commission using the so called commitology procedure (see Glossary). If this institutional path would be finally chosen ERGEG's principles would become binding for all European Member States. Alternatively the new European regulatory authority ACER, which is part of the 3rd energy package could deal with the issue on behalf of the Commission.

Both approaches have their difficulties, which are briefly described below.

7.2.2.1 Nord Stream connection pipelines

In 2005 Gazprom, BASF as the owner of Wintershall and E.ON AG signed a contract for the construction of the Nord Stream (formerly North European) Gas Pipeline through the Baltic Sea from Vyborg in Russia to Greifswald on the German coast. There will be two pipelines, each with an annual capacity of 27.5 Bcm. It was planned to finish the construction of the first line in 2010, but this has been delayed until at least 2011. The second phase is planned to be in operation one or two years later.

In 2006 Wingas introduced plans to connect the pipeline to the German and European networks (Figure 15).

- One pipeline, called OPAL, will run south from Greifswald to the German-Czech border point Olbernhau. From Olbernhau the Czech pipeline operator RWE Transgas will build a new pipeline (Gazelle) connecting Olbernhau with Waidhaus at the German Czech border, the traditional border point for the delivery of Russian gas to E.ON Ruhrgas and Gaz de France. OPAL's planned capacity is 36.5 Bcm in the northern part and 31.9 Bcm in the southern part; the diameter is 1,420 mm and pressure 100 bar. Shares in the project are Wingas 80%, E.ON Ruhrgas 20% and it was planned to be in operation in 2010, a deadline that was also extended to 2011.
- A second pipeline, NEL, will run from Greifswald southwest to connect with Wingas' RHG pipeline at Achim. Wingas plans further improvements of its pipeline system between Achim and Bunde (called KAPAL) to be able to ship gas to the German/Dutch border point Bunde/Oude Statensijl[301]. NEL has a 1.220 mm diameter, and pressure of 100 bar, which will allow a capacity of 21.8 Bcm, and will start operation in 2012. The Wingas share in the project is 75%, E.ON Ruhrgas 25%.

[301] Wingas itself has contracted 9 Bcm/year of gas to be delivered thorugh the Nord Stream and wants to sell part of this gas to the Netherlands and to the UK. Therefore the link to the Dutch market with the option to supply the gas physically to the UK through the BBL pipeline from Balgzand to Bacton is an important part of the whole project. (For the sales strategy of Wingas related to Nord Stream gas see for example the interview with Wingas's CEO Rainer Seele in Gas Matters 11/05, p. 16-21).

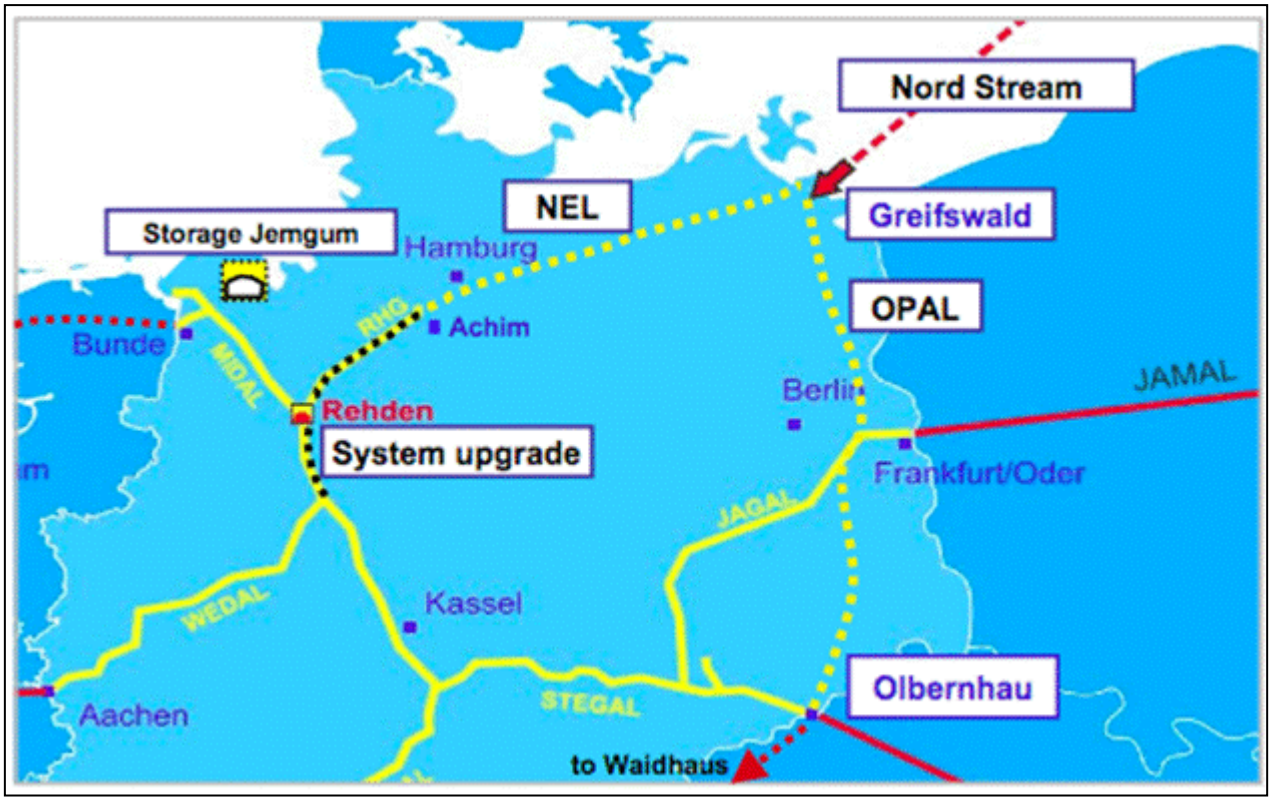

Figure 15: OPAL and NEL (Source: Wingas)

Wingas and E.ON Ruhrgas applied in 2007 for the first time for an exemption from regulated Third Party Access for the two projects[302]. The German energy law allows for such an exemption if the pipeline connects Germany with other countries and some other criteria are fulfilled. The BNetzA signalled to Wingas several times that it would most likely not grant exemption. The major argument of the regulator was that the projects do not fulfil the main prerequisite for such an exemption, that the pipelines connect Germany with other countries and are used for the transit of gas[303]. For NEL the argument was straightforward, because the pipeline ends within Germany. The regulatory authority did not accept the argument that, with the addition of the KAPAL project, the NEL is finally connected with the Dutch border. For OPAL the situation was more complicated. Wingas planned to connect the pipeline with its existing STEGAL system around 1 km before the Czech border. Therefore OPAL would have also not been directly connected to a border point. Wingas finally withdrew the first application in July 2008.

The company then founded a new operating company for the projects and started a new initiative for an application for an exemption for NEL and OPAL. To improve the possibility of getting an exemption at least for OPAL it redesigned the pipeline route and intends now to

[302] Wingas also applied for an exemption for the so-called KAPAL project, the third element of the total picture. KAPAL encompasses enhancements of the existing WINGAS system between Achim, Bunde and Eynatten. See unpublished, but non confidential document application of Wingas to the BNetzA of April 16, 2007. The original application is from March 9, 2007 On April 16 the company delivered a version, where all business secrets were erased. Wingas-Transport: Antrag der WINGAS TRANSPORT GmbH & Co KG gem. § 28a EnWG auf Ausnahme der gesamten Leitungskapazitäten des Onshore-Projektes "Nord Stream" in der Bundesrepublik Deutschland bezogen auf die gesamten jeweiligen (Mit-) Eigentumsanteile der WINGAS GmbH von der Anwendung der Rechtsvorschriften des EnWG über Netzzugang.

[303] See for example the very early response from Beschlusskammer 7 on March 21, 2007: "Concerning all sub-projects (OPAL, NEL, KAPAL, HL) described it is doubtful whether these are interconnection pipelines as defined in § 28a, 3 Nr. 34 energy law.

build OPAL as a separate pipeline directly to the German-Czech border point Olbernhau, or even more precisely across the border to the Czech Brandov, without any connection to the STEGAL in Germany. After this redesign, Beschlusskammer 7 of the BNetzA granted an exemption for OPAL from regulated third party access[304]. This exemption was only granted for transit capacity, i.e. for capacity that is offered as a bundled product at the Greifswald entry point and the Olbernhau exit point. All volumes injected and withdrawn within Germany and counterflows from Olbernhau into Germany are subject to regulated third party access[305]. The exemption was granted with further restrictions. Wingas and E.ON Ruhrgas have to implement measures to avoid capacity hoarding and "are obliged in the case of contractual congestion to apply a market oriented, transparent and non-discriminatory procedure.[306]" Furthermore Wingas and E.ON Ruhrgas must implement strict unbundling rules between sales and transportation for the pipeline. And again, in the second decision no exemption was granted for the NEL project[307]. The European Commission mainly approved the decision of the German regulatory authority in June[308].

Whether the NEL project will be cancelled now, or whether Wingas and or E.ON Ruhrgas will build the pipeline under regulated conditions was not finally decided when this study was finished[309].

Although the BNetzA switched during the procedures for the exemption from regulated third party access from a very restrictive to a more positive perspective, the procedures in principle show that the German regulatory authority is very reluctant to approve exemptions from regulation for new investments and that most new infrastructure will be built in a regulated environment. Therefore it is doubtful whether RWE will be successful in obtaining an exemption for the Mitteldeutsche Transversale (MET) to connect RWE's Czech and German system with the Belgian, and ultimately the UK, market. Formal planning procedures for the project have started but a final investment decision has not yet been taken. The RWE Group

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304 SeeBNetzA press release,February 25, 2009.

305 See Bundesnetzagentur Beschlusskammer 7: Az. BK7-08-009: Beschluss in dem Verwaltungsverfahren wegen: Antrag auf Freistellung von der Regulierung, Bonn 25.02.2009, p1 and 2. In its application Wingas and E.ON Ruhrgas argued that the pipeline will be mainly used for transit, but withdrawal in Germany would be possible. Currently one connection to German systems is planned at Groß Köris with an interconnection capacity of 4.5 Bcm..

306 Decision of the BNetzA, p. 1.

307 Beschlusskammer 7 outlined in a hearing of November 20, 2008 its main arguments. The Beschlusskammer still insists that NEL is not a connecting pipeline. Concerning OPAL, Concord Power Nordal (see section 7.2.2.2) argued that OPAL is also not a connecting pipeline, because it is finally connected via the new Czech Gazelle project to Waidhaus, a German border point, and the main purpose of the project is to establish an alternative route to bring Russian gas to Germany. But the Beschlusskammer did not accept this argument. It had no interest to see what happens with the gas behind the Czech border. See for the direct relation between the OPAL project and the Gazelle project presentation of Samuel Haag, RWE Transgas Net at the Conference of the Czech Gas Association (CPS) in Prague, May 2008. Interestingly the Czech regulatory authority – that was consulted by the BNetzA - doubted that the exemption was justified, and referred to contractual agreements concerning the gas transportation in the Czech Republic. Unfortunately these agreements were confidential and not disclosed by the Czech regulatory authority (see decision of the BNetzA, p. 14)

308 See European Commission: "Ausnahmegenehmigung der Bundesnetzagentur für die OPAL-Gasleitung gemäß Art. 22 der Richtlinie 2003/55. When this study was finished the 24 pages paper was not published. The author has nevertheless seen the paper. The Commission followed completely the arguments of the BNetzA except on one issue. Unlike the German regulatory authority the Commission thinks the pipeline could have a negative impact on competition in the Czech Republic. Therefore the Commission demands the following change of the decision of the BNetzA: "If Gazprom and Wingas each for themselves or jointly want to book more than 50% of the OPAL exit capacity to the Czech Republic the concerned company or companies must launch an annual gas and capacity release programme of 3 Bcm. The BNetzA must approve the design of the programme. Capacity booked by RWE Transgas is added to Gazprom's booked capacity."

309 The latter is more likely. The spokesman of Wingas' management board, Rainer Seele, said repeatedly that Wingas is in discussions with the regulatory authority to agree on conditions under regulated third party access that enables Wingas to build the pipeline.

is working seriously on the project although many observers doubt that it will go ahead.[310] Although the company has started a formal open season to investigate overall demand, the project is principally designed for the needs of the RWE group.

7.2.2.2 Additional problems for the OPAL project

Wingas' OPAL project faces additional problems. In the state of Brandenburg local initiatives delayed the formal planning procedure because of environmental concerns about a compressor station for the pipeline. The protests are in line with a general tendency in Germany to protest against any project in the energy sector. All power plants – even wind farms - high voltage grids, new gas stores or pipelines are confronted with environmental protests of varying degrees of seriousness. In the case of OPAL this will delay planning, and may lead to some changes, but will not cause the project to be abandoned.

A more serious challenge may be a potentially competing project, the NORDAL pipeline. NORDAL is a project sponsored by Concord Power which, for around 10 years, has planned to build a CCGT plant at Lubmin near Greifswald. To supply the plant with gas, a 700mm diameter pipeline was planned from Börnicke, north of Berlin, to Lubmin. At Börnicke the pipeline would be connected with the eastern German extension of the NETRA-system, which is connected to the Emden/Bunde region. Planning for this project started long before Nord Stream was on the agenda and formal planning consent for the pipeline was granted in mid 2004. After the decision was taken to go ahead with Nord Stream, Concord Power revised its planning for NORDAL. The diameter was increased to 1,200 mm, enough to transport the gas from the first Nord Stream line. Concord Power received formal planning approval for the revised project in late 2006, and is in principle able to build the pipeline. The company argues that after formal permission was granted for the NORDAL project, German planning law does not allow approval for a second pipeline in the same area[311]. Concord offered to cooperate with E.ON Ruhrgas and Wingas in different ways, but Wingas has refused any discussions with the company[312]. It is not clear whether Concord Power would ultimately be able to prevent OPAL and implement its own project, but Concord is very committed to NORDAL and has used all available means to make Wingas' life difficult. As described above, it is involved in the formal OPAL planning procedure. It is also involved in the formal process for an exemption from regulation for OPAL at the BNetzA[313]. Concord

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[310] The RWE group started internal planning in 2005 or 2006. The 1,000 mm diameter pipeline could have a very low minimum starting capacity of 5 Bcm (see Thomas Kleefuß: View of RWE Transgas Net on gas transit in Central and Eastern Europe, presentation at the 2007 autumn gas conference of the Czech Gas Association (CPS), November 7, 2007 at Prague. RWE intends to start construction in 2011 and finish the pipeline in 2013. The project may become more important, if the Nabucco pipeline, in whiche RWE has a stake would be realised and the RWE Group would be able to bring Nabucco Caspian gas to Baumgarten and through the Czech republic to Sayda.

[311] The managing director of Concord Power, Heiko von Tschischwitz repeatedly explained publicly the position of the company. Most recently the company put forwards its arguments in the public hearing for the planning procedure of the OPAL project in the state of Mecklenburg-Western Pomerania in November 2008 (see press release of Concord Power November 11, 2008).

[312] Representatives of Wingas decline to make any comment on Concord Power and are even unwilling to mention the name of the company.

[313] The German energy law - like the antitrust law – allows companies with a justified economic interest to join these formal procedures. These companies are then allowed to have access to all documents and present their views at hearings. The BNetzA affirmed the economic interest of Concord Power because the company could justify that it is committed to the NORDAL project (see decision of the BNetzA about adding Concord Power to the procedure, October 2, 2008). Directly after BNetzA released the approval of the exemption, Concord Power announced that it would challenge this decision by court action (see Concord Power Nordal press release, February 25, 2009. And Concord Power acted as announced.

Power has complained at a local court in Mecklenburg-Vorpommern about anti-competitive behaviour on the part of Wingas, arguing that OPAL will be an obstacle to new market entrants.

In February 2008, Concord Power finally gave up its CCGT project at Lubmin and sold the site to E.ON which, with Gazprom, wants to build a CCGT plant (see section 7.3.3). Nevertheless Concord Power is investing a lot of time and money in the Nordal project although its motives are not entirely clear. Concord Power always insists that the company genuinely wants to build and operate the pipeline. But it may also be that the company is ultimately only seeking to receive as much money as possible for abandoning the project, in order to recover at least part of the relatively high development cost for the power plant project[314].

7.2.2.3 Open Season procedures

In January 2008 E.ON GT started an open season procedure to estimate demand for new transportation capacity[315]. The procedure was divided into two phases:

- In the first phase, shippers could make non-binding requests for capacity. Based on these requests E.ON GT analysed the need for investment and calculated a preliminary range of transportation tariffs.

- In the second phase shippers must make binding commitments to book 80% of the capacity for a minimum of 15 years, and can book only 5% for less than 5 years.

The procedure attracted a lot of interest in, but also criticism of, the design of the open season.

102 customers (90 shippers and 12 downstream network operators) made 485 non-binding requests during the first phase. Total demand arising from these requests was 430,000 MWh/h additional entry and exit capacity. From this data, E.ON GT arrived at the conclusion that 3,000 km of new pipelines should be built, requiring a total investment of 7.2 billion Euro. Based on this assessment of investment E.ON GT published a price spread for the new tariffs at different entry and exit points.

The highest number of requests was for the Wallbach exit point at the German-Italian border with 30, followed by 25 and 26 requests at the two entry points at Emden (NPT, EPT). Entry

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[314] Concord Power Nordal GmbH – which is the correct name of the project company – is part of the Saalfeld Group. The Hamburg based investor Michael Saalfeld has a long track record in the David vs. Goliath game in the German energy industry since the beginning of liberalisation. His joint venture with Vattenfall, VASA Energy, was one of the first new entrants in the German power market. After Vattenfall acquired the Hamburg based utility HEW and the Berlin based utility Bewag, the joint venture was dissolved. Saalfeld continued (with his company Concord Power) to work on the 1,200 MW CCGT project at Lubmin and founded one of the first providers of eco-power to residential customers Lichtblick. Lichtblick has around 350,000 power customers (see also section 5.3.4.2) and is experienced in enforcing third party access also if necessary by using legal action. Concord Power was one of the companies that started court action against the ministerial allowance of the takeover of Ruhrgas by E.ON.

[315] For a description of the procedure and its different phases see E.ON GT brochure Open Season 2008. http://www.eon-gastransport.com/cps/rde/xchg/SID-817156E4-4AC055E6/eon-gastransport/hs.xsl/3. Information on the outcome of the different phases was always published by E.ON GT on its internet page under the same web reference.

points at Burghausen and Eynatten attracted more than 20 requests. The highest new volumes were demanded for the entry points Etzel (38 million kWh/h) and Börnicke (35million kWh/h). The request for Börnicke capacity probably came from Concord Power (see above). The distribution of requests across the different entry and exit points showed that demand was high at almost all border points, and entry points where storage facilities are planned or under construction: Etzel, but also Burghausen (Haidach) and Epe.

In the second phase, 42 customers made 169 binding requests. The total demand for capacity was 150,000 MWh/h (of which 14,000 MWh/h was for low cal gas). This was much lower than the 430,000 MWh/h of the first phase, but still beyond the capacity which E.ON GT could manage to construct. The company therefore agreed to develop criteria for priorities jointly with the BNetzA. Final decisions will be reached by applying these criteria to further reduce the capacity requests. Due to this additional step the final allocation of new capacity was delayed beyond the scheduled August 2008. Participants expected a delay of one month but it became almost a year. The requests concentrated – as in the first phase, but at a lower level - on the same entry and exit points. The following table shows the final binding commitments for a capacity of more than 3,500 MWh/h (the complete results can be found on the internet page of E.ON GT).

Name of the point	Entry/Exit	Number of companies	Plateau-capacity (MWh/h)
Emden NPT	Entry	8	4,009
Emden EPT	Entry	6	3,362
Gronau Epe H1	Entry	4	4,515
Waidhaus	Entry	5	3,729
Bocholtz	Entry	6	4,148
Burghausen 1	Entry	5	4,685
Burghausen 2	Entry	1	4,274
Eynatten	Entry	7	3,796
Oberkappel	Entry	11	5,685
Gronau-Epe L1	Entry	1	4,080
Vreden	Entry	6	4,589
Eynatten	Exit	6	3,287
Oberkappel	Exit	5	4,742
Burghausen 3	Exit	4	7,168
Wallbach	Exit	9	3,460
Steinitz	Exit	3	8,340
Speicher Etzel	Exit	2	14,535

Table 7: Requests for new transportation capacity at the different entry- and exit points in the E.ON GT open season procedure (Source: E.ON GT)

As noted above, demand was concentrated at the major border points and new storage sites. The major critical issues from the perspective of shippers were:

- A lack of co-ordination with neighbouring German and foreign transmission system operators

- New capacity could only be booked in the open season procedure. Particularly for companies with storage or power projects, it is difficult to make binding commitments before a final investment decision for these projects has been taken.
- The unilateral nature of the binding commitment led to planning and financial risks for shippers. E.ON GT still makes the final investment decision depending on an evaluation of the economic feasibility of the network extension scenario based on the binding commitments. And E.ON GT accepts the commitment of shippers under the caveat of technical, planning legal feasibility[316].
- The first non-binding phase gives shippers incentives to express demand even if they are not genuinely interested in capacity. The preliminary tariff range is calculated based on this demand and binding commitments must be based on this tariff indication. Final tariffs may deviate significantly if the final demand is lower than expressions of demand in the first phase.

As a consequence, two companies formally complained about the procedure, but their complaints were rejected mainly on procedural grounds[317]. The BNetzA signalled that although it was not happy with all details of the design of the procedure, it considered that this first open season procedure by a network operator to decide on investment in the network, was a sign of progress[318]. But aside from the necessity to optimise the procedure, the complaints from two companies involved in power plant and storage projects, show that this type of open season does not fit with such projects. Investors have no guarantee of obtaining the transportation capacity they need, and the timing usually does not fit with their planning. At a conference in autumn 2008 a representative of Electrabel, one of the companies working on power plant projects (see section 7.3.3) said very clearly: "The stipulations of the Open Season procedure of E.ON GT are an obstacle for the investment in CCGTs.[319]" As a consequence, in November 2008 Essent Energy Trading and Rheinische Epe Gasspeicher GmbH & Co KG, a joint venture of Essent and the Cologne based utility RheinEnergie, started a new formal procedure at the BNetzA against E.ON GT to obtain transportation capacity for its storage projects at Epe[320].

After months of discussion with the regulatory authority about priorities of projects and the proper framework conditions for investment, During May 2009, E.ON GT announced the finalisation of the open season procedure. The company will now invest around 400 million

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316 E.ON GT: The general procedural terms for Open Season 2008, §13 states explicity the unilateral binding commitment as the first step and describes in § 14 and 15§ the procedures of E.ON GT following this commitment.

317 The two – or formally precisely three - companies were Continental Gas Storage and Kraftwerksgesellschaft Nuon Griesheim and Nuon Epe Gasspeicher GmbH. Continental Gas Storage is totally unknown in Germany. The Dutch investment company of the former Nuon storage manager Rick Lorio has an option to develop storage at Epe. Nuon is working on a CCGT planned at Griesheim (Frankfurt) and wants to extend its storage at Epe.

318 In a press release, following the decision of the Beschlusskammer 7 to reject the complaints, the regulator emphasised that the open season procedure demonstrates that in principle, investment in networks is feasible based on market-oriented criteria under the current regulatory regime. A decision in favour of Nuon and Gas Continental Europe would have delayed this process for months or years.

319 Presentation of Ralf Schwarz, Electrabel Deutschland at the Bundesverband Neuer Energieanbieter (bne) conference: Gasmarkt in Deutschland on November 13, 2008 at Berlin. Published on the bne internet page http://www.neue-energieanbieter.de/. Therefore bne is working on a concept for a separate ordinance provision that should regulate the connection of storage facilities and power plants to the existing networks and – more important – access to capacity for such new projects.

320 RheinEnergie complained publicly during the summer 2008 about the difficulties of getting transportation capacity for the storage project and announced political and legal action.

Euro, only 15% of the investment requirement of 3 billion Euro for all binding commitments for capacity from shippers. Bigger investments are the improvement of a pipeline from Sannerz (Hesse) to Rimpar (interconnection point with the MEGAL pipeline near Würzburg) and an enhancement of the MEGAL system in the direction of the German-Austrian border point Oberkappel. Both measures will ultimately allow more gas to be shipped eastwards to South-east Europe. The extension from Sannerz to Rimpar seems to be a long-standingproject. Pipeline maps from 2000 already show this intention. Sannerz, south of the city of Fulda is located where the E.ON GT system crosses Wingas Transport's MIDAL pipeline. Compared to the demand expressed during the open season the outcome is very disappointing.

A final agreement with the BNetzA about the calculation of investment budgets was apparently not achieved, one of the reasons for the disappointing investment decision[321].

In October 2008 Gasunie Deutschland and Gastransport Services started an integrated open season procedure[322]. The integrated procedure allows shippers to book joint capacities in both systems. Gasunie Deutschland is experiencing a significant increase of demand for transportation capacity. The reasons are new power plant and storage projects, and the substitution of declining indigenous production by new gas imports from Russia, Norway and new LNG projects. Furthermore increasing competition in Germany is leading to more demand for transportation capacity. The market screening phase was finished at the end of 2008. Altogether 45 participants expressed significant demand for new capacity at all German-Dutch border points of the GTS system and all interconnection points of the Gasunie Deutschland system within Germany and at the border points[323]. Final investment decision for new capacity is scheduled for the third or fourth quarter 2010.

Two network operators, E.ON GT and GasunieD both have complaints about the framework conditions for investment in Germany. If the decision of the BNetzA not to approve exemptions from cost based tariffs holds, the network operators will have to comply with the regulations for cost-based, and subsequently incentive–based, regulation. For new investment, this regulation allows a return on equity of 9.29%. But the network operators argue the effective rate of return is much lower because not all the costs related to these investments are allowed. And under the regime of incentive-based regulation network operators think it is almost impossible for them to invest in new compressor stations. The related increase of operating expenditures (opex) is accepted in this regime with a delay of at least two years, in the worst case seven years. According to the network operators, additional

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[321] Many market players were very disappointed with the final outcome. And comparing the demand for new capacity at the border points with E.ON GT's decision to concentrate on an improvement of the Southeast connection - that should be mainly in the interest of E.ON Ruhrgas - the disappointment can be understood. Interestingly the only company that complained in public was Wingas. Rainer Seele the spokesman of the management board said at the annual press conference at Düsseldorf during June 2009: "With the planned investment of 400 million Euro, 15% of the total investment to satisfy the complete demand, E.ON GT neither helps to improve the competitive situation in Germany nor increases security of supply." (see Gasmarkt Deutschland 07/09). Wingas demanded without success new capacity at various border points and for storage connection.

[322] See joint press release of Gastransport Service and Gasunie Deutschland, October 8, 2008.

[323] See joint presentation of Gastransport Services and Gasunie Deutschland at the shipper's meeting on the open season procedure on April 27, 2009: "Integrated open season. Market screening results and scoping" published on the Gasunie Deutschland internet page www.gasunie.de.

opex mainly from fuel gas is around 7% of capital expenditure[324]. Consequently E.ON GT does not plan to invest in new compressor stations to fulfil the demand from the open season procedure and GasunieD has already signalled that it will take the same decision if the regulatory regime is not changed to accept opex increases after investment immediately in the incentive-based tariff regulation[325].

But despites these difficulties related to new investment, the launch of the open season procedure demonstrates that regulated third party access works. Investment decisions are no longer made by integrated companies based on their own sales and procurement strategies. The network operators have to take into account demand for new capacity and comply with regulation. This obviously requires new procedures and regulatory/contractual agreements between shippers, network operators and the regulator. The fact that these agreements are not yet perfect is not very surprising, after only two years of effective regulation. My assumption is that ongoing discussions about the correct framework for new investment will add pressure on the integrated companies to abandon their network businesses. If there is ownership unbundling between sales and transportation activities, the regulator will be more willing to listen to the arguments of network operators, as concerns that operators are favouring the interests of their trading divisions will disappear.

7.3 Gas demand in Germany

An interesting issue over the coming years will be the development of gas demand in Germany. The two main drivers are:

- The government's energy and climate policy, which may significantly reduce gas demand in the heating sector.
- Substantial uncertainty about the future of gas as a fuel for power generation.

7.3.1 Demand and supply since 2003

In my 2006 study I showed the German gas demand until 2002 and pointed out that since the end of the nineties demand has more or less stagnated,[326] as the following figure demonstrates.

[324] See presentation of Jens Schumann, managing director of Gasunie Deutschland at the 9th ICG Branchentreffen Gas, March 24-25 at Berlin

[325] See Gasunie Deutschland presentation "Regulatory Issues"at the shipper's meeting on the open season procedure on April 27, 2009 (published on the internet page of Gasunie Deutschland www.gasunie.de).

[326] See Lohmann 2006, p. 9.

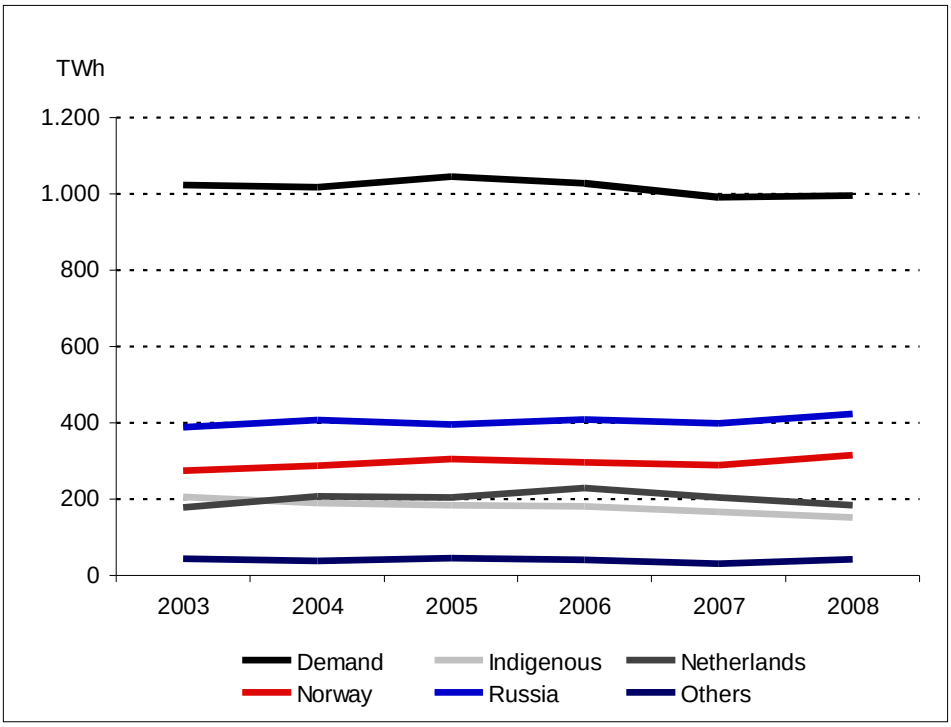

Figure 16: Supply and demand in Germany 2003 - 2008 (Source: Ministry of economics: Ausgewählte Statistiken zur Entwicklung des deutschen Gasmarktes monatliche Bilanz 1998 - 2008)

In addition to annual demand, Figure 16 also shows the gas supplies from different sources. Indigenous supply is constantly declining, and is being substituted by more supplies from Russia and Norway. This long-term supply picture will not change significantly over the coming years. So far attempts by major German gas importing companies to add gas from more remote suppliers transported as LNG to Germany have not been very successful[327]. Over the past several years, most German supply contracts with the Russian Gazprom have been extended until 2036. Dutch and Norwegian contracts have durations until 2022 or 2028. These contracts will be the backbone of German long-term supply over the coming years. In addition the German gas majors E.ON Ruhrgas and VNG will add a share of 10% - 15% of equity gas to their supply portfolios[328].

More challenging is the future development of the demand side. Conventional wisdom until 2006 was that demand in the residential and industrial sector would – as during recent years – stagnate or decline slightly, but that this would be more than offset by additional demand from the power sector. This assumption was challenged in 2007 and 2008 mainly for two reasons:

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[327] In particular E.ON Ruhrgas is ambitious in that business. The company aims for a share of 10% from LNG in its supply portfolio, but until now it does not looks as if this target will be meet very soon. The company has capacity in a number of regasification terminals in Europe (Barcelona, Huelva, Isle of Grain, Gate) and participates in a number of new projects (Livorno, LeHavre, Krk). But it postponed in 2008 plans for a German terminal at Wilhelmshaven. And until mid 2009 its participation in upstream projects that allow access to LNG has beem very limited. The company is trying to get a foot in African and Middle East projects but so far the only success was a 5% share in a project in Equatorial Guinea and a 29% share in an exploration licence in Egypt. Long-term supply contracts have also not closed.

[328] E.ON Ruhrgas has for years been involved in gas production, but in 2008 gas production was only 1.4 Bcm (see E.ON annual report 2008, p. 49). VNG founded in 2006 VNG Norge, acquired a number of exploration licences and in 2008 the production company Endeavour Energy Norge AS.

- Steeply increasing oil prices – and as a consequence gas prices.
- The more serious climate and energy policy of the German government.

Quantitative data about the consequences of these developments for Germany is only available to a limited extent. The following graph of demand development is based on three studies[329]:

- EWI/Prognos – Studie: Die Entwicklung der Energiemärkte bis zum Jahr 2030, Cologne Bale 2005
- EWI/Prognos: Auswirkungen höherer Ölpreise auf Energieangebot und Nachfrage, Cologne Bale 2006
- Leitstudie 2008: Weiterentwicklung der "Ausbaustrategie Erneuerbarer Energien" vor dem Hintergrund der aktuellen Klimaschutzziele Deutschlands und Europas, Oktober 2008

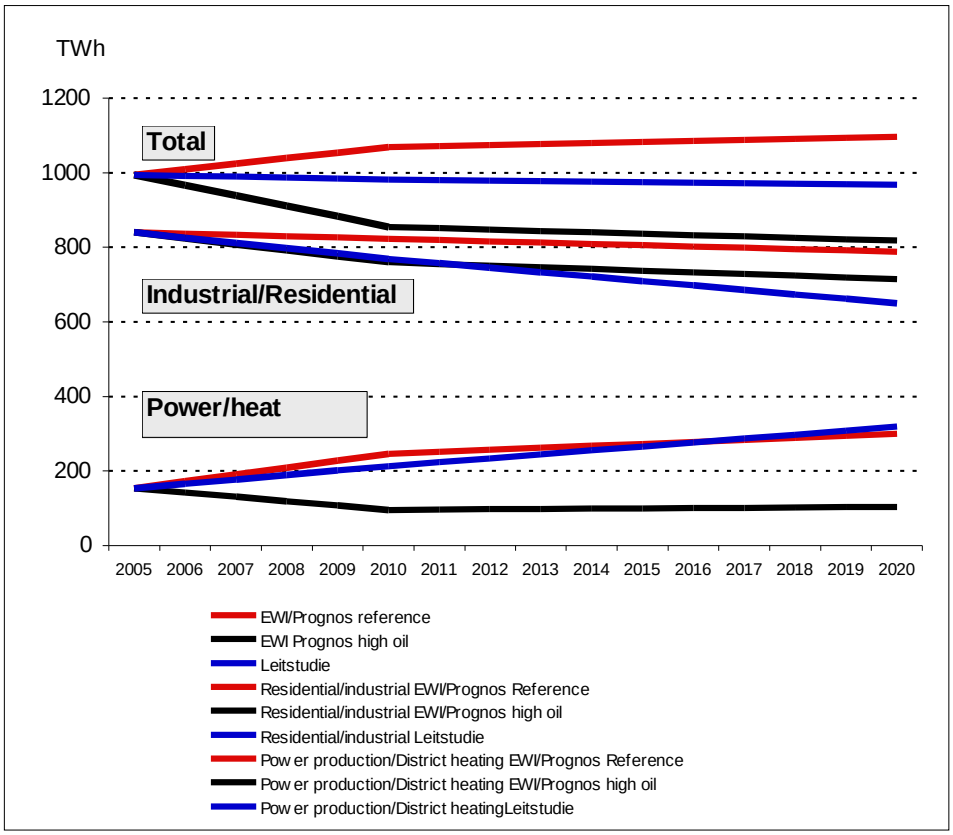

Figure 17: Forecast of gas demand until 2020 (Source: author's calculations based on EWI/ Prognos and "Leitstudie"

[329] The first two studies were made on behalf of the ministry of economics. They are often used in Germany as reference studies on the development of demand in Germany. The third study was done on behalf of the ministry of environment. It is the latest update of a yearly study. It takes into account the latest legislation in the energy sector on energy efficiency and the promotion of renewable energies in the heating sector.

The reference scenario of EWI/Prognos (red lines) was prepared before oil price shocks and a new climate and energy policy were on the agenda. For total gas demand until 2020 an increase of around 10% was estimated. The driver was the power sector. EWI/Prognos assumed gas will be one of the main substitutes for coal-fired power plants and nuclear power plants[330].

In EWI/Prognos "high oil price" scenario (black lines) gas demand will decrease by almost 20% up to 2020. In particular gas for power production does not play a big role. Compared to gas, coal will be more competitive and renewable energies will have a bigger share.

The "Leitstudie 2008" whose major purpose is to investigate the future role of renewable energies in different sectors based on the targets of the government for emission reduction, forecasts a total gas demand in 2020 almost at the level of 2005. The steep 20% decrease of use in the residential and industrial sector is substituted by an increase in the power sector, which comes in particular from decentralised CHP plants.

Scenarios in times of changing and uncertain framework conditions are difficult and none of these scenarios take into account the effects of the economic crisis that started in the fourth quarter of 2008. But they show that it is not very likely that gas demand will increase over the next ten years. In the following section, the drivers behind these developments are described.

7.3.2 Energy and climate policy

In August 2007 the German government agreed on an integrated climate and energy programme to reduce carbon emissions by 40% by 2020 compared to 1990 levels[331]. The major elements of the programme relevant for the gas market are:

- Several ways of increasing efficiency in the heating sector.
- Increasing the share of power production from CHP plants from 12% to 25%.
- Increasing the share of renewable energies in power production from 14% to 30%.
- Increasing the share of renewable energies in the heating sector from 7% to 14%.
- Support for carbon capture and storage technologies.
- Support for the injection of biomethane into gas networks.

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[330] German energy producers and the government agreed on a phasing out scheme for nuclear power plants in 2002. The scheme is stipulated in the Atomic Energy Act. Each nuclear power plant is endowed with a certain amount of power. Assuming normal operations most plants must shut down before 2020. In 2008 23% of the German power production came from nuclear power plants (see BDEW overview, May 22, 2009).

[331] The so-called Meseberg programme – because it was agreed at a meeting of the German government at Meseberg - contains altogether 29 cornerstones. See for example: Ministry of envrironment: Das Integrierte Energie- und Klimaprogramm der Bundesregierung, December 2007.

The increases in efficiency and the obligation to use a certain share of renewable energies for heating in new buildings – including prescriptions on technology[332] – will reduce the use of gas in the heating sector[333]. The estimate that gas demand in the heating sector could decline by at least 20% by 2020, which is included in the "Leitstudie 2008", is shared by an increasing number of people from the gas industry. Burckhard Bergmann, in one of his last speeches as E.ON Ruhrgas CEO at the major German energy conference Handelsblatt Jahrestagung Energiewirtschaft, said he expected a fall of 25%. Already in September 2007 Bernhard Witschen, member of the executive board of the Cologne based utility RheinEnergie, anticipated that the use of fossil fuels in the heating sector could be 25% lower in 2020 as a result of the Meseberg action plan[334].

A number of local utilities say that, even in 2008, they have lost sales due to changes in customer behaviour in relation to energy use:

- Energy efficiency is already increasing.
- Customers have cut energy use due to high gas prices.
- Renewable energies – in particular wood pellets and heating pumps - are already competing with gas.

The German gas industry started a number of initiatives in 2008 and 2009 to compensate this decline. For example they started to promote gas fired micro CHP plants of 1 MW for residential houses as a new technology.

7.3.3 Will gas demand from CCGT plants increase?

The extent to which a decline in the gas demand for heating will be compensated by the power sector is unclear. Subsidies to increase power production from CHP plants could lead to increased gas demand in this sector, but coal-fired CHP plants receive the same subsidies. And – as many observers argue – increased power production from renewable energies, particularly wind power, should increase the demand for flexible gas-fired power plant as back up for intermittent wind generation.

Under the new rules of the EU emissions trading scheme, from 2013 emission permits will be auctioned rather than freely allocated. In principle, this should improve the economic viability of gas-fired power plant relative to coal-fired plants. Furthermore most of the

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[332] The law on the use or renewable energy in the heating sector says precisely what technlogies may be used. The law is fulfilled if either a share of 15% of heating is provided from solar sources or a share of 30% from liquid – like bio alcohol - or solid biomass or a share of 50% from geothermal sources, that what the law says HL. Alternatively houses can be supplied by district heating from highly efficient CHP plants. See Gestz zur Förderung Erneuerbarer Energien im Wärmebereich (Erneuerbare-Energien-Wärmegesetz-EEWärmeG), August 7, 2008, § 5 – 7.

[333] Burckhard Bergmann, then still the CEO of E.ON Ruhrgas, said at a press meeting at the end of November 2007 on the energy and climate programme: "We think a policy "to abandon gas", which seems to be the consequence of the climate policy of the German government, is a dead end.

[334] Bernhard Witschens's presentation at the 10th Team Consult Colloquium on September 20, 2007 in Berlin. Team Consult also expects that the climate and energy policy of the German government will lead to a decrease in demand by more than 20% by 2020 (see Sybe Visser, senior expert of Team Consult: presentation at 11th Team Consult Colloquium, October 23, 2008.

current coal-fired projects face significant public and local political resistance. But the future role of gas in the power sector portfolio is anything but clear.

The German government sees only a very limited role for gas-fired power plants in future because it fears increasing import dependence[335]. In principle, the government believes that coal will be the most important fossil fuel, and hopes that carbon capture technology will be available in the future to cope with the emission problems of coal-fired power plants[336].

An ongoing topic is the future of nuclear power in Germany. Legislation that obliges closure of nuclear power plants by 2022 after each unit has produced a certain amount of electricity, is still in place[337]. But the Christian Democratic Party (CDU) and the Liberal Party (FDP) favour abandoning this policy and extending the life span of existing plants. If the two parties have a sufficient majority to form a coalition after the next general election in September 2009, it is possible that the nuclear power policy of the German government will be changed.

Against this background, only a very limited number of gas-fired power plant projects are currently under construction or in various stages of planning (Table 8)

[335] The Russian-Ukrainian gas crisis during January 2009 and the related cuts of Russian gas flows immediately resulted in political rejection of a bigger role for gas fired power plant. The minister of economics at that time Michael Glos said in a speech at the mahor German energy conference Handelsblatt Jahrestagung Energiewirtschaft on January 20, 2009, the day when gas transit through the Ukraine was resumed, that gas should play no bigger role in power production in Germany. For a detailed description of the crisis see: Simon Pirani, Jonathan Stern, Katja Yafimava: The Russo-Ukrainian gas dispute of January 2009: a comprehensive assessment, Oxford Institute of Energy Studies, NG 27, Oxford February 2009.

[336] There are numerous statements by representatives of the German government on this topic. Interestingly even the ministry of environment has the same position. See most recently the report of the Geman government on the oil and gas market strategy: Bericht der Bundesregierung zur Öl- und Gasmarktstrategie, Berlin 2008: "For the foreseeable future power production based on hard coal and lignite will remain the most important pillar." P. 62. And one page further: "The use of gas could be increased especially if coal-fired power plants will no longer be built as natural gas has comparatively lower emissions. But in the long-run it will make us more and more dependent on imports and has related price risks."

[337] The amendment of the decree on the use of nuclear power was enforced in 2002 by the coalition of the Social Democratic Party and the Green Party at that time. The law endows each plant with an amount of power it can produce. This amount and the usual load factor define the remaining life span. Most of the 17 plants with a total capacity of 20,500 MW should have produced the amount of power by 2018.

Company	Location	Capacity (MW)	status
E.ON	Irsching 4	555	Under construction. In operation 2011.
E.ON (jointly with N-Ergie, Mainova, HEAG)	Irsching 5	860	Under construction. In operation 2009.
E.ON/Gazprom	Lubmin	1,200	Planning. Postponed for an indefinite time.
RWE	Lingen	876	Under construction. In operation 2009.
Advanced Power	Bocholt	400	Planning.
Advanced Power	Wustermark (North of Berlin)	800	Early planning stage
Electrabel	/Cabe/ Stassfurt	800	Evaluation of feasibility of different locations.
Nuon	Frankfurt	450	Planning. Investment decision scheduled for 2009. Nuon postponed the project in August 2009 but ant to sell it to an investor because it is far advanced
Iberdrola	Ludwigsau (North Hesse)	1,100	Planning.
Iberdrola	Lauchhammer	n.a	Planning.
Gazprom/Soteg	Eisenhüttenstadt	800	Planning, most likely no final investment decision
EnBW	Karlsruhe	410	Project, status not clear.
Atel	Premnitz	400	Early planning stage, site was bought in 2008.
Swb Bremen	Mittelsbüren	420	Planning. Start of operation planned 2013.
Tobi Kraftwerksgesellschaft (8 distribution companies)	Würgassen	800	Early planning.
Nuon	Meppen	450	Planning, investment decision not before 2010.

Table 8: Gas fired power plant projects in Germany (Souces: Company information)

A number of companies believe it is worth working on CCGT projects because, despite the total lack of political support, a number of factors will improve the general outlook over the coming years. The development of the gas market and the evolving commercial framework may make power projects more attractive. But the continuing fragmentation into market areas and the consequent constraints on the development of a more liquid market, combined with problems related to the availability of transportation capacity, still create risks for power projects[338], although the market situation has improved and is ecpected to improve further. My impression, at the end of 2008, was that companies which were evaluating projects were not optimistic about their prospects. This view is backed by Gazprom's decision in 2009 to

[338] Statkraft, for example, which has operated two CCGT plants in the market area of Wingas since 2007, would like to optimise the utilisation of the gas by Day-Ahead trading. But in the Wingas market area the potential trading partners are extremely limited.

most likely stop the Eisenhüttenstadt project and postpone the Lubmin project indefinitely[339]. As long as the financial crisis that started in the fourth quarter 2008 lasts, a number of the potential investors will not continue with these projects. Aside from the E.ON projects at Irrsching and the RWE project at Lingen, no final investment decision been made for any of the projects listed in Table 8.. Therefore prior to 2015, virtually no new capacity will be in operation.

7.3.4 Biomethane – a new source of supply

Improved conditions for the injection of bio-natural-gas into gas networks was a fundamental element of the German government's 2007 climate and energy programme (see above). Plants already in operation and the use of biomethane in the CHP sector have been subsidised for several years. (Bio-natural-gas is the preferred gas industry term, but the biogas sector prefers "biomethane".)

At the end of 2005, the first study on the potential for bio-natural-gas, commissioned by BGW and DVGW and other associations, was published; it was carried out mainly by the Wuppertal Institut, an institute specialising in environmental issues.[340]. It concluded that around 10 Bcm of bio-natural-gas could be produced in Germany in 2030, roughly 10% of current gas demand. Biomethane production costs are higher than the current price of natural gas. The Wuppertal Institut calculates for plants with a production of 500 m^3/h (4.3 mil. m^3/y) that the cost, including processing, of bio-methane is 4.5-7.2 ct/kWh, depending on feedstock and conversion technology. Despite these high production costs, the operation of such plants can be profitable if the biomethane is used for the production of electricity and heat, or as fuel. In power and heat production, the subsidies in the Law on Renewable Energies (EEG) make the use of biomethane attractive as long as the cost stays within a certain range. In the fuel sector, biomethane costs are usually below the diesel price at filling stations. If biomethane is subsidised by tax exemptions, the Wuppertal Institut sees good prospects in this sector. In addition, the voluntary commitment of the gas industry to blend a 10% share of biomethane into natural gas networks increases to 20% by 2020. To facilitate the use in the CHP sector further, the network access ordinance provision was amended in early 2008. The main provisions supporting the injection of biomethane are:

- Bio-natural-gas plants are prioritised for connection to the network.
- The network operator must bear part of these connection costs.
- For balancing bio-natural-gas within balancing groups, network operators must offer an extended balancing service for a period of twelve months. The tolerance band between injection and withdrawal is 25% of the injection capacity. This is based on

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339 The managing director of Gazprom Germania, Hans-Joachim Gornig announced these decisions at the annual press conference of the company in May 2009. He said: "In principle Gazprom Germania is interested to develop gas fired power plants but currently the economic framework conditions do not favour such projects." (see Gasmarkt Deutschland 06/09).

340 Analyse und Bewertung der Nutzungsmöglichkeiten von Biomasse. Untersuchung im Auftrag von BGW und DVGW. Band 1: Gesamtergebnisse und Schlussfolgerungen (Wuppertal Institut), Wuppertal Institut für Klima Umwelt Energie in co-operation with Institut für Energetik und Umwelt, Fraunhofer Institut Umwelt,-Sicherheits,-Energietechnik UMSICHT, Gaswärme-Institut Essen, Wissenschaftszentrum Nordrhein-Westfalen Institut Arbeit und Technik, Wuppertal, Leipzig, Oberhausen, Essen, November 2005.

the assumption of constant injection over the year and a load factor for CHP-plants – the major customers – of roughly 5,500 hours/y. The price for this extended balancing service is only 0.1 ct/kWh.

- The operator of the biogas plant is responsible only for processing gas to pipeline quality specifications. The network operator is in charge of the measurement requirements and bears the related cost.
- Payment to biogas plant operators of the avoided cost of long-distance transportation - 0.7 ct/kWh - is in fact a direct subsidy.
- Network operators can allocate all costs related to the injection of biomethane to general network tariffs.

Although there is no direct government support for bio-natural-gas in the heating sector as a renewable energy[341], a number of suppliers have started to offer "ecogas" products with a share of biomethane usually ranging between 5% and 20%.

Experts disagree as to whether 10 Bcm/year of biomethane will actually be produced, because of the competition between food production and energy use in this sector. But the industry is taking the issue seriously and some of the large German incumbents such as E.ON Ruhrgas, and a growing number of distribution companies, have become involved.

8 Conclusions and future developments

It was not the aim of this study to present a theoretical analysis as to whether the model of German network access which has been chosen was the most efficient, or whether the new balancing system is optimal or was introduced at the best time. The aim was to show that these measures have been effective, and that the regulator mainly reacted to the long history of the German gas industry of preventing the entry of new players and, as a consequence, any significant progress towards competition. Therefore the industry itself must take principal responsibility for the current situation. Complaints about overly rapid and radical changes over recent years should be addressed mainly to industry associations and the major players themselves; something that industry representatives are increasingly conceding, at least informally.

The main message of this study is: "regulation matters". From 2006 until 2009 it was principally the regulatory authority and its design of the framework conditions that paved the way for the emergence of competition in Germany. In particular the enforcement of the two-contract-model, and the switch from hourly to daily balancing, facilitated market entry and allowed market players to develop new sales strategies[342]. But it must be emphasised that the structure of the regulatory authority is important for this success. Its power is based on the

[341] Only in the federal state of Baden-Wuerttemberg does the law on the use of renewable energies in the heating sector allow biomethane to be included in the obligatory 20% share of renewable energies in new buildings.

[342] Frank Jarmer, the managing director of EGT Energiehandel Triberg, an affiliate of a German utility that started to acquire industrial customers nation-wide in Germany for example said explicitly that the two-contract-model and the daily balancing system enabled the start of these new sales activities (see Gasmarkt Deutschland, 01/09, p. 29).

ability of the formal decision bodies (Beschlusskammern) to make legally binding decisions that can be enforced quickly. This structure finally reduced the influence of the diverse interests of the different stakeholder groups.

But the role of the different stakeholders is still important. I have described how all major decisions were prepared in intensive discussions between the BNetzA and the stakeholder associations. And the basic ideas for the new design of the different parts of the framework were developed by associations. In particular GEODE, an association of local distribution companies, played a very active role. But also a number of major transmission system operators made very important proposals in relation to the new balancing regime. This demonstrates that at least some of the incumbents changed their position. They are no longer trying to block any change, but see the opportunities in a more open gas market not only for their sales and trading business, but even for the transportation sector. This view is not shared by all incumbents, but more of them are joining this camp.

In particular, I have described the changing market behaviour of E.ON Ruhrgas. Before 2006 E.ON Ruhrgas had a reputation for preventing any change. Since 2006 the company has started a number of initiatives that support the development of competition in the German gas market, such as the merger of market areas, OTC trading, release and auctioning of storage capacity and an open season procedure to evaluate new demand for transportation capacity. There should be no misunderstanding about the fact that E.ON Ruhrgas is still the dominant player in the German gas market and is trying to prevent any further erosion of its market position. But the company has started to understand that resistance to any change may finally be more harmful for its business model than adaptation to the new framework conditions. The other major German gas companies have also adapted their market behaviour. This new market behaviour of the incumbents, led by E.ON Ruhrgas, was also an important new development in Germany.

As a consequence, the German gas market in 2008/09 is very different compared with 2005. Institutions like the Bundeskartellamt might still not agree that Germany has a “competitive gas market”, but competition has developed and customers have a much greater choice. In particular smaller and medium sized industrial customers are more and more satisfied that they will receive different offers if they tender their gas supply, and can secure significant savings by switching supplier or renegotiating their contracts. Also local utilities are able to switch supplier or can start to implement new procurement strategies such as portfolio management approaches with different supply sources including storage and trading products with a mixture of price mechanisms, partly linked to oil and partly linked to the OTC market.

But not all customer groups benefit from increasing competition in the same way:

- Competition in the residential sector is still at an infant stage. The existence of different market areas and switching procedures which are still not very well established restrict competition in that sector.
- Competition in the low cal gas sector is less than in the high cal gas sector because the number of potential suppliers is lower and access to low cal gas is more difficult.

- In the traditional gas market very large industrial customers often had contracts with very favourable prices. These are often below current market prices and large industrial customers fear price increases.
- The same is true for power producers that also had very favourable prices.

The issues just mentioned point to possible further developments in the German gas market.

I have described how the number of market areas was reduced, the development from 19 to 12 market areas and the setbacks for further reductions. But I have also described new initiatives for a merger of market areas starting from the beginning of 2009, and I expect that, at the latest by October 2010, there will be only two high cal and one or two low cal market areas. This development will be accompanied by new rules for capacity allocation and congestion management that will facilitate transportation both within the market areas from the border points, and between the market areas. A new regime for congestion management and capacity allocation is the last remaining building block of the regulatory framework.

The optimisation of operational processes, in particular related to portfolio and system balancing and the supply of non-daily metered customers, is also one of the major tasks for the coming years.

As a result, competition in the residential sector will become more intense, but many customers have strong ties to their local distribution company and therefore it will most likely remain a difficult market for nation-wide suppliers.

The further development in the low cal market segment might be interesting. A number of market players think the merger of the high cal and low cal market area in the Netherlands mentioned in 3.4.3.5 will have a significant impact. As a first step it may facilitate low cal gas procurement. In the Dutch market only one quality will be traded and it can be physically nominated as low cal gas at a German border point. Even a lack of firm interconnection capacity might not be a major obstacle, because traders think the risk of interruption is low. As a second step the standardisation of gas quality in the Dutch market may serve as a model for the German market, although the physical premises are different. Over the next five years the commercial difference between high cal and low cal gas may disappear.

Gas prices and pricing principles in Germany will become a crucial topic. Traditionally gas has been priced following the principle of “Anlegbarkeit”, i.e. in every sector prices are calculated in relation to competing fuels. As a result in the heating sector, gas is priced in relation to gas oil, in the industrial sector mainly in relation to fuel oil and in the power sector partly to fuel oil and partly to coal. As a consequence, prices for each sector vary, and prices for large industrial users and power plant operators are usually much lower than prices in the heating sector. I have described the development of OTC trading over the last three years, and as a consequence OTC prices are available as benchmark prices and volumes can be bought in the OTC market. Since 2006, compared to the gas prices in the heating sector these OTC prices were usually lower (see **Figure 9**). Therefore local distribution companies have an incentive to replace prices calculated according to the Anlegbarkeit principle, with contracts or procurement strategies that have a closer relationship to OTC market prices. Smaller and

medium sized industrial customers, for whom prices are also often linked to heating oil prices, have incentives to switch to suppliers that offer gas based on OTC market prices. On the other hand suppliers have incentives to terminate contracts with prices below OTC market levels. This trend may have further consequences for future market development:

- Traditionally local distribution companies bore neither price nor volume risk. They more or less passed the prices in their contracts on to their customers and had comfortable take-or-pay conditions. With more market-oriented procurement strategies these companies are exposed to price and volume risks. Very volatile price movements in 2008 demonstrated how severe these risks can be. The answers are implementation of risk management systems and co-operation among distribution companies. Nevertheless it cannot be ruled out that sooner or later some distribution companies will not be able to cope with these risks. As a result, more concentration in the downstream sector may take place during the coming years[343].
- OTC market prices in 2008 and at the beginning of 2009 were low. Northwest Europe is well supplied with gas and the economic crisis that started in autumn 2008 further depressed demand. Therefore OTC markets are well supplied with gas[344] and although the interconnections between the northwest European gas markets are not perfect, additional demand on the OTC market can be rather easily met[345]. But it should not be forgotten that Germany is mainly supplied with gas from major European producers under long-term contracts. The further development of prices and the OTC market depends on:
    - Improvement of interconnections between different markets.
    - The reaction of producers to developments in Germany.
- I have shown that there are investment projects for new infrastructure but that transmission system operators are critical of the framework, and in particular regulation of the return on investment. In principle I expect further integration of northwest European markets, but the timing and the magnitude of investment is still uncertain[346].
- In the current contracts between the major European gas producers (mainly Gazprom, StatoilHydro and GasTerra) and the German gas importers, the Anlegbarkeit-principle is still mainly applied[347] and the value of the gas is calculated according to the value in the different end user segment. But this traditional business model where the producer

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[343] From the beginning of the liberalisation process in particular in the power sector the death of local distribution companies was predicted. But this has not yet happenned. I do not predict any figure for remaining companies.But the number of independent players will decrease during 2009/10 and the increasing complexity of the gas market will be one of the causes.

[344] Even during the Russian-Ukrainian gas crisis in January 2009 the effect on OTC market prices was limited. For most traders this demonstrated the healthy supply of the markets.

[345] During the first quarter of 2009 the Day-Ahead prices at the NCG VP usually had a premium of up to 2.00 Euro/MWh over TTF prices. This premium was often higher than transportation cost, but prices were still attractive for German buyers.

[346] In particular Gasunie is promoting the concept of a northwest European "gas roundabout"that includes an extension of the Dutch system (already decided) but also an integration of its north German network. Such a gas roundabout would finally link the UK market (via the BBL-pipline) the Dutch network including the Gate LNG regasification terminal in Rotterdam and, at a minimum, the north and east German market including gas from the Nord Stream pipeline.

[347] A number of contracts contain a small part where the price is linked to OTC prices

takes the price risk, and the importer the volume risk, does not work any longer. On the pricing side the Anlegbarkeit-principle that granted a fair margin to the producer vanishes, and importers are less able to sell the volumes as a result of stagnating or decreasing demand and increasing competition. The question is whether and how the contractual framework will be adapted, with a pricing system that takes into account the increasing relevance of market prices[348] and volume flexibility, where producers are willing to offer more gas at the virtual trading points to increase liquidity. All of the major producers are involved in short-term trading activities but only to a very limited extent because of the dominance of the long-term contracts. And all players are reluctant to abandon a business model that worked nicely for 40 years. But at least one of them – Gazprom – has been signalling for some years that it wants to have a bigger share in the downstream market, a demand that has not been wholeheartedly welcomed by the German public and politicians. Concerns became even more acute after the January 2009 Russian-Ukrainian gas crisis.

This study is limited to Germany. But in future, gas development will no longer take place in a national, but a European, context. I have already noted possible interactions between German and European pipeline regulations and the increasing importance of cross border trading activities and provision of flexibilty. The reactions of the producers to these changes will depend on future supply and demand development. If market prices in Northwest Europe remain low – and below long-term contract prices for long periods- as a result of healthy supply and low demand over the next two to three years, pressure on the contractual framework will increase. I pointed out in the study that it can be at least questioned whether gas demand in Germany will increase in the coming years.

The framework in place in 2009 no longer isolates the German gas market from the rest of Europe, but allows integration and development. Whatever happens in future, this is a very big change compared with the position in 2005.

[348] I don't want to become involved in the some times heated debates about the rationality of oil-linked gas prices. Producers and importers may have reasons to link gas prices to oil prices. But nevertheless this must in some way take into account market prices for gas, or arbitration will take place at the expense of one party.

9 Glossary

Basic balancing service:

Service related to the hourly balancing system in Germany. The service allows shippers an imbalance of 10% of the relevant maximum hourly capacity and a cumulated tolerance of one hourly volume of the maximum hourly capacity. Transmission system operators did not charge any fee for this service.

Balancing group:

A group of entry and exit points within one single market area. Each shipper decides which entry and exit point to include in a balancing group. The number of entry and exit points can be changed. Balancing is done within the balancing group. The allocated entry and exit volumes must be balanced hourly or daily. Each shipper has to close a balancing group contract with the balancing group operator (see below) as a prerequisite of the hourly (until October 1, 2008) or daily (from October 1, 2008) balancing. A shipper can have more than one balancing group in each market area. A balancing group can encompass entry and exit points of more than one shipper. One shipper must be appointed as the shipper in charge of the balancing group. All entry and exit points of a transportation portfolio of a shipper must be included into a balancing group.

Balancing group transmission operator:

In charge of the balancing group. Usually the network operator that operates the market area.

Beschlusskammer

Formal decision body of the German regulatory authority. The decisions of the Beschlusskammer have legal status and must be obeyed by the concerned parties. They can be challenged by court action.

Bundeskartellamt (BKartA):

The German antitrust authority.

Bundesnetzagentur (BNetzA):

The German energy regulatory authority.

Co-operation agreement:

Agreement among all German network operators, where the principles of network access and the requirements for co-operation among all network operators are described. In addition, the co-operation agreement contains (in an appendix) the general conditions of network access including the standard contractual stipulations for an entry contract, an exit contract and a balancing group contract.

Commitology Procedure:

Special feature of the European law-making process. It allows the European Commission to change and develop further parts of a direct European regulation without new approval from

the European Parliament and the Council. The issues of which regulations can be subject to a commitology procedure are defined in the regulation.

Contribution account:

Part of the daily balancing regime. In this account all revenues and costs from buying, selling, balancing, and system regulating energy, and revenues from hourly structuring fees are collected. All shippers (except very large industrial customers) either have to settle the deficit or surplus every half year or year.

Daily Balancing

Balancing system in Germany since October 2008. The portfolio of every shipper must be balanced at the end of the gas day. Imbalances are cashed out at market-related prices

Distribution network

Network of local or regional distribution companies. Usually most of the networks are low pressure. Residential customers are connected to the networks. Therefore distribution networks have numerous exit points.

GABi Gas:

"Grundmodell der Ausgleichsleistungs- und Bilanzierungsregeln im Gassektor". Name of the basic model for balancing as prescribed by the regulatory authority for the gas sector in May 2008.

Gas Year: October 1, 6:00 a.m. to October 1, 6:00 a.m. next year

High cal gas:

Gas with a calorific value between 11.00 and 1200 kWh/m3.

Hourly Balancing:

Balancing regime in Germany until October 2008. The portfolios of all shippers must be balanced during every hour. Imbalances beyond the "basic balancing service" (see separate entry) are penalised.

Hourly incentive system

A special feature of the daily balancing system. To a certain degree shippers must take care of their own hourly balancing of injection and withdrawal. The requirements are different for different customer groups. For hourly imbalances beyond defined tolerance levels shippers must pay a fee – or more precisely a penalty – which will give shippers an incentive to take care of the hourly balancing of the portfolio in the range defined in GABi Gas.

Hourly structuring fee:

Part of the hourly incentive system within the regime of daily balancing. Shippers must pay this fee if they do not meet the requirements for the hourly balancing of their portfolios. Therefore the fee is in fact a penalty.

Interregional transmission system operator

Operator of a pipeline system connected to German border points or points of indigenous production. The networks of the subsidiaries of the importing gas companies E.ON Gastransport, GasunieD (former BEB), Wingas-Transport, Ontras – VNG Gastransport and RWE Transportnetz Gas and the pipelines of the international groups DONG, StatoilHydro, ENI, Gaz de France are characterised as interregional pipelines.

Low cal gas:

Gas with a calorific value of around 10.00 kWh/m3. Low cal gas comes from German production and from the Netherlands. Import of low cal gas from the Netherlands is around 15 Bcm/y. German production is also around 15 Bcm/y, but because some of the German low cal gas is blended with Norwegian gas to a high cal quality, the total supply of low cal gas is less than 30 Bcm/y or roughly 30% of the German market. Actual figures are not published.

Market area:

An aggregation of different interconnected networks horizontally and vertically. For a shipper a market area is one integrated network. Usually a market area is composed of at least one interregional transmission network with its own separate entry point, and a number of local distribution networks each with their own separate entry points. In addition, regional transmission networks (see below) can be included, where they exist between the interregional network and the distribution network

Ordinance Provision

An ordinance provision is an annex to a law with more precise stipulations than the law. It is issued by the responsible ministry (in the case of energy the ministry of economics). It decided by the cabinet. Unlike a law, it is proposed by the cabinet and approved not by the parliament (Bundestag), but by the second chamber, the house of the federal states (Bundesrat).

Portfolio balancing:

Energy sold to, or bought from, the network operators by shippers for the daily balancing of their portfolios to settle end of the day imbalances.

Regional transmission system operator

Operator of a regional transmission system. Usually these systems are connected to the interregional systems on the entry side and are used for transportation within a restricted regional area. On the exit side these systems are connected mainly to local distribution networks. There is no binding legal or technical definition of regional transmission networks. Usually the network consists of high pressure pipelines with a diameter mainly between 200 and 700 mm. The number of entry points is low (10 – 20) and the number of exit points is high (200 – 400). For these networks an entry-exit tariff system is applied. The transportation companies of the regional German gas companies bayernets, GVS-Netz or Saar Ferngas Transport are typical regional transmission systems.

Single-booking-model:

System for organising network access. Within a market area (see above) capacity is booked in each network separately.

SLP - Standard Load Profiles:

Profiles applied to calculate the gas demand for customers where the use of gas is not metered hourly (non-metered customers) but only once a year. All customers with an annual demand of less than 1.5 million kWh belong to this group. There are two different approaches to calculating SLP. In the analytical approach, all metered gas volumes (industrial gas users) are deducted from the total daily load of a distribution company. The remaining load is allocated to the non-metered customers applying certain formulae. In the synthetic approach a formula that describes the hourly gas demand of non-metered customers is directly applied to each customer. Usually customers are divided into certain categories (for example old houses or new houses). The main factor in the formula is temperature.

System balancing gas:

Gas needed by the network operator to physically balance the transmission system.

Rucksack principle:

Right of a shipper to transfer the necessary transportation capacity to supply a customer from the latter's previous supplier. Thus the customer carries his capacity "in his rucksack" to the new supplier.

Transmission system operator in charge of a market area:

One of the interregional transmission system operators of a market area., responsible for the balancing, co-ordination and publication of all data relevant to the market area. If market areas merge, these tasks can be assigned to a specially created service company.

Two-contract model:

System for organising network access. Access is based on one entry contract into the market area (see above) and one exit contract to the final customer, independent of the number of networks in the market area.

Virtual trading point:

A virtual point where gas may be traded after entry and before exit within the market area.