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**DG COMPETITION REPORT ON  
ENERGY SECTOR INQUIRY**

**10 January 2007**

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# EXECUTIVE SUMMARY<sup>1</sup>

## Introduction

Well functioning energy markets that ensure secure energy supplies at competitive prices are key for achieving growth and consumer welfare in the European Union. To achieve this objective the EU decided to open up Europe's gas and electricity markets to competition and to create a single European energy market. The process of market opening has significantly changed the functioning of the markets, provided new market opportunities, led to the introduction of new products and services. Competition initially lowered energy prices in Europe in line with market fundamentals.

However, while progress has been made, the objectives of market opening have not yet been achieved. Despite the liberalisation of the internal energy market, barriers to free competition remain. Significant rises in gas and electricity wholesale prices that cannot be fully explained by higher primary fuel costs and environmental obligations, persistent complaints about entry barriers and limited possibilities to exercise customer choice led the Commission to open an inquiry into the functioning of the European gas and electricity markets in June 2005. This inquiry, based on Article 17 of Regulation 1/2003<sup>2</sup> on the implementation of the Treaty rules on competition, aimed at assessing the prevailing competitive conditions and establishing the causes of the perceived market malfunctioning. The Final Report (Commission Communication) summarises the results of the inquiry, which are presented in more detail in this Technical Annex<sup>3</sup> to the Final Report.

While the Sector Inquiry was launched amidst perception that consumers were not reaping the full benefits of liberalisation, it should be underlined from the outset that it was not the object of the inquiry to describe the progress made in the liberalisation process and the advantages resulting from it. There are many such achievements and customers in markets where liberalisation has been successfully introduced are still among those benefiting from the widest choice of suppliers and services. They also pay – compared to customers in other Member States – more cost-reflective prices on average. The Commission remains thus convinced that there is no alternative to the liberalisation process. It is, therefore, essential to ensure that existing liberalisation Directives are fully and effectively transposed.<sup>4</sup> However, more needs to be done before consumers can reap the full benefit.

The Energy Sector Inquiry has focused on identifying areas where competition is not yet functioning well and those areas which need to be addressed the most rapidly in order for liberalisation to bear fruit. For the purpose of the inquiry the key areas were grouped under the following headings: (1) market concentration/market power, (2) vertical foreclosure (most prominently inadequate unbundling of network and supply), (3) lack of market integration (including lack of regulatory oversight for cross border issues), (4) lack of transparency, (5)

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<sup>1</sup> This executive summary mirrors the Commission's Communication COM(2006) 851 – Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final report).

<sup>2</sup> Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (OJ L 1 of 4.1.2003, p.1), as amended by Council Regulation (EC) No 411/2004 (OJ L 68 of 6.3.2004, p. 1).

<sup>3</sup> A Commission staff working paper, DG Competition Report on Energy Sector Inquiry – SEC(2006) 1724.

<sup>4</sup> The Commission is conducting infringement procedures against a number of Member States in this respect – see further in the Commission's Communication on the Prospects for the internal gas and electricity market, referred to below.

price formation, (6) downstream markets, (7) balancing markets, and (8) liquefied natural gas (LNG).

The shortcomings identified in these key areas call for urgent action and priority should be given to four areas: (1) achieving effective unbundling of network and supply activities, (2) removing the regulatory gaps (in particular for cross border issues), (3) addressing market concentration and barriers to entry, and (4) increasing transparency in market operations. The Commission's intentions concerning regulatory proposals to be made in this regard are set out in its Communication on "Prospects for the internal gas and electricity market"<sup>5</sup> which is presented in parallel to the Final Report.

### The wider context

The introduction of competition in Europe's gas and electricity markets is an integral part of European energy policy which is directed at achieving the three closely related objectives of: a competitive and efficient energy sector, security of supply and sustainability. All European consumers, i.e. households, commercial users and industrial users, heavily depend on the secure and reliable provision of energy at competitive prices. Also, the achievement of the Union's goal of adequate protection of the environment is of fundamental importance as can be demonstrated by the commitment to reduce the emission of greenhouse gases in implementation of the Kyoto Protocol. The Sector Inquiry therefore has to be seen against this wider policy context.

European energy policy was set out in the Commission's Communication to the 2006 Spring European Council<sup>6</sup> concerning the renewed Growth and Jobs strategy. That Communication puts the creation of an efficient and integrated energy policy at the heart of the Commission's priorities. This goal was further underlined in the Commission's Green Paper "A European Strategy for Sustainable, Competitive and Secure Energy"<sup>7</sup> which was adopted by the Commission in March 2006.

The Final Report of the Sector Inquiry is presented in parallel to the Commission's Strategic EU Energy Review<sup>8</sup> and the Energy Package that includes the "Communication on Prospects for the internal gas and electricity market" referred to above and the follow-up to the Green Paper. Account is also taken of the work undertaken within the High Level Group on Competitiveness, Energy and the Environment, which underlined the need for better functioning electricity and gas markets in its first report adopted in June 2006.

It transpires from all these documents that the three policy objectives "competitiveness, security of supply and sustainability" are closely interlinked and complementary. Competitive markets provide the necessary signals for investment, which leads to supply security in the most cost efficient manner. Similarly, the creation of a competitive internal market will allow the Union's energy companies to operate in a market of a larger dimension, which will improve their ability to contribute to security of supply. At the same time, market forces oblige European operators to use the most cost effective methods of production, which in the appropriate regulatory environment can benefit sustainability. Consumers will be able to choose between different providers and contract schemes, and could thus reduce their electricity costs and adapt their consumption to market developments. Competitive, cost

<sup>5</sup> COM(2006) 841, Communication from the Commission, Prospects for the internal gas and electricity market.

<sup>6</sup> Time to move up a gear – Annual Progress Report on Growth and Jobs, 25 January 2006/

<sup>7</sup> COM(2006) 105 Final, 8.3.2006, SEC (2006) 317.

<sup>8</sup> COM(2007) 1, Communication from the Commission "An Energy Policy for Europe".

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reflective prices will help encourage energy efficiency, which can reduce the dependence on external suppliers and which supports the Union's objective for sustainability and security of supply.

The Final Report concentrates on the competition aspects of Europe's energy policy and the remaining obstacles to creating a single European energy market. Quite apart from the fact that this aspect merits a thorough analysis in its own right, the focus is also dictated by the procedural framework (Regulation 1/2003), in which the inquiry was carried out. This does not mean that e.g. security of supply goals are not taken into account when assessing likely pro- and anti-competitive effects in the context of applying the Community competition rules in individual cases. Indeed a competitive internal market is a key instrument in delivering this objective. However in the context of the Sector Inquiry the main focus has been on competition.

### **The procedure leading to the adoption of the report**

The Sector Inquiry into the European energy markets was launched on 17 June 2005. Initial results were presented in the form of an Issues Paper published on 15 November 2005. Following publication of the Preliminary Report on 16 February 2006 the Commission launched a public consultation. In their submissions stakeholders welcomed the report, generally praising its objectivity as well as the wealth of information. Contributions came from companies operating in the sector, both from incumbents and new entrants, from national regulators, competition authorities, consultancies, law firms, energy traders, grid operators, customers, industry associations and national government agencies.

The majority of the stakeholders support the findings, although there were variations in the assessment of the gravity of the situation and whether the situation is improving or not. As regards the possible ways forward there was both support and opposition to the ideas put forward in the Preliminary Report such as structural unbundling, while some called for even more radical remedies. Generally speaking the vertically integrated incumbent companies were not in favour of further measures, whilst consumers, traders/new entrants and authorities supported the call for legislative initiatives.

## The Findings

The main findings of the Sector Inquiry can be grouped – as indicated above – under eight headings. Whilst there are some obvious differences between the gas and electricity sectors, the many similarities and inter-relationships between the sectors plead for a common presentation..

### 1. Market concentration

**At the wholesale level, gas and electricity markets remain national in scope, and generally maintain the high level of concentration of the pre-liberalisation period. This gives scope for exercising market power.**

Wholesale gas trade has been slow to develop, and the incumbents remain dominant on their traditional markets, by largely controlling up-stream gas imports and/or domestic gas production. Incumbents trade only a small proportion of their gas on gas exchanges (“hubs”). With little new entry in retail markets, customer choice is limited and competitive pressure constrained. The overall picture for potential new entrants is one of dependency on vertically integrated incumbents for services throughout the supply chain.

Although electricity trading is more developed, sales on wholesale electricity markets generally reflect the significant level of concentration in generation. Analysis of trading on power exchanges shows that, in a number of them, generators have scope to exercise market power by raising prices, a concern also expressed by many customers. Analysis of trading positions on forward markets, which overall shows less concentration, demonstrates that the electricity markets depend on few suppliers with long positions (i.e. generate more than they resell). Analysis of generation portfolios also shows that the main generators have the ability to withdraw capacity to raise prices.

In the context of the inquiry, a study has been conducted on concentration levels in the electricity sector.<sup>9</sup> An analysis of concentration on an hourly basis shows that even during off-peak hours markets remain highly concentrated and that concentration levels, even in the less concentrated markets, reach significant levels at peak hours. The analysis based on measurements of the structure of the market in every hour also reveals that, in certain markets, long-term contracts and, to a lesser extent, the reserve requirements can reinforce concentration levels. Further, the analysis shows that the existing level of interconnection capacity is not sufficient to significantly reduce concentration.

### 2. Vertical foreclosure

**The current level of unbundling of network and supply interests has negative repercussions on market functioning and on incentives to invest in networks. This constitutes a major obstacle to new entry and also threatens security of supply.**

New entrants often lack effective access to networks (in gas, also to storage and to liquefied natural gas terminals) despite the existing unbundling provisions. The operators of the network/infrastructure are suspected of favouring their own affiliates (discrimination). Vertical integration also leads to a situation where operational and investment decisions are

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<sup>9</sup> This issue is presented as a separate chapter in the Technical Annex to the Final Report.

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not taken in the interest of network/infrastructure operations, but on the basis of the supply interests of the integrated company (including grid connection for competing power plants). This is highly damaging to security of supply.

Another form of vertical foreclosure was found to exist by way of the integration of generation/imports and supply interests within the same group. This form of vertical integration reduces the incentives for incumbents to trade on wholesale markets and leads to sub-optimal levels of liquidity in these markets. In particular, the prevalence of long-term supply contracts between gas producers and incumbent importers makes it very difficult for new entrants to access gas on the upstream markets. Similarly, electricity generation assets are in the hand of a few incumbent suppliers or are indirectly controlled by them on the basis of long-term power purchase agreements (PPAs) giving the incumbents control over the essential inputs into the wholesale markets. Low levels of liquidity are an entry barrier to both gas and electricity markets.

### 3. Market integration

**Cross-border sales do not currently impose any significant competitive constraint. Incumbents rarely enter other national markets as competitors. Insufficient or unavailable cross-border capacity and different market designs hamper market integration.**

For gas, available capacity on cross-border import pipelines is limited. New entrants are unable to secure transit capacity on key routes and entry capacity into new markets. Very often, the primary capacity on transit pipelines is controlled by incumbents based on pre-liberalisation legacy contracts which are not subjected to normal third party access rules. Incumbents have little incentive to expand capacity to serve the needs of new entrants. This is reinforced by ineffective congestion management mechanisms, which make it difficult to secure even small volumes of short-term, interruptible capacity on the secondary market. In many cases, new entrants have not even been able to obtain a sufficient amount of capacity when there have been expansions of transit pipeline capacity. Expansions have generally been tailored to the needs of the incumbents' own supply businesses.

In electricity, integration is hampered by insufficient interconnector capacity and a lack of adequate incentives to invest in additional capacity to eliminate long-established bottlenecks. In addition, on certain borders, long-term pre-liberalisation capacity reservations still exist despite the ruling of the European Court of Justice that such reservations are not compatible with EC law, unless they were notified under Directive 96/92/EC. Improving access to existing interconnectors requires better methods of congestion management. However, better use of capacity is often not in the interest of vertically integrated network operators.

### 4. Transparency

**There is a lack of reliable and timely information on the markets.**

Network users require more transparency going beyond the current minimum requirements set by EU legislation. Of particular importance is data relating to network availability, especially for electricity interconnections and gas transit pipelines. Data on the operation of generation capacity and gas storage also needs to be more widely available. For electricity, in particular, it was noted that rules on proper market conduct and supervision differ

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significantly between Member States, as there is little harmonisation at EU level of the transparency requirements.

To ensure a level playing field, all market participants require information to be made available on an equal footing and in a timely manner. At present there is an information asymmetry between the vertically integrated incumbents and their competitors. Improved transparency would minimise risks for new market players and so reduce entry barriers and improve trust in the wholesale markets and confidence in price signals. Obviously it needs to be ensured that no collusion takes place on the basis of the published information and, although commercial confidentiality is important, this should not be allowed to undermine effective transparency by being given too wide an interpretation.

### 5. Price formation

**More effective and transparent price formation is needed in order to deliver the full advantages of market opening to consumers. Many users have limited trust in the price formation mechanisms, while regulated supply tariffs below market prices discourage new entry.**

Gas import contracts use price indices that are linked to oil derivatives (e.g. light fuel or heavy fuel) and prices have, therefore, closely followed developments in oil markets. This linkage results in wholesale prices that fail to react to changes in the supply and demand for gas, which is damaging to security of supply. No clear trend towards more market based pricing mechanisms can be observed in long-term import contracts. Ensuring liquidity is crucial to improving confidence in price formation on gas hubs, which will allow for a relaxation of the linkage to oil.

Electricity price formation is complex. Increases in the price of primary fuels have certainly played a role in recent electricity price developments especially in marginal plants. However this does not appear to fully explain the recent price rises. Similarly, the effect of the EU CO<sub>2</sub> emissions trading scheme on electricity prices is not yet entirely clear.

In several Member States, regulated tariffs have generated adverse effects for the development of competitive markets, since they have been set at very low levels compared to market prices and cover a large part of the market, thereby effectively leading to re-regulation. Similarly, in several Member States, special measures to reduce electricity bills for energy intensive industries have been considered. Such schemes must be compatible with antitrust and state aid rules.

### 6. Downstream markets

**Competition at the retail level is often limited. The duration of retail contracts for industrial customers and local distribution companies can have a substantial impact on the opportunities for alternative suppliers to successfully enter the market.**

The cumulative effect of long contract durations, contracts with indefinite duration, contracts with tacit renewal clauses and long termination periods can be substantial. The analysis shows that the degree to which the industrial customers are tied to incumbent suppliers on a long-term basis differs significantly between Member States.

Customers demand more competitive offers from non-incumbent suppliers and regret the absence of pan-European supply offers. The number of competitive offers that customers

receive is particularly unsatisfactory in some Member States characterised by a high level of concentration.

For gas, restrictions on how customers can dispose of their gas, in combination with restrictive practices by suppliers regarding delivery points, limit competition and prevent the achievement of efficiencies by these customers. In electricity, certain standard contracts contain restrictions, which may also raise competition concerns.

### 7. Balancing markets

**Currently, balancing markets often favour incumbents and create obstacles for newcomers. The size of the current balancing zones is too small, which leads to increased costs and protects the market power of incumbents.**

For gas, the small size of current balancing zones increases the complexity and costs of shipping gas within Europe. Costs are increased by highly complex and divergent rules in each zone, and by the obligation to reserve capacity at each border point. These problems are exacerbated by the time dimension: the shorter the balancing period, the higher the risk of imbalance for the supplier. All these aspects create major obstacles for new suppliers to enter the market, which the vertically integrated incumbents have little incentive to remove. Furthermore, balancing charges, clearing costs and penalty charges are not transparent and often contain unjustified penalty charges, favouring incumbents. Effective unbundling is necessary to create a level playing field in the balancing markets and to reduce barriers to entry.

In electricity, the markets on which transmission system operators have to acquire balancing and reserve energy are highly concentrated, which gives generators scope for exercising market power. This can result in entry barriers for new suppliers facing a high risk of high imbalance prices and/or high network charges (to the extent that balancing costs are included in the costs of the network). Concentration in balancing markets could be reduced if the geographical size of control areas was enlarged. Harmonization of balancing market regimes would be an important step to increase the size of control areas, improve market integration and simplify trade. In some Member States the structural relation between TSOs and their affiliated generation provides an incentive for the TSO to buy excessive reserve capacity and/or to pay high prices, thereby favouring their affiliated generation arm. Results indicate that the amount of capacity reserves bought differs substantially between TSOs.

## 8. LNG markets

**LNG supplies widen Europe's upstream supplier base and are therefore important for both security of supply and competition between upstream suppliers. The potential for LNG supplies to favour less concentrated downstream markets still needs to be realised.**

Traditionally LNG has been imported by national incumbents who also own LNG terminals, and this situation has prevented LNG imports from increasing downstream competition. Recent trends, however, point to more capacity going to new entrants and to producers themselves. This is likely to have a positive impact on fostering downstream competition unless such effects are frustrated by anticompetitive rules or behaviour. Strong investment in LNG terminals has taken place and is scheduled to take place in the coming years. Investments in some LNG terminals have benefited from exemptions from third party access obligations under a test applied by national regulators with Commission supervision. This test seeks to achieve a balance between *ex ante* incentives to invest and competition once the investment has been made. While experience is largely positive, improvements are possible.

## Remedies

In order to address the malfunctioning of the market identified in the Sector Inquiry and to significantly improve the scope of competition, it is essential to apply both competition and regulatory-based remedies. Competition law enforcement can make a significant contribution, but cannot by itself open markets and resolve all the shortcomings identified by the Sector Inquiry: a number of regulatory measures are, therefore, also needed.

### Competition law enforcement

**Full and combined use of the Commission's powers under antitrust rules (Articles 81, 82 and 86 EC), merger (Regulation 139/2004)<sup>10</sup> and State aid control (Articles 87 and 88 EC)** is needed to maximise the impact of the Commission's enforcement action. The Commission is forcefully pursuing infringements of Community competition law (antitrust) in the sector wherever the Community interest so requires, in close cooperation with National Competition Authorities.

#### *Market Concentration*

**Market concentration has been identified as a major concern for the success of the liberalisation process.** The market power of pre-liberalisation monopolies has not yet been eroded. This makes the Community's action under the merger regulation essential so as to ensure that the competitive structure in relevant markets (which currently are at most national in scope) does not further deteriorate. In recent merger cases remedies such as divestitures, contract and/or gas release have been applied. In addition, the impact of long-term upstream contracts on downstream concentration has emerged as a major theme.

Energy release programmes (i.e. electricity Virtual Power Plant auctions and gas release programmes) are a means to develop market liquidity and increase entry opportunities. They constitute suitable remedies to competition concerns not only in the merger area but also under antitrust rules. In order to be fully effective they must be well-designed and large scale. Substantial experience has been gathered with such programmes by competition and regulatory authorities at national level (e.g. in Spain, France, Austria, Germany) and by the European Commission (in merger cases) allowing the authorities to avoid pitfalls and ensure their effectiveness. For gas, such release programmes have the additional advantage that they are likely to increase hub liquidity which supports the introduction of price signals not biased by the gas-oil-price link.

In certain circumstances applicable antitrust law also permits the application of farther reaching structural measures as a remedy to infringements of competition rules. This is the case where behavioural remedies would be less effective to bring the infringement to an end, where there is a substantial risk of a lasting or repeated infringement that derives from the very structure of the undertaking, or where behavioural remedies would be more burdensome.<sup>11</sup>

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<sup>10</sup> Council Regulation (EC) No 139/2004 of 20 January 2005.

<sup>11</sup> See Article 7(1) and recital 12 of Regulation 1/2003.

### *Vertical foreclosure*

**Wherever competition infringements are facilitated by vertical integration between supply and generation and infrastructure businesses and insufficient unbundling, the full force of the Commission's powers to prevent future abuse needs to be applied.**

The Sector Inquiry has also confirmed the vertical tying of markets by long-term downstream contracts as a priority for review of case situations under competition law and of providing guidance where required. When such contracts, concluded by dominant firms, foreclose the market, Article 81 or 82 EC may be infringed unless there are countervailing efficiencies benefiting consumers.<sup>12</sup> Similarly, power purchase agreements in the electricity sector can have foreclosure effects.

Furthermore, the concentration of gas import contracts in the hand of a few incumbents is one of the main reasons why competition at the subsequent level of trade does not take off. Whilst this does not as such put into question existing and future upstream contracts, it requires attention with respect to their effects for the downstream markets.

### *Market integration*

**Foreclosure can also arise at other levels of the value chain, most prominently as regards access to infrastructure (transmission and distribution networks and/or storage facilities), particularly in cases where cross-border access is concerned, thereby preventing market integration.** Such access can be blocked through long-term transmission contracts and through the associated risk of capacity hoarding. Action in this field should include an analysis of the competition effects of pre-liberalisation long-term contracts and the compatibility of such contracts with competition rules.

Additionally, lack of investment and delayed investments by transmission companies with vertically integrated supply companies are another serious source of concern. It is recalled that one National Competition Authority has found that a vertically integrated network operator deliberately stopped an investment project in order to benefit its supply branch by depriving competitors of access to more capacity.<sup>13</sup>

**Market partitioning remains one of the most serious obstacles** to market integration. The fight against collusion between incumbents remains a priority of antitrust enforcement action, reflecting the overall priority of the Commission to fight attempts by undertakings to coordinate rather than to compete.

## **Structural issues and pro-competitive regulatory environment**

The findings of the Sector Inquiry will enable the Commission to focus its enforcement action on the most serious concerns identified in the report. They also make it easier for the Commission to identify efficient remedies that can effectively resolve the competition problems identified in individual cases.

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<sup>12</sup> In the analysis of long-term contracts, sunk investments, if any have been made by the parties, are taken into account - see Commission Guidelines on the application of Article 81(3) of the Treaty (OJ C 101 of 27.4.2004, page 97, paragraph 44).

<sup>13</sup> The Italian Competition Authority has recently taken action against the delaying tactics of an incumbent operator to expand an important import pipeline.

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However, **key issues relating to market structure and the regulatory environment will have to be addressed in parallel**, in order to remedy the malfunctioning of the markets that has been demonstrated by the inquiry.

The Sector Inquiry has identified the following main fundamental deficiencies in the competitive structure of current electricity and gas markets:

- **Structural conflicts of interest: a systemic conflict of interest caused by insufficient unbundling** of networks from the competitive parts of the sector;
- **Gaps in the regulatory environment: a persistent regulatory gap** particularly for cross border issues. The regulatory systems in place have loose ends, which do not meet;
- **A chronic lack of liquidity**, both in electricity and gas wholesale markets: the lifeblood for our markets is lacking and the market power of pre-liberalisation monopolies persists;
- **A general lack of transparency** in market operations in the sector.

Options for regulatory action at EC level are discussed by the Commission in its Communication on “Prospects for the internal gas and electricity market”. The findings of the Sector Inquiry and the resulting deficiencies identified below support and confirm the analysis brought forward by the Commission in that Communication.

### *Unbundling*

**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**, which has resulted in a lack of investment in infrastructure and in discrimination. It is crucial to ensure that network owners and/or operators do not have incentives that are distorted by supply interests of affiliates. This is particularly important at a time when Europe needs very large investments to ensure security of supply and to create integrated and competitive markets.

To achieve this, it will be necessary to decisively reinforce the current inadequate level of unbundling. This would, in turn, also facilitate cooperation among network operators.

Economic evidence shows that full ownership unbundling is the most effective means to ensure choice for energy users and encourage investment. This is because separate network companies are not influenced by overlapping supply/generation interests as regards investment decisions. It also avoids overly detailed and complex regulation and disproportionate administrative burdens. The independent system operator approach would improve the status quo but would require more detailed, prescriptive and costly regulation and would be less effective in addressing the disincentives to invest in networks.

Furthermore, the public consultation has not revealed any significant synergy effects linked to vertical integration. Indeed, where ownership unbundling has been implemented, experience shows that both the network business and the (production and) supply business continue to thrive after separation.

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### *The regulatory environment*

Whilst ownership unbundling would substantially contribute to reducing problems of market power and lack of liquidity, it is clear that also other measures will be needed. As the Sector Inquiry confirms, **Europe needs a substantial strengthening of the powers of regulators and enhanced European coordination**. This goes in hand with the findings presented by the Commission in its Communication on “Prospects for the internal gas and electricity market”. Only a strengthened regulatory framework can provide the transparent, stable and non-discriminatory framework that the sector needs for competition to develop and for future investments to be made.

The main ingredients of such a strengthened framework should be:

- enhanced powers for independent national energy regulators,
- reinforced coordination between national energy regulators,
- reinforced cooperation between Transmission System Operators (TSO), and
- substantially enhanced consistency of regulation in cross-border issues.

**Reinforced coordination between national energy regulators, with a stronger role for Community oversight to ensure the Internal Market interests**, particularly as regards cross-border issues and areas most critical for market entry, will be necessary to overcome the current regulatory cross-border gap which cannot be remedied by application of competition rules alone. Options for regulatory measures are discussed in the Communication on “Prospects for the internal gas and electricity market”.

### *Chronic lack of liquidity*

Reinforced unbundling rules and an improved regulatory environment for cross border issues in particular should, in the medium term, substantially reduce the problems of market power and lack of liquidity in a sustained manner, by bringing additional supplies to concentrated national markets. However, there **remain serious concerns in the short term, as regards the lack of sufficient liquidity** and sustained market power in wholesale markets, which is leading to higher prices in retail markets just as full liberalisation is to be implemented on 1 July 2007.

As already indicated, competition law enforcement will be an important tool to address any anti-competitive conduct concerning this issue. However, more may be needed. As the levels of concentration in gas and electricity markets have remained high, often reflecting pre-liberalisation monopolies, national energy regulators should analyse conditions in their respective markets in co-operation with competition authorities and make appropriate proposals. Measures taken in the past by a number of Member States include release programmes (i.e. electricity Virtual Power Plant auctions and gas release programmes).

It is also recalled that certain Member States have introduced under national law ceilings on ownership of electricity generation and control over long-term upstream gas contracts (imports and national production), as an effective measure to rapidly reduce market power. For electricity, such measures could imply either divesture or asset swaps of power plants on a European scale. For gas, it could mean contract release, contract swaps and/or divesture of domestic production, as have been applied in recent merger cases. Widening of small TSO

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areas and introducing more open and flexible tendering procedures for balancing energy could reduce the current high levels of concentration in balancing markets and remove obstacles to entry, with a positive knock-on effect in wholesale markets.

Furthermore, the Sector Inquiry has highlighted the importance of enhancing the scope for entry through investment in new generation and gas import infrastructure as well as strict application of use-it-or-lose-it provisions for infrastructure and suitable generation sites.

### *Lack of transparency in market operations*

There is general recognition that **access to market information** should be further enhanced. All relevant market information should be published on a rolling basis in a timely manner. Any exceptions should be very strictly limited to what is required to reduce the risk of collusion. Guidelines as well as monitoring and eventually adaptation of existing regulation should serve to further enhance transparency in the gas and electricity sector. Intended proposals are outlined in the Communication on “Prospects for the internal gas and electricity market”.

### *Other important issues*

In addition to these four fundamental areas, other issues of pro-competitive market environment need consideration. On these issues, specific suggestions for regulatory action at EC level are made by the Commission in its Communication on “Prospects for the internal gas and electricity market”.

**Regulated retail tariffs can have highly distortive effects** and in certain cases pre-empt the creation of liberalised markets. It is of crucial importance to assess the impact of remaining regulated supply tariffs on the development of competition, and remove distortions.<sup>14</sup>

In order to achieve that access to new infrastructure is not unduly restricted, the Commission should continue to ensure that **exemptions from access provisions are not detrimental to the development of competition**. It is important that projects continue to be scrutinized on a case by case basis with strict application of competition principles striking a proper balance between incentives for *ex-ante* investment and *ex-post* competition, and that the exemption procedures are streamlined.

In order to achieve a single European network from the perspective of the network user, there is a need for appropriate harmonisation of **market design, especially regarding methods having an effect on cross border trade**. Action is needed, wherever current capacity is insufficient, to develop interconnector capacity as a necessary condition for the development of competition and the integration of markets. These aims can only be achieved through increased cooperation between national regulators inducing increased cooperation among TSOs across national borders within a well-defined procedural framework.

In order to put **more gas transmission capacity on the market**, it will be important to clarify the legal position of *pre-liberalisation* long-term gas transmission contracts under the

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For the household market segment, there is a need to strike the right balance between competition and universal public service obligations.

## ENERGY SECTOR INQUIRY - EXECUTIVE SUMMARY

Second Gas Directive<sup>15</sup>, which are already now subject to strict use-it-or-lose-it rules and to the rules of competition law.

Further changes are needed regarding the method for **allocating limited interconnector capacity**. For electricity, implicit day-ahead auctions or equivalent measures should be promoted as much as possible to ensure that interconnectors are used to their maximum extent. TSOs should also have incentives to maximise the amount of cross border capacity made available to the market.<sup>16</sup>

In order to provide sufficient guarantees for effective access, **third party access for gas storage should be reviewed so as to strike the right balance between the need for effective access and maintaining incentives for new storage developments.**

A **monitoring system for trading on wholesale markets (e.g. power exchanges)** would increase market participants' confidence in the market and limit the risk of market manipulation. Regulators should be empowered to collect and exchange relevant information in this respect. They should have the power to make recommendations for enforcement action or have the power to carry out such enforcement action themselves.

## Conclusion

The Sector Inquiry has identified a number of serious shortcomings which prevent European energy users and consumers from reaping the full benefit of the liberalisation process. The findings support the conclusions of the Communication on "Prospects for the internal gas and electricity market", which has been carried out by the Commission in the follow up to the Green Paper and in the course of the preparation of the Strategic EU Energy Review. These initiatives bring forward the Commission's intentions as to proposals for regulatory reform, aiming at an Internal Market for energy that contributes to sustainability, competitiveness and security of supply. In addition, and in parallel, the Final Report also draws conclusions with regard to enforcement action under EC competition law. Both these documents aim at identifying and remedying obstacles to creating a single European energy market, in which consumers fully benefit from the opening of markets to competition.

**A complete version of the report is available on**

**[http://ec.europa.eu/comm/competition/antitrust/others/sector\\_inquiries/energy/](http://ec.europa.eu/comm/competition/antitrust/others/sector_inquiries/energy/)**

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<sup>15</sup> Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas (OJ 2003 L 176/57). Replaces the First Gas Directive.

<sup>16</sup> e.g. Scarce capacity that is kept in reserves by some TSOs for emergency situations may be offered to the market as interruptible capacity, and can be bought back when required, using for instance cross border congestion rents.

## A. INTRODUCTION

- (1) Well functioning energy markets that ensure secure energy supplies at competitive prices are key for achieving growth and consumer welfare. To achieve this objective, the EU has decided to open energy markets to competition and to create a single European market energy. The process of market opening has significantly changed the functioning of the markets, provided new market opportunities, lead to the introduction of new products and services and initially lowered energy prices in Europe in line with market fundamentals. Nevertheless, the objectives of market opening whilst showing some progress have not been achieved.
- (2) Significant rises in gas and electricity wholesale prices and persistent complaints about barriers to entry and limited consumer choice led the Commission to open an inquiry into the functioning of the European gas and electricity markets in June 2005. The inquiry, based on Art. 17 of Regulation 1/2003, aims at assessing competitive conditions and establishing the causes of market malfunctioning.
- (3) When analysing the gas and electricity markets, the broader implications of the development of these sectors should be kept in mind. Both the European consumer and European industry<sup>17</sup> are heavily dependent on the secure and reliable provision of energy at competitive prices. Also, the achievement of the Union's goals for the environment need to be respected, including the reduction of greenhouse gases in the energy sector and meeting the Kyoto commitments.
- (4) The wider context has been set out in the Commission's Communication<sup>18</sup> to the 2006 Spring European Council concerning the renewed Growth and Jobs strategy, that puts the formulation of an efficient and integrated energy policy at the heart of the Commission's priorities. The Commission also adopted the Green Paper "A European Strategy for Substainable, Competitive and Secure Energy" (COM(2006) 106 final) on 8 March 2006<sup>19</sup>.
- (5) Whilst there are similarities between the gas and electricity sectors – not least when it comes to the unsatisfactory state of the liberalisation process - there are also some important differences. The main differences are: (a) electricity is not a natural resource, whilst gas is (i.e. electricity can in principle be produced everywhere in the Community whilst gas can only be produced where found); (b) electricity cannot be stored whilst gas can; (c) electricity is generated through different production technologies characterised by significant differences of marginal costs (e.g. for base load and peak load); (d) liberalisation in electricity started at EU level earlier than in gas. These and other differences have to be taken into account when describing the state of liberalisation of the gas and electricity markets.

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<sup>17</sup> As noted above, the Commission's October 2005 Communication on the Lisbon programme has led inter alia to the creation of a High Level group on competitiveness, energy and the environment.

<sup>18</sup> Time to move up a gear - Annual Progress on Growth and Jobs, Communication from the Commission, 25 January 2006.

<sup>19</sup> Document available on the website:

[http://ec.europa.eu/energy/green\\_paper\\_energy/doc/2006\\_03\\_08\\_gp\\_document\\_en.pdf](http://ec.europa.eu/energy/green_paper_energy/doc/2006_03_08_gp_document_en.pdf)

### Essential Steps in the Inquiry

- (6) Little reliable quantitative data is available on many aspects of electricity and (especially) gas markets. A thorough market investigation was therefore needed as a basis for the assessment of energy market functioning. Following the Commission decision launching the inquiry on 13 June 2005<sup>20</sup> the Commission sent out over 3000 questionnaires in the summer 2005 in order to establish the facts for a solid competition analysis. This makes the Sector Inquiry one of the most thorough investigations in the Commission's history.
- (7) An Issues Paper setting out initial findings was prepared in November 2005<sup>21</sup>. In particular, five areas of possible market malfunctioning were identified in the Issues Paper:
- gas and electricity markets in many Member States continue to be concentrated, creating scope for incumbent operators to exercise market power;
  - there is an inadequate level of unbundling of network and supply activities; in addition, wholesale markets are not liquid: either because of vertical foreclosure due to long-term contracts (gas) or because companies are active both in generation and retail, limiting the development of wholesale markets (electricity).
  - barriers to the cross border supply of gas and electricity prevent the development of integrated EU energy markets. There is not enough cross border capacity and existing capacities are not efficiently used;
  - a lack of transparency regarding market sensitive information aggravates mistrust in market functioning and benefits incumbents, undermining the position of new entrants;
  - there is little trust by industry and consumers in current price formation mechanisms on electricity and gas wholesale markets, and prices have increased significantly.
- (8) The initial indications in the Issues Paper were discussed with national competition authorities and electricity and gas regulators on 15 November 2005. The Issues Paper, which was generally welcomed, was also presented to the Energy Council in December 2005 by Commissioner Kroes. The Council discussion on the state of the Internal Energy Market also took account of the 2005 Communication from the Commission reporting on progress in creating the internal gas and electricity market<sup>22</sup>.

<sup>20</sup> The opening decision is available on the DG Competition website, at [http://www.europa.eu.int/comm/competition/antitrust/others/sector\\_inquiries/energy/decision\\_en.pdf](http://www.europa.eu.int/comm/competition/antitrust/others/sector_inquiries/energy/decision_en.pdf) cf. also Press release IP/05/716 of 13 June 2005: Competition: Commission opens Sector Inquiry into gas and electricity.

<sup>21</sup> The Issues Paper is available on the DG Competition website, at [http://www.europa.eu.int/comm/competition/antitrust/others/sector\\_inquiries/energy/](http://www.europa.eu.int/comm/competition/antitrust/others/sector_inquiries/energy/)

<sup>22</sup> COM (2005)568, November 2005

## ENERGY SECTOR INQUIRY – INTRODUCTION

- (9) On 16 February 2006 a Preliminary Report was published<sup>23</sup>, which builds on the Issues Paper. A more detailed analysis was undertaken of the data gathered in the Sector Inquiry and these further findings were integrated in the Preliminary Report. The main indications of the Issues Paper have been confirmed. As in the Issues Paper, the main concerns for the gas and electricity sector are therefore grouped under the five broad categories:
- (1) Market concentration;
  - (2) Vertical foreclosure;
  - (3) Lack of market integration;
  - (4) Lack of transparency; and
  - (5) Price issues.
- (10) On 16 February 2006 the detailed findings of the Preliminary Report were also presented to the general public at a conference in Brussels followed by a discussion with all stakeholders concerned (consumers, industry, network operators, traders and other market participants; regulators, competition authorities and other national administrations; representatives of unions, environmental and consumer organisations and other stakeholders)<sup>24</sup>. The event was widely covered by the press and received very favourable comments.
- (11) On the day of the public presentation the Commission also launched a public consultation on the Preliminary Report and possible ways forward. The overall reactions in the public consultation were again very favourable. Commentators praised in particular the objectivity of the Preliminary Report as well as the quality and novelty of the findings allowing policy makers to take an informed position on the energy sector. A number of commentators called for urgent action to complete the liberalisation process.
- (12) In May 2006 – however outside the scope of the Sector Inquiry – the Commission carried out surprise inspections at approximately 25 companies in six Member States (Austria, Belgium, France, Germany, Hungary and Italy). These investigations concerned allegations that market participants engaged in activities foreclosing markets and collusive arrangements. At the time of the publication of this report these investigations are ongoing.
- (13) In spring 2006 two studies were commissioned, one concerned the importance/potential of liquefied natural gas (LNG) for Europe's future gas supplies, the other the level of concentration and the price formation in electricity wholesale markets. The results of these studies are summarised in this report (2<sup>nd</sup> part).

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<sup>23</sup> The Preliminary Report is available on the DG Competition website at [http://ec.europa.eu/comm/competition/antitrust/others/sector\\_inquiries/energy/#16022006](http://ec.europa.eu/comm/competition/antitrust/others/sector_inquiries/energy/#16022006)

<sup>24</sup> The main speeches, presentations and contributions are published on DG Comp's website at [http://ec.europa.eu/comm/competition/antitrust/others/sector\\_inquiries/energy/presentation.html](http://ec.europa.eu/comm/competition/antitrust/others/sector_inquiries/energy/presentation.html)

## ENERGY SECTOR INQUIRY – INTRODUCTION

- (14) At the same time the scope of the Sector Inquiry was extended to cover also downstream and balancing markets. The results of this analysis are presented in the 2<sup>nd</sup> part of the report. With the exploitation of the corresponding data all information received in the context of the Sector Inquiry has now been assessed.
- (15) At the same time the existing chapters were revised to take into account comments made by stakeholders in the public consultation. In particular the chapters on unbundling have been revised. The market integration chapter for the gas sector was also complemented by an inquiry into the question why no more gas was flowing from the European continent to the UK in winter 2005/2006 when price hikes occurred in the UK.
- (16) The proposal by certain stakeholders to update the information in order to take into account subsequent market developments was taken up to the extent possible (e.g. for the electricity study). However a complete update was considered to be disproportionate as it would have substantially delayed the publication of the report. Moreover, the public consultation largely confirmed the previous findings.
- (17) The report was presented to national competition authorities and national energy regulators on 30 November 2006. The report was adopted by the Commission on 10 January 2007. The main messages are that even after 8 years of liberalisation in the electricity sector and 6 years in the gas sector and despite some encouraging (initial) progress particularly regarding the electricity market:
  - a. markets have remained highly concentrated giving incumbent operators scope for exercising market power;
  - b. the unbundling of infrastructure/network and supply activities is inadequate rendering market entry for new suppliers very difficult;
  - c. there is a lack of transparency causing distrust in the markets and undermining the level playing field for new entrants.
- (18) It is in this light that the report proposes further legislative measures and the reinforced application of EC competition law taking into account the priority enforcement areas identified in the report.

## B. FIRST PHASE OF THE SECTOR INQUIRY

### a. GAS

#### I. Introduction

##### I.1. Main market features

*Gas production, supply and transport*

- (19) Natural gas is a “primary” source of energy consisting of hydrocarbons (mainly methane)<sup>25</sup>. It is used in industrial processes as fuel and raw material, for electricity generation, and by households for cooking and heating. Other energy sources can often be used for the same purposes. Substitution is nevertheless partial and imperfect. Changing from one energy source to another can often give rise to important switching costs.
- (20) Natural gas consumption in 2004 amounted to 460 billion cubic metres (bcm) in the European Union. It accounts for approximately a quarter of primary energy consumption by type of fuel. The most important European gas markets are: UK (consumption 96 bcm), Germany (87 bcm) Italy (73 bcm) and France (45 bcm)<sup>26</sup>.
- (21) Consumption is likely to continue to grow. According to IEA forecasts, the European gas consumption (EU-25) is predicted to grow at an average rate of 2.1% per year between 2000 and 2010, of 1.4% between 2011 and 2020, and is predicted to shrink by 0.2% between 2021 and 2030. Gas would then become Europe’s second fuel after oil, with 23.7% of the total primary energy supply in 2030<sup>27</sup>.
- (22) Around 42% of the natural gas consumed in the EU is produced within the EU, in particular in the United Kingdom, the Netherlands and Denmark, as well as in Italy, Hungary, Austria, Poland and Germany<sup>28</sup>. This means that the EU currently imports around 58% of its gas needs, and this proportion is growing. The graph overleaf shows increasing gas consumption in Europe since 1985 for all current Member States, as well as the increasing share of gas imports from third countries. Between 1985 and 2005, imports have increased from roughly 40% to 60% of consumption.
- (23) Gas prices have risen sharply in the last few years. This is true both for gas imported on the basis of long-term contracts with an oil-price link (Figure 2 shows prices at some key EU border crossings) and prices on the few traded markets in Europe (some gas hub prices are shown in Figure 3).

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<sup>25</sup> Natural gas is not a fully homogenous product and technical quality differences can be important. In Europe a main distinction can be made is between so called H-gas (high calorific value), which is the most widely produced type of natural gas, and so called L-gas (low calorific value).

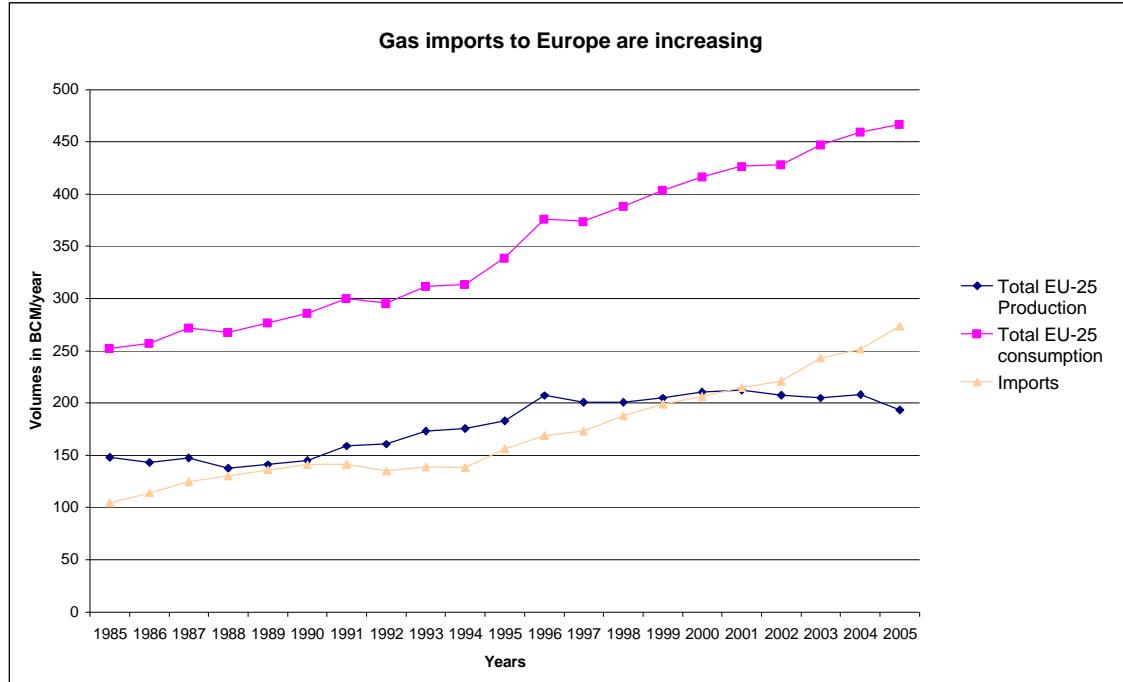
<sup>26</sup> Source: Eurostat, gross inland consumption data for 2004. The BP Statistical Review 2006 provides data up to 2005, with very similar estimates.

<sup>27</sup> European Commission, Energy and Transports Trends 2030, Update 2005, page 74.

<sup>28</sup> Calculations on the basis of the BP Statistical Review 2006 indicates that in 2004, 45.2 % and in 2005, 41.4% of the gas consumed in the EU was produced in the EU.

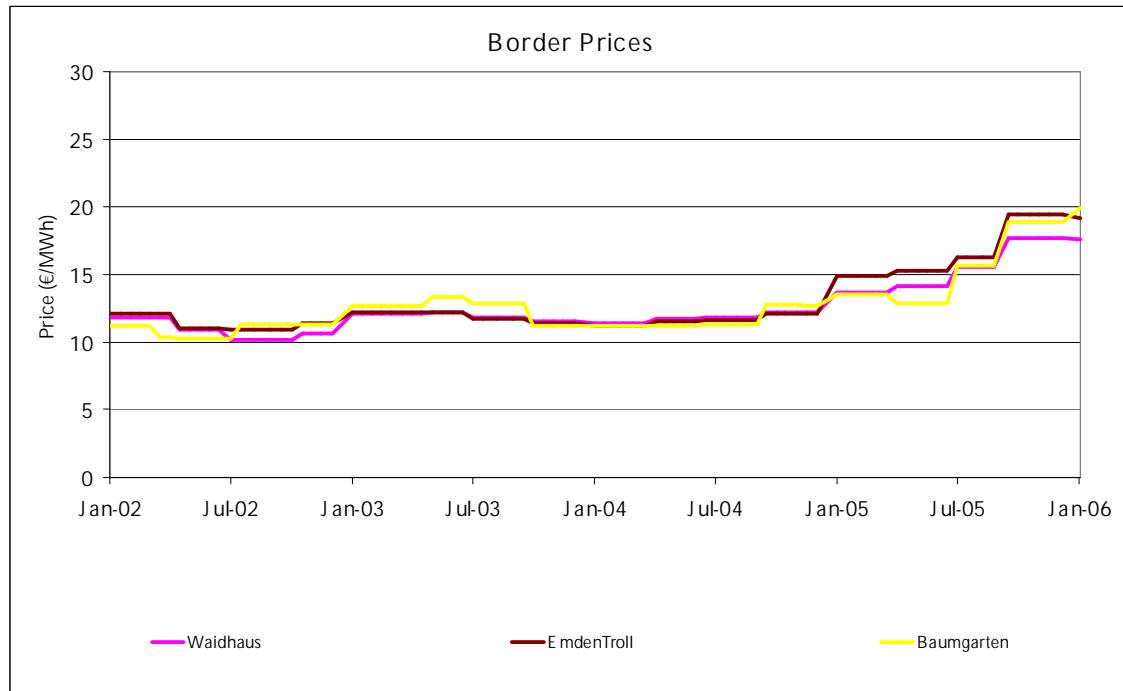
## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 1**



Source: BP Statistical Review 2005

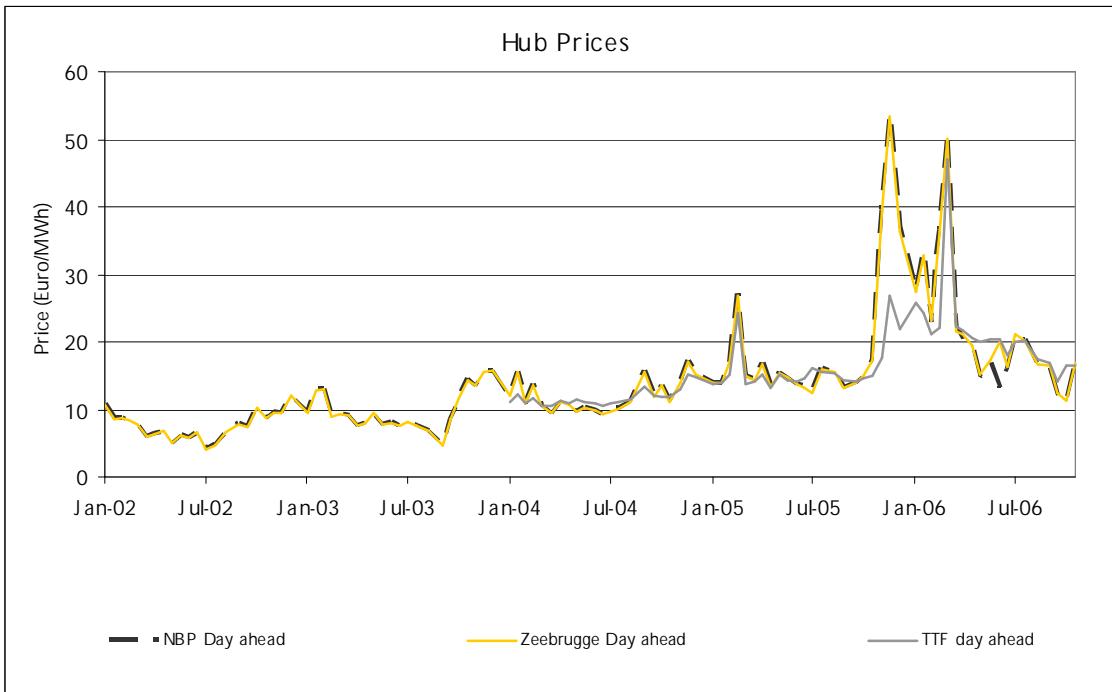
**Figure 2**



Source: Heren European Gas Market

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

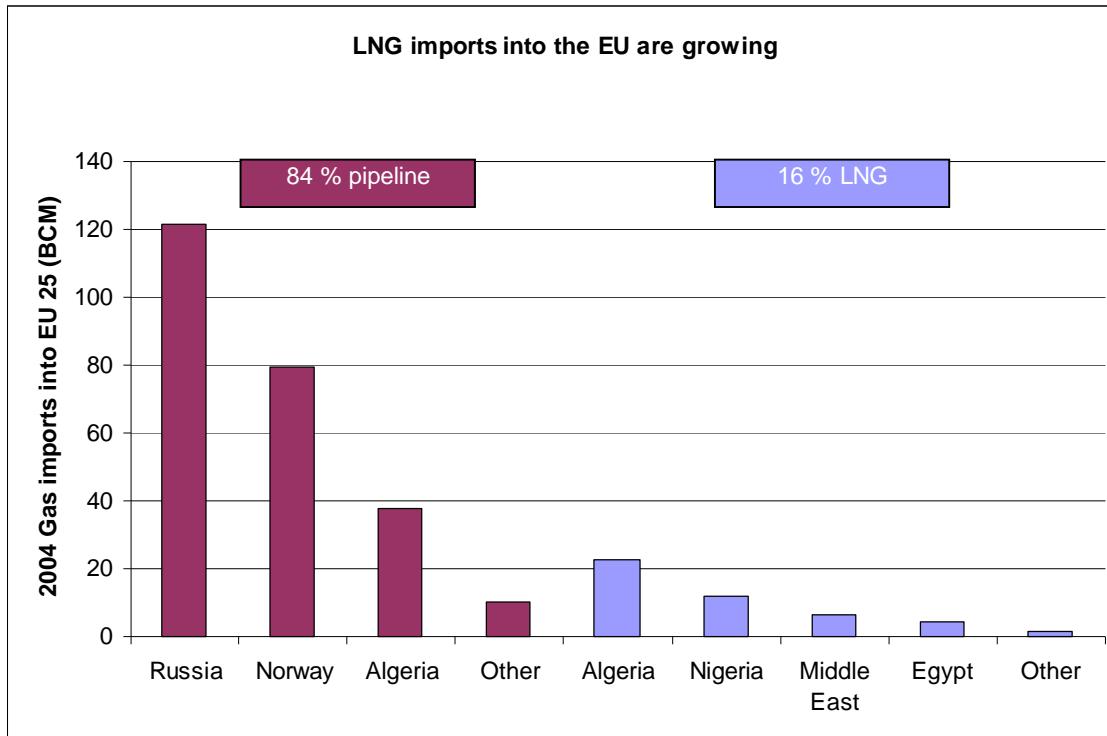
**Figure 3**



Source: Argus Media

- (24) Natural gas is found in underground reserves. For geological reasons the degree of flexibility of gas extraction varies. From some fields the gas must be extracted at a continuous rate and there is limited margin to influence the production rate, without jeopardising the overall volume of gas available. Other fields do not allow control of the rate of gas production where gas is merely a by-product of oil production. More flexible gas fields do exist and these have different economic characteristics, since they can often be used as a source of market flexibility in competition with storage. Therefore, they have an additional value relating to the expected value of gas during peaks periods.
- (25) Natural gas is mostly transported from production to the markets through pipelines. In addition, after being cooled and condensed, it can be transported in liquefied form (LNG) by sea. Compared to other primary energy sources, transport costs for gas are high in relation to the price of the commodity. This is a key reason why gas markets have remained regional in character rather than global. Transport by pipeline remains less expensive than LNG-shipments for shorter distances. However, decreasing costs for the LNG chain have made longer transport routes economically viable, bringing new sources of gas to the European markets. This may mean that LNG becomes a viable alternative, displacing gas from longer pipeline routes. Nevertheless, many specific geographic factors play a role, and new pipelines are being considered to bring gas from relatively remote areas to Europe (e.g., the proposed Nabucco project that could transport gas from the Caspian region and Iran).
- (26) Roughly 250 bcm were imported to the EU in 2005 by pipeline, whereas only 50 bcm were imported as LNG-shipments. The majority of imports come from the three major gas producing countries close to the EU: Russia, Algeria and Norway. The following graph illustrates that the major part of EU's gas imports comes from Russia and Norway. This gas flows via pipeline, whereas Algerian imports are partly transported as LNG.

**Figure 4**



Source: BP Statistical Review 2005

- (27) The number of upstream producers supplying EU gas markets is gradually increasing as LNG supplies become more competitive and new LNG-terminals are built in Europe. This diversification of upstream supply should enhance competition between exporters to EU gas markets.
- (28) Increasing LNG-imports will contribute to the globalisation of gas markets and strengthen links between the EU and US markets. LNG-imports are also expected to grow in the US and a number of facilities allowing for LNG-imports are planned. Countries like Qatar, Algeria, Trinidad or Nigeria can already supply LNG both into the EU and into the US.
- (29) As a consequence of increased LNG-shipments around the Atlantic Basin<sup>29</sup>, increased competition for short-term LNG between the US and EU can be expected. For example, LNG quantities originally foreseen to be delivered into the EU might be diverted to the US when better profits can be made (or vice-versa)<sup>30</sup>. In assessing the effect of US prices on EU markets it must, however, be kept in mind that most EU imports are based on long-term contracts. This is also true, at present, for LNG - supplies to Europe, which means that these gas flows are not totally flexible in reacting to changing market conditions. Nevertheless, it cannot be excluded that short-term LNG might become the marginal unit of supply during certain periods in some markets, which might create a link to US prices. Even so, pipeline gas prices are currently often indexed to oil products. These gas imports therefore do not react to changes in the market price of gas on global markets.

<sup>29</sup> LNG shipments from the Atlantic to the Far East, which is the other main global source of demand for LNG, are currently marginal, but may be an important future development.

<sup>30</sup> This trend could be reinforced by continuing high US gas prices. At present the US is short of both gas and LNG import facilities, leading to structurally high LNG-prices. US spot prices may be sent higher still by temporary phenomena, such as last year's loss of gas production in the US due to the hurricanes in the Gulf of Mexico.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (30) The pipelines to bring gas from a production region to the European market are generally specific to that purpose. In this respect pipeline investments often constitute a sunk investment and create an interdependency between the supplier and the market served by the pipeline. The same is true of some of the investment in LNG-facilities, although to a much lesser extent, as shipments can be brought to alternative markets.
- (31) Onward transport from the point of import to consumers within the EU takes place by pipeline networks, which gives the gas industry the character of a network industry. The supply of gas to customers in fact depends on the possibilities to use existing pipeline infrastructure. In most cases, the construction of competing parallel gas networks is not economically viable: the network operator on a given transport market can, therefore, often be considered to be in control of a natural monopoly.
- (32) The largest-volume and/or highest pressure pipelines are typically used to transport gas over long distances between or within Member States. These networks are called transmission networks, and those that are used to transport gas between and across Member States are also often referred to as transit networks.
- (33) Transmission networks are generally interconnected so that inputs or off-takes at one point affect the rest of the network to some extent. The very high and relatively stable flow rates often associated with transit lines have meant that operational arrangements for these have historically developed somewhat differently to those applying to purely national transmission networks. For instance, some transit pipelines are interconnected with a wider network only to a limited extent, and can be managed on an end-to-end basis.
- (34) Connected to off-take points from transmission networks are lower-pressure networks, called distribution networks. The majority of end-customers are connected to distribution networks, although some large users connect directly to transmission networks. Distribution system operators (DSOs) are generally also responsible for metering their customers' consumption, and therefore in competitive markets often have a vital role in ensuring the availability of accurate consumption data and in ensuring a smooth customer transfer between suppliers.
- (35) The off-take of individual users of gas varies in ways which might be predictable (e.g., space heating in homes will consume more gas in winter than in summer; and might be turned down at night), or less so (e.g. if a production line breaks down). Gas supply therefore needs to be flexible: it must have a seasonal and daily shape, and it must also be able to adjust to unexpected changes in demand<sup>31</sup>.
- (36) Flexibility of gas supply can be assured in a number of ways. Flow change may be secured through turning up or down particularly flexible gas fields as discussed above. Storage facilities are also available meaning that production and demand do not need to be in balance in the same way as for electricity. Balancing inflows and outflows over the short term is nevertheless necessary to ensure system integrity of the gas network, although there is a certain margin to alter the pressure in gas pipelines, a flexibility instrument known as “line-pack”.

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The concept of flexibility is used here to include both planned “shape” and responsiveness to unexpected events.

- (37) Gas infrastructure is designed to operate safely within defined quality and pressure parameters. Transmission system operators (TSOs) have access to a range of facilities to ensure this (e.g. blending facilities to ensure appropriate quality; storage, compressors and line-pack<sup>32</sup> to maintain safe pressures). However, as markets develop TSOs should have alternatives for maintaining safe operating conditions through their interactions with other market players, and would not necessarily have to own all of the technical facilities to ensure system balance.
- (38) Storage facilities offer different degrees of flexibility, because their physical characteristics often limit the speed with which gas can be injected or withdrawn<sup>33</sup>. For this reason, some storage sites are most suitable for seasonal storage (being filled steadily during the warmer months, so as to partly equalize winter and summer imports, which means less investment in pipelines is required), although others permit quicker injections or withdrawals. Access to storage is of particular importance to serve customers who require gas deliveries that vary over time, and in general is essential to serve household customers.

*Gas market operators*

- (39) Gas exploration and production (E&P) requires geological and engineering competences quite different to the rest of the value chain. Therefore, although in some cases E&P is carried out by companies that are also active lower in the chain, there are not necessarily great synergies in combining production and other activities. The production companies operate on a scale that is often global. In planning development of a field, they would typically consider selling the gas to any country or company, although the economic range is influenced by transport mode and distance<sup>34</sup>. Many European national importers have also bought gas from several producers, notably to guarantee security of supply.
- (40) Historically, gas producers' main partner within each European Member State has been a national monopolistic importer. This company might have helped to fund the construction of long-distance import infrastructure, and has also in most cases built the national transmission network and national storage facilities. In a few Member States more than one company had this kind of role, within separate geographic regions. In some cases, this incumbent importer also had a monopoly on sales to end-users in the Member State's territory. In other cases, the incumbent importer had long-established business relationships with downstream monopolies, or with other companies that in turn sold to downstream monopolies<sup>35</sup>.

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<sup>32</sup> Line-pack is compressed gas stored within the pipeline network, or the ability to store gas in this way.

<sup>33</sup> For instance, storage tanks at LNG sites are typically highly flexible, salt caverns (that would otherwise be empty) also quite flexible, whereas aquifers (where the gas must be forced into porous rock, often displacing water) have their flexibility limited by the porosity level.

<sup>34</sup> Nevertheless some fields are effectively land-locked and certain gas producing countries have to sell their gas to or at least via Russia for this reason.

<sup>35</sup> The companies that had *de facto* or *de jure* monopolies over imports to, or sales within, a particular region will in this report often be referred to as the incumbents. In addition, and as an exception, Wingas will be considered as an incumbent because of its unique position on the German market. Conversely, “new entrant” is used mostly to refer to companies that did not have *de facto* or *de jure* monopolies in the gas industry (i.e., it includes former electricity monopolies). When considering barriers to expansion it is also relevant to examine such barriers as they apply to former gas monopolies when expanding into new territories.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (41) Market opening implies a modification of this type of vertically integrated organisation, which was the guiding principle of the previous market structure. In principle, a range of new business models should be possible in the gas supply chain and new entrants should be able to compete on only some parts of the value chain. Notably, shippers/suppliers should be able to buy gas on wholesale markets, arranging transportation with the network company, and signing retail contracts with end-user customers. New companies should also be allowed to import gas from external sources, in competition with the previous incumbent. Finally pure traders focussing largely on buying and selling gas on wholesale markets may emerge, arranging transportation only to the extent necessary to trade on Europe's wholesale markets. Such new business models rely on the development of functioning wholesale markets, and on access to transport networks.
- (42) Liberalisation legislation specifically requires separate companies for the transport activities, so as to ensure non-discriminatory market access. TSOs are required to be legally and functionally unbundled from competitive activities, and DSOs will have similar obligations from 2007. Fully unbundled networks, however, would have different incentives compared to vertically integrated companies. Whereas integrated companies might have incentives to restrict the flow of gas so as to keep the price of gas high, independent networks would have incentives to maximise the amount of capacity sold because their profit would depend purely on transport incomes.
- (43) It should also be noted that the networks are regulated, which means that their profitability and solidity are not directly determined by markets. The profitability is both capped and “guaranteed” by the regulatory system. Their financial solidity (balance sheet) depends also on the way that unbundling has been implemented.

## I.2. The regulatory framework

- (44) The main objective of European energy policy in the area of gas has been the gradual liberalisation of the sector and the creation of a competitive integrated internal market, with security of supply ensured. The Community legislative process of liberalising the gas markets began in the 1990s, first with the Price Transparency Directive<sup>36</sup> and with basic non-discrimination requirements in the Transit Directive<sup>37</sup> and the Hydrocarbons Directive<sup>38</sup> and then, under the First Gas Directive<sup>39</sup>, with the abolition of import monopolies, gradual market opening, accounting unbundling for vertically integrated network companies, and an option of regulated third party network access.
- (45) The Second Gas Directive<sup>40</sup> was adopted in June 2003 and was to be implemented by 1 July 2004, although implementation has been late or otherwise unsatisfactory in many Member States<sup>41</sup>. It requires full market opening, national sector regulators, regulated third party network access, regulated or negotiated access to storage and further unbundling of integrated companies. It is complemented by the Gas Regulation<sup>42</sup>, which expands on several of the provisions in the Directive. It introduces qualitative obligatory minimum requirements for access to transmission systems (network tariffs, third party access services, capacity allocation, transparency, balancing and trading of capacity rights).
- (46) Community legislation is supplemented by other binding and non-binding instruments, such as the binding guidelines under the Gas Regulation, voluntary guidelines developed within ERGEG<sup>43</sup> and the Madrid Forum<sup>44</sup> (e.g. Guidelines for Good Third Party Access Practice for Storage System Operators – GGPSSO) and technical standards prepared by EASEE-gas<sup>45</sup>.
- (47) In order to increase competition on a liberalised market, the Second Gas Directive requires full market opening. All commercial customers must be free to choose their supplier by 1 July 2004, while, for household customers, the corresponding date is 1 July 2007. By that date, at the latest, the retail market should, consequently, be fully

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<sup>36</sup> Directive 90/377/EEC of 29 June 1990 concerning a Community Procedure to improve the transparency of gas and electricity prices charged to industrial end-user (OJ 1990 L 185/16).

<sup>37</sup> Directive 91/296/EEC of 31 May 1991 on the transit of natural gas through grids (OJ 1991 L 147/37). Repealed by the Second Gas Directive.

<sup>38</sup> Directive 94/22/EC of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons (OJ 1994 L 164/3).

<sup>39</sup> Directive 98/30/EC of 22 June 1998 concerning common rules for the internal market in natural gas (OJ 1998 L 204/1). Implementation in national law by August 2000. Repealed by the Second Gas Directive.

<sup>40</sup> Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas (OJ 2003 L 176/57). Replaces the First Gas Directive.

<sup>41</sup> See Communication from the Commission reporting on progress in creating the internal gas and electricity market, COM (2005) 568. The Commission has also opened infringement cases against certain Member States. See also below on late implementation for specific aspects of the Directive.

<sup>42</sup> Regulation (EC) No 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks (OJ 2005 L 289/1). Date of application of entry into force is 1 July 2006.

<sup>43</sup> The European Regulators Group for Electricity and Gas established by Commission Decision of 11 November 2003 (OJ 2003 L 296/34).

<sup>44</sup> The European Gas Regulatory Forum (“the Madrid forum”); participants include national regulatory authorities, Member States, the European Commission, network operators, gas suppliers and traders, consumers, network users, and gas exchanges.

<sup>45</sup> The European Association for the Streamlining of Energy Exchanges, a group made up of representatives of different gas actors, provides Common Business Practices for technical harmonisation.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

open to competition (although several Member States have already now introduced full market opening)<sup>46</sup>.

- (48) Community legislation does not include measures that directly address the concentrated market structure inherited from the monopoly era, which remains a key problem of the internal gas market. In certain Member States further measures have been introduced to tackle concentration (e.g. gas release programs or market share caps).
- (49) The supply of gas to final customers depends on the possibilities to use existing transport infrastructure, which can in many cases be considered as a natural monopoly. A regulatory framework is, therefore, essential to ensure that access is granted in a non-discriminatory and transparent manner.
- (50) To ensure the implementation of the regulatory framework in this respect, the Second Gas Directive requires the creation of national energy regulators<sup>47</sup>. Their main roles include approving and controlling tariffs (or tariff methodologies), ensuring non-discriminatory network access and effective unbundling, and dealing with complaints.
- (51) Regulated third party access, based on approved and published tariffs, now applies to transmission, distribution and LNG operators, as well as to balancing services (i.e. negotiated access is no longer allowed). The operators must refrain from discriminating between system users, and provide them all with the information needed for efficient access.
- (52) However, regulated access to necessary infrastructure is far from universal. Member States still retain a choice between applying negotiated or regulated access for storage, line pack and other ancillary services. Derogation from third party access rights, whereby investors can reserve the capacity for themselves, can also be granted in order to provide incentives for risky investments in important new infrastructure. The Second Gas Directive foresees a number of criteria to be fulfilled in order to allow such exemptions including the condition that competition is not adversely affected. Such derogations may be limited in time and to a part of the capacity.
- (53) In order to improve access, and reduce risks of discrimination and cross-subsidy, the Second Gas Directive requires unbundling of integrated network operators. Transmission and distribution system operators must, in addition to the previous accounting unbundling (i.e. the keeping of separate accounts), also be legally unbundled and management unbundled (i.e. independent from activities not related to the network operation as regards legal form, organisation and decision making). Whereas ownership unbundling is not required by EU legislation, several Member States have found it necessary also to require separate ownership of network and supply companies.
- (54) Currently, unbundling requirements are more limited for distribution system operators, as the legal unbundling only has to be completed by 1 July 2007, and Member States can also exempt small distribution system operators, serving fewer than 100.000 connected customers, from the obligation of legal unbundling (but not from accounting unbundling). Moreover, only accounting unbundling is required for storage and LNG operators.

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<sup>46</sup> Some Member States benefit from derogations as, for example, isolated or emerging markets.

<sup>47</sup> In practice, regulators already existed in almost all Member States.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (55) The Gas Regulation provides further requirements aimed at ensuring fair access to transmission networks. Services must be offered in a non-discriminatory manner on terms that may also suit new entrants (e.g. firm and interruptible capacity; long and short-term contracts). It requires non-discriminatory capacity allocation mechanisms, congestion management procedures based on a use-it-or-lose-it principle, and a functioning secondary capacity market. Balancing rules must reflect genuine system needs (excessively stringent rules hamper new entrants), and imbalance charges must be cost-reflective, while still providing appropriate incentives for balance.
- (56) Despite the increased obligations in the Second Gas Directive, difficulties in accessing infrastructure remain a competition concern. Effective unbundling is one of the keys to fair access, not least in view of alleged discrimination by infrastructure companies in favour of their related supply businesses.
- (57) In order to create an integrated European gas market, EU legislation needs to enable and facilitate cross-border trade. Twenty-five liberalised markets will not in themselves guarantee competition at EU-level.
- (58) Under the Second Gas Directive and the Gas Regulation, transit pipelines are covered by the same access rules as other transmission services. However, the continued validity of existing long-term transit contracts (negotiated under the now repealed Transit Directive) constitutes an important practical obstacle to introducing regulated access. If cross-border trade is to increase, access to transit capacity is vital, making these legacy contracts a key issues for market integration.
- (59) Market integration is also hampered by limitations in the competences of national regulators. In the absence of any single cross-border regulator, national regulators must cooperate with each other in monitoring the management and allocation of interconnection capacity. ERGEG provides a forum for co-operation. However, the powers of regulators vary between Member States, since Community legislation only provides for certain minimum competencies. Moreover, the manner in which Community rules have been implemented varies between Member States, and may in some cases even give rise to regulatory vacuum – especially in cross-border situations. In addition to the requirements under Community law, there is also a considerable scope for Member States to apply their own specific national rules<sup>48</sup>.
- (60) Transparency is a necessary component of non-discriminatory access, and for ensuring a level playing field on wholesale markets. The Community legislation does not include rules on all aspects of transparency of gas markets. The Gas Regulation, however, supplements the basic transparency requirements of the Second Gas Directive, and provides for certain further transparency requirements in relation to transport services. As regards storage, transparency provisions are set out in the non-binding Guidelines for Good Third Party Access Practice for Storage Operators, but not in binding EU legislation. Even within the scope of the binding Gas Regulation, the availability of information can suffer from lack of precision on the exact obligations of network operators and from exemptions aimed at protecting network users' commercial data. Specifically, it appears that in some cases the Directives and Regulation have to date been interpreted – in the Commission's view erroneously – in a way that would allow

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<sup>48</sup> E.g. authorisations or licences to operate gas facilities or to supply gas, planning permission for constructing new infrastructure, etc.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

important transit lines to automatically benefit from the confidentiality exemptions. The Commission has already launched infringement cases against some Member States in this respect.

- (61) The Second Gas Directive requires that prices for accessing transmission, distribution and LNG infrastructure, as well as balancing charges, are regulated (although this does not apply to storage, line pack and other ancillary network services). Nevertheless, in many Member States end-user prices are also regulated, often in a system where regulated prices co-exist with the market price (effectively capping the market price).
- (62) The Second Gas Directive takes fully account of the new regime emerging from Directive 2003/55/EC and includes certain general requirements for Member States to monitor security of supply issues. These provisions are complemented by a specific Directive<sup>49</sup> on security of gas supply adopted in April 2004. The Security of Gas Supply Directive requires Member States to define transparent and non-discriminatory security of supply standards that are compatible with a competitive internal gas market. A non-exhaustive list of possible instruments for security of supply is also included (e.g. storage capacity, cross-border pipeline capacities, domestic production, liquid markets, LNG facilities, diversification of supply sources, long-term contracts, etc). Member States are required to define clear roles and responsibilities of market actors, and publish them, and must also establish standards to ensure supplies for household customers (e.g. for protecting against temporary disruptions at times of high gas demand in cold periods), thus guaranteeing the necessary minimum level of security of supply to household customers.

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<sup>49</sup> Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply (OJ 2004 L 127/92). To be implemented by May 2006.

### I.3. Gas wholesale markets

- (63) The large majority of gas consumed in the EU is bought by the incumbent wholesale players under long-term contracts from producers, both outside and inside the EU. As noted, these companies historically had special or exclusive rights to import and transport gas and normally controlled the major import and storage facilities.
- (64) The business models of pure retail supplier/shippers or pure traders do not necessitate procurement of gas from remote regions (or their own production), provided gas is available on liquid wholesale markets. Such companies would be building a supply business from a much smaller starting position (not having inherited a set of monopoly customers) and would be looking to purchase smaller quantities of gas. Traders may be less focused on a single geographic region, more interested in arbitraging price differences between regions, and therefore more interested in buying short-term tradable packages of gas and network capacity, rather than long-term supplies.
- (65) Against this background, natural gas is increasingly bought and sold in a number of quite different ways at different levels of the wholesale market, as well as at the retail level<sup>50</sup>. Because of the variety of players involved in gas markets, the distinction between levels of the market is not always clear-cut. The exact meaning of liquidity on wholesale markets equally varies. Considering the current stage of EU gas market development it is not necessary to use any refined definition of liquidity. In the gas part of this report we use the term broadly, to mean a level of market activity that ensures a counter-party can generally be found to enable the buying or selling of gas in sufficient volumes to meet a commercial need, and at competitive prices.
- (66) Some trading at wholesale level takes place through more-or-less organised exchanges, generally referred to as “hubs”. This kind of trading is potentially more accessible to new market entrants and the non-integrated business models referred to above. Such hub trading has been, so far, slow to develop, but the future development of traded wholesale markets is crucial for market integration and competition in EU gas markets.
- (67) Developing liquid gas hubs is vital to allow new business models to develop in gas markets and to ensure that new entrants can secure access to gas at wholesale level. Liquid hubs would underpin the functioning of the market in many ways. They would provide a price formation mechanism that reflected supply and demand, and therefore create price signals for investment (which in turn would strengthen supply security). They would enable suppliers to optimise their portfolios in a cost effective manner. They would enable traders to take advantage of short-term price differentials, and this arbitrage would keep the market efficient. Arbitrage between hubs would also help integrate geographic markets. Given the usefulness of hubs, we might expect them to develop if market conditions allow. However, the converse is equally true: the absence of liquid hubs creates significant entry barriers, so hindering the development of competition.
- (68) Gas hubs can be “virtual” in character, allowing trading of gas that has been physically injected into any point on a national grid. This is the case for the UK hub (NBP) and the recent hubs in the Netherlands (TTF) and Italy (PSV). In these cases, gas is usually

<sup>50</sup> There is also a significant level of bilateral exchange of gas between market participants. Such trading is generally referred to as “swapping” although in fact a price is frequently set for the gas exchanged and the price is not necessarily the same on both sides. The great majority of swaps are between incumbent gas companies.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

traded on an “entry-paid” basis meaning that entry capacity into the networks has been settled. Others are “physical”, requiring gas to be transported to and from a particular trading point or zone. This is true for Zeebrugge (Belgium), Baumgarten (Austria) and Emden (Germany), for instance.

- (69) Certain gas hubs offer transparent title-transfer facilities, standardised contracts, and brokers helping traders to match bids and offers. Some offer the assistance of a market operator to arrange the physical transport of gas between different points around the hub, or the provision of liquidity support. Other hubs consist simply of groups of flanges across which companies arrange private swaps. No European gas hub has an operator ensuring the clearing function of the market, which is common in electricity. In the most developed gas markets (UK, US), financial derivatives of gas products are traded; this also happens in some Continental markets, but is not common.
- (70) The total level of activity on European trading hubs is relatively low: a balanced sample of 30 companies bought in total over 600 bcm during 2003-2004 on hubs<sup>51</sup>, which suggest Europe as a whole sees trading churn<sup>52</sup> of around 1:1. However, each unit of gas within the traded part of the market might be expected to be bought and sold many times over, so this churn rate does not mean that most consumed gas has been sold on hubs. Indeed, in more competitive markets like the UK or US churn rates are many times higher. In addition, the distribution of activity across these hubs is extremely unequal and almost all trading on European gas hubs is in the UK or at Zeebrugge, which at least partly serves the UK market (see Figure 5).
- (71) The UK NBP is by far the most heavily traded hub, and the UK also sees significant “beach trading” activity (where gas is traded around entry terminals of offshore pipelines), and also trading of gas forward contracts on the International Petroleum Exchange (IPE).
- (72) The most important hub in Continental Europe is located at Zeebrugge. This hub is near the end of the UK-Belgium interconnector, as well as being physically adjacent to a number of sources of gas supply (LNG, North Sea pipeline, transit lines on the Fluxys network). Over past years the interconnector has typically flowed gas to the UK during the winter, and Zeebrugge trading therefore should be understood as partly meeting UK demand. It is therefore more appropriate to compare UK-related trading activity (including a proportion of Zeebrugge trading) to consumption in that country<sup>53</sup>.

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<sup>51</sup> The sample included 30 companies including 12 incumbents, 9 entrants, 7 producers and 2 pure traders. The sample companies were located in countries with a combined annual consumption of around 360 bcm. The stated level of purchases represents all the reported purchases of our sample companies over the two calendar years, adding together trades on multiple timescales; clearly, this is far from representing the entire market. Since each unit sold must have a buyer, the imbalance between sales and purchases in the graphs that follow shows the incompleteness of the sample used for this preliminary analysis, and suggests that a sample of the entire market would include more sellers in the UK and more buyers in Continental markets.

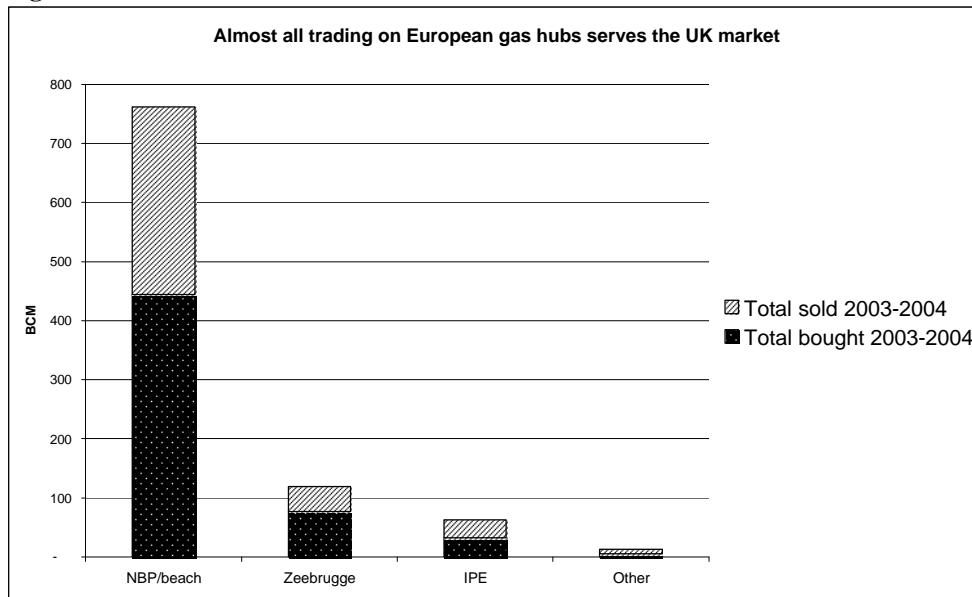
<sup>52</sup> “Churn” here means the ratio between total volume of trades and the physical volume of gas consumed in the area served by the hub.

<sup>53</sup> Gas bought in UK-related trading (by the companies analysed in the Preliminary Report) was around 2.6 times total UK consumption during 2003-2004, assuming that 50% of Zeebrugge activity is serving the UK market, which is probably an under-estimate. This UK-related trading represents 85% of all European hub trading reported by the same companies.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

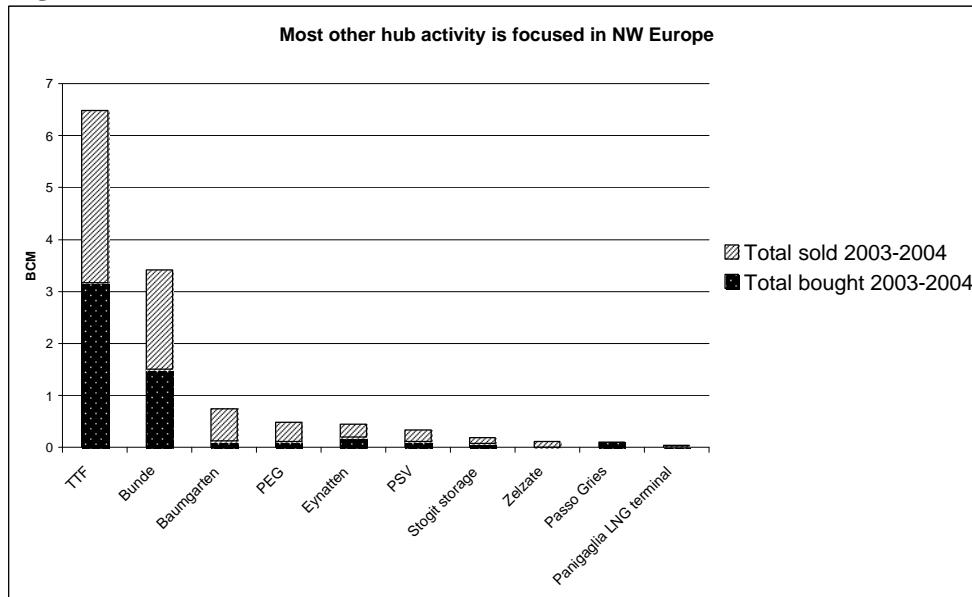
- (73) Gas is traded in a number of other locations on Continental Europe, and Figure 6 shows other locations and the volumes of trading during 2003-2004<sup>54</sup>. The volumes of trading in these other countries are extremely low, with gas bought on these hubs representing collectively only 1% of total consumption in the relevant countries<sup>55</sup>. Even this very limited liquidity is concentrated in North-West Europe<sup>56</sup>.

**Figure 5**



Source: Energy Sector Inquiry 2005/2006

**Figure 6**



Source: Energy Sector Inquiry 2005/2006

<sup>54</sup> Trading reported by the companies in the Preliminary Report sample in Belgium, the Netherlands, France, Germany and Italy.

<sup>55</sup> 0-7% if half of Zeebrugge trading is treated as serving the relevant Continental markets.

<sup>56</sup> Information on trading in Spain was not collected, and it is possible that trading around LNG terminals in that country would create another significant bar on this graph.

- (74) Liquidity on the hubs is caught in a vicious circle. A lack of liquidity increases the risks of trading, since it reduces the chances of finding an acceptable counter-party when a trader needs to close a position. It also facilitates price manipulation and therefore makes it more difficult to analyse and manage risk. Low liquidity therefore deters entrants (particularly pure traders), and tends to mean liquidity stays low. For these reasons, traders (e.g., banks or commodity trading houses), who have no inherent need to buy or sell gas, are largely absent from Continental hubs.
- (75) It should be noted that away from the North Sea coast, trading has been reported in the answers to the inquiry in a number of locations that are not formal hubs: storage sites, LNG facilities and flanges are mentioned. Most Continental formal hubs have a number of disadvantages. The UK-related hubs, for example, are a focus for broker activity which assists with match-making and credit management, but this is not generally true with the less active Continental hubs. It could also be the case that difficulties transporting gas to hubs would deter their use, although this is less likely to be a factor for virtual hubs such as the TTF in the Netherlands or the Italian PSV. Whatever the reason, the dispersal of trading reduces the already low liquidity of individual hubs.

## II. Issues

### II.1. Concentration

#### II.1.1. Market structure

- (76) The Sector Inquiry looks at wholesale markets with a view to assessing the competition issues that hamper the development of these markets within the EU. Competition between upstream producers outside the EU falls outside the scope of the Sector Inquiry, although competitive conditions on these markets influence the price of the basic commodity.
- (77) There are a number of global players active on the upstream gas producer level. If the market is considered global then concentration is unlikely to be excessively high<sup>57</sup>. However, such a geographical delineation is difficult given that the feasibility of buying gas from various different gas producers depends on gas transport costs and the availability of gas infrastructure (notably, pipelines and LNG terminals). Due to infrastructure constraints some regions in the EU are dependant on a limited number of upstream producers for their gas. Therefore, defining this upstream market is not straightforward. However, the future development of new infrastructure and LNG sources is likely to provide new economically viable sources of gas to Europe thereby reducing dependence on a few producers and hence reducing concentration, where it exists, at this level of the gas supply chain.
- (78) The Sector Inquiry is concerned with the competitive conditions within the EU. At the wholesale level of the gas supply chain EU liberalisation has not, so far, significantly changed the market structure. The high level of concentration which existed in most national markets at liberalisation largely remains. This is true at both the national wholesale and retail levels for most countries, although the distinction between wholesale and retail is not clear cut. In many national markets no liquid wholesale market has emerged and traded markets (gas hubs) represent a minor part of gas supply.
- (79) The lack of liquidity on European wholesale markets is crucial for competition, as such markets would contribute to market integration and price formation based on the supply and demand for gas. Liquid wholesale markets also crucially affect competitive conditions at the retail level, because most new entrants wishing to enter the retail market do not have access to gas supplies directly from gas producers and so they need to procure gas on wholesale markets.
- (80) For a competition analysis of market structure (concentration and market dominance) it is necessary to delineate the product and geographic dimension of the gas market<sup>58</sup>. This must be done on a case by case basis. The different degrees of market developments in Member States play a key role for defining the relevant market.

<sup>57</sup> In IV/M.1383 Exxon/Mobil , the Commission considered that there is a world-wide exploration market for oil and natural gas (as the possible contents of the ground are not known at the time of exploration) and that there is a market for the development, production and sales of gas. The precise definition of the geographic scope of this latter market was left open, even though the Commission found that the market would probably include the EEA, Algeria and Russia.

<sup>58</sup> Commission Notice on the Definition of the Relevant Market for the Purposes of Community Competition Law, OJ C 372 of December 9, 1997.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (81) The definition of the relevant product market(s) must according to Commission practice take into account the existing and foreseen degree of market opening<sup>59</sup>. The fact that gas customers are captive or eligible to choose their supplies will influence their behaviour on the demand side. Eligible customers may further be subdivided into separate markets, according to their gas consumption and profiles<sup>60</sup>.
- (82) In more developed markets a separate market for wholesale supplies of natural gas can be distinguished. Amongst factors to be considered are: on the demand side, whether there is a need for gas supply at the wholesale level and on the supply side, whether there is an offer of such wholesale gas<sup>61</sup>. The Commission has considered that at the wholesale level, gas is supplied to local distribution/supply companies, power generators and industrial customers. The Commission found that at the retail level, gas is supplied by local companies to final customers<sup>62</sup>.
- (83) It should also be noted that gas is not a completely homogenous product. Traditionally EU gas has been classified in two gas qualities: on the one hand, so called H-gas (high calorific value), which is the most widely produced type of natural gas, and on the other hand, L-gas (low calorific value)<sup>63</sup>. However, even within the most common category of H gas, technical quality differences remain, which continue to hamper cross-border gas flows, into the UK amongst others<sup>64</sup>.
- (84) It is the Commission's experience that gas supply markets are not broader than national in scope<sup>65</sup>. Network congestion may be an important (but not the only) constraint on the boundaries of the relevant market, since new entrants may simply be unable to gain access to a market because they cannot transport their gas to it.
- (85) Besides gas supply markets, gas infrastructure operations constitute another category of relevant product markets<sup>66</sup>. The two main types of infrastructure operations are transportation and storage<sup>67</sup>.

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<sup>59</sup> See, inter alia, COMP/M.3440 EDP/ENI/GDP. Even though as of 1 July 2007, when all customers should be eligible, this distinction should become less relevant, except for countries benefiting from exemptions.

<sup>60</sup> See COMP/M. 3318 ESC/Sibelga (December 2003) and COMP/M.3410 Total/Gaz de France (August 2004)

<sup>61</sup> See IV/M.1383 Exxon/Mobil, COMP/M.3440 EDP/ENI/GDP, COMP/M.2822 ENBW/ENI/GVS. In Germany, a regional wholesale level has also been distinguished.

<sup>62</sup> See IV/M.1383 Exxon/Mobil.

<sup>63</sup> The latter type of gas is mainly produced in the large Dutch Groningen field. If there are distinct infrastructures for the supply of the low-calorific gas, high-calorific gas or gas of a different quality then this may lead to the definition of separate product markets. In IV/M.1383 Exxon/Mobil (September 1999), the Commission found that on the German market, low-calorific gas could be substitutable with high-calorific gas. In later decisions, the Commission leaned towards a different product market definition, considering that there were probably distinct product markets for L-gas and H-gas, even though it left the definition open. See, M.3075 to M. 3080 and M. 3318 ESC / Sibelga (December 2003) regarding the Belgian market.

<sup>64</sup> EASEE-GAS has worked, within the framework of the Madrid Forum, towards harmonising gas quality standards within the European Union.

<sup>65</sup> See COMP/M.3696 E.ON/MOL and COMP/M.3440 EDP/ENI/GDP, as well as M.3297 Norsk Hydro/Duke Energy and M. 3294 Exxon Mobil/BEB

<sup>66</sup> See COMP/M.3696 E.ON/MOL

<sup>67</sup> Gas transport can be subdivided into gas transmission and gas distribution. The two networks may be submitted to different legal regimes and are physically distinct, the former operating at high pressure and concerning larger volumes than the latter. Other relevant markets could be e.g. metering services, quality control services etc.

- (86) Also for gas infrastructure, the geographic scope of the market needs to be defined. Where a network is owned by a sole company operating in one country or region, the definition is rather straightforward<sup>68</sup>. However, the question arises whether transit lines for which no alternative exists may constitute separate geographical markets.

### **II.1.2. Concentration in imports and domestic production**

- (87) Competition brings benefits through lower prices, greater choice, enhanced efficiency and more innovation. However, highly concentrated markets may indicate that competition is not effective and therefore that these benefits are not being realised.
- (88) The Sector Inquiry looks at wholesale markets with a view to assessing competitive conditions within the EU, not only on traded “wholesale markets”, but also on the part of these markets where competition is not fully developed. In this respect it is essential to recognise that natural gas consumed in the EU comes from imports, domestic production (in some countries) or traded markets.
- (89) The “wholesale level” that is considered relevant in this inquiry includes domestic production and imports on the supply side as well as traded “hubs”<sup>69</sup>. In some countries like The Netherlands, Italy, the United Kingdom, Germany and Denmark, where national production is (or has been) important, producers have been active themselves at the wholesale level. It should also be noted that “gas release programmes” may also provide liquidity at wholesale level<sup>70</sup>.
- (90) Incumbent shares of imports and domestic production are illustrated in the table below. Incumbent suppliers source the vast majority of their gas through long-term contracts, which may relate to gas imports or to domestic gas production. The Gas Sector Inquiry has analysed 400 of these contracts so far, representing about 360 bcm of gas in 2004. Many of these contracts were entered into at a time when incumbents were national monopolies. Long-term gas supply contracts were often linked to infrastructure development such as a pipeline or gas fired power station, since in order for the investment in such a project to be viable a long-term supply of gas needed to be secured. Even after liberalisation, incumbents have been allowed to retain this access to gas as well as the associated infrastructure capacity.

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<sup>68</sup> COMP/M.3696 E.ON/MOL For example, in Germany there is a multi-tiered structure with about 700 local network operators, about 40 regional network operators and a few supra-regional network operators. Local supply companies, known as Stadtwerke, are often the de facto monopoly suppliers in their regions and control the local distribution network.

<sup>69</sup> In most EU countries, short-term operations carried out at hubs are not a main feature of the wholesale markets. See introduction for further discussion of gas hubs.

<sup>70</sup> Gas release programmes aim to give entrants access to gas by obliging incumbents to make gas available. There have been several types of gas release programmes implemented, for example in the UK, Spain, Italy, Germany and Austria, with varying degrees of success. In the UK a gas release programme was part of a package of reforms that led to the successful opening of the gas market to competition.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Table 1**

Incumbents control the majority of the gas in their home countries				
	Total imports (2004, in bcm)	Incumbent share of imports (2004)	Total domestic production (2004, in bcm)	Incumbent share of domestic production (2004)
Austria	9	80-90%	2	-
Belgium	16	90-100%	0	-
Czech Republic	9	90-100%	<1	-
Denmark	0	-	10	80-90%
France	49	90-100%	1	-
Great Britain	13	20-30%	105	40-50%
Germany	88	90-100%	18	80-90%
Hungary	11	90-100%	3	90-100%
Italy	67	60-70%	13	80-90%
Netherlands	18	50-60%	73	90-100%
Poland	10	90-100%	5	90-100%
Slovakia	7	90-100%	<1	-

Source: Sector Inquiry, Eurostat, National Regulatory Authorities

Note: “Total imports” means gas imported for use in domestic consumption and do not include transit gas or imports that are subsequently exported. Due to differences in countries reporting methodologies percentages are presented in ranges.

- (91) For most countries represented in the table the incumbents control the vast majority of the gas either through import contracts or through control of domestic production. The exception is the UK where there has been full ownership unbundling of the former monopoly gas supply company (Centrica), the network operator (NGT) and gas production (BG Group). Here we can see that the incumbent share of domestic production and imports is relatively low. In Germany there are a few vertically integrated gas companies. Here we see a much higher concentration of the gas in the hands of the incumbents. France, Czech Republic and Slovakia have very little domestic gas production whilst Belgium has none. In these countries, therefore, the incumbents retain control of the gas through their import contracts.

### II.1.3. Concentration on traded gas markets

- (92) Given that most domestic production and imports are controlled by incumbents, traded gas markets or ‘hubs’<sup>71</sup> are an important potential source of gas for new entrants. However, the limited role of traded markets means that competitive conditions at wholesale level in gas markets are in most national markets mainly determined by the companies with access to most available gas through their contracts with gas importers and producers. The incumbents are also the major players on most of the gas hubs. The following graph shows the distribution of activity on a number of hubs between different types of company<sup>72</sup>.

<sup>71</sup>

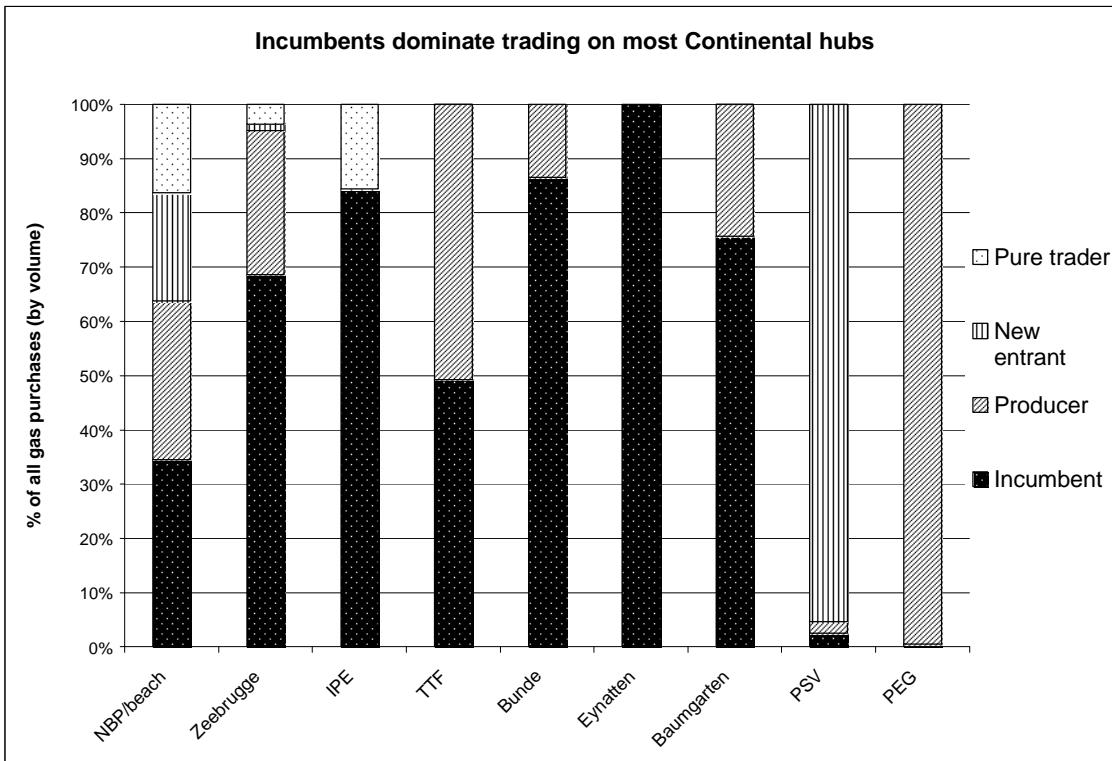
Hubs are discussed in more detail in the introduction to the gas section of this report.

<sup>72</sup>

Data in this section is based on a balanced sample of 30 companies which bought in total over 600 bcm during 2003-2004 on hubs. The data represent all products traded on hubs which including spot and forward trading up to one year ahead.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 7**



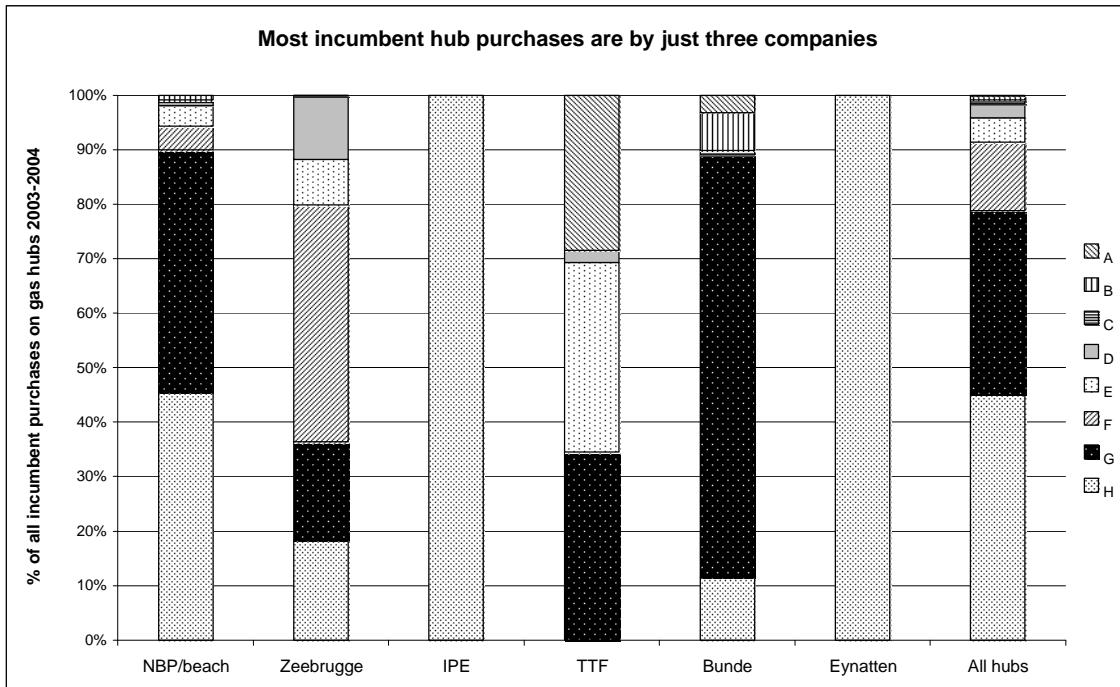
Source: Energy Sector Inquiry 2005/2006

- (93) The majority of trading on Continental hubs is carried out by companies with established gas positions, as “pure traders” play a minor role. On each of the most important Continental hubs, incumbents were significant buyers during 2003-2004 (49% by volume of all TTF purchases, 58% in Zeebrugge, 76% at Baumgarten and 86% at Bunde). Gas producers were the next most important group of traders. New entrant suppliers bought small volumes at Zeebrugge (2% of all purchases), and almost nothing anywhere else on the continent except Italy.
- (94) Italy represents a significant exception to the general pattern. In that country incumbent and producer involvement in trading is extremely low, and therefore new entrants predominate on the PSV. However, the low volumes involved must be stressed: total purchases on PSV in 2003-2004 represented less than 0.1% of total Italian consumption.
- (95) Incumbents are, then, of some importance in providing liquidity. However, the distribution of incumbent activity is sharply unequal. As Figure 8 shows, across all European hubs<sup>73</sup>, over 90% of all incumbent hub purchases during 2003-2004 were by just three companies. One of these companies (Company F) is barely active except as a major buyer at Zeebrugge.
- (96) A good deal of incumbent trading is local. For instance, Company A bought very little except on the TTF and at Bunde, which are close to its historic area of operations.

<sup>73</sup> To aid clarity, separate data on very small trading points (PSV, PEG and assorted flange trading) are not presented on the graph, but the “All hubs” column does include these.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

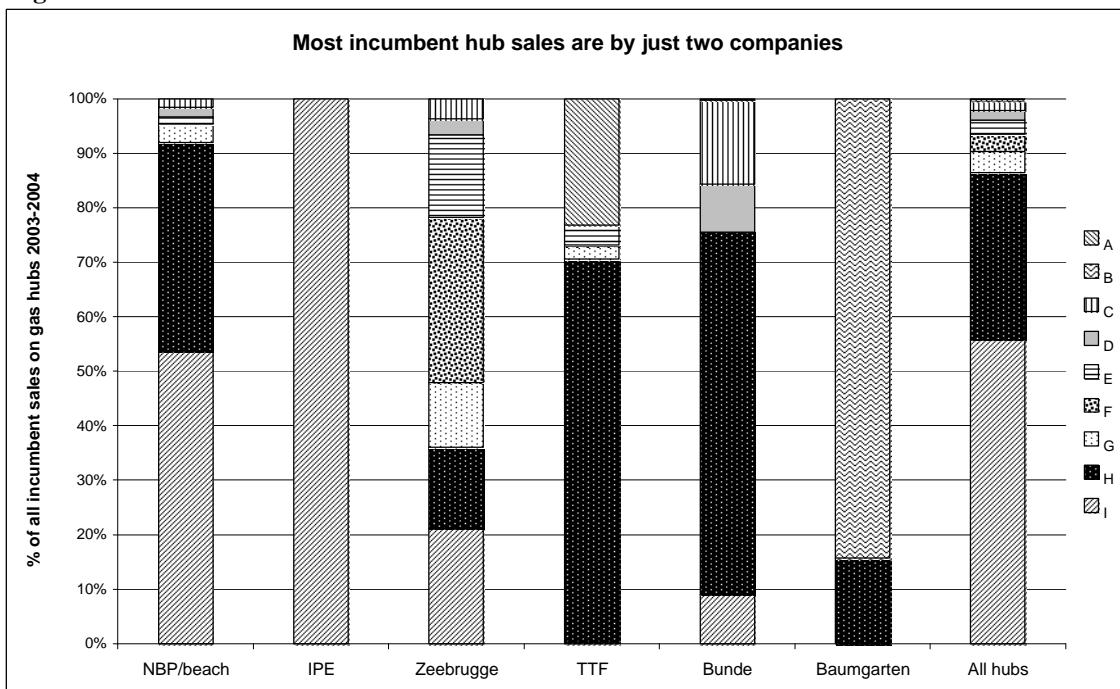
**Figure 8**



Source: Energy Sector Inquiry 2005/2006

- (97) Data on incumbent sales on hubs (see Figure 9) show even more concentration, with just two companies reporting 87% of all hub sales in 2003-2004 (the same two as represented nearly 80% of hub purchases). Again, we see localised activity: for instance, Company B reported major sales at Baumgarten and no activity at other hubs.

**Figure 9**

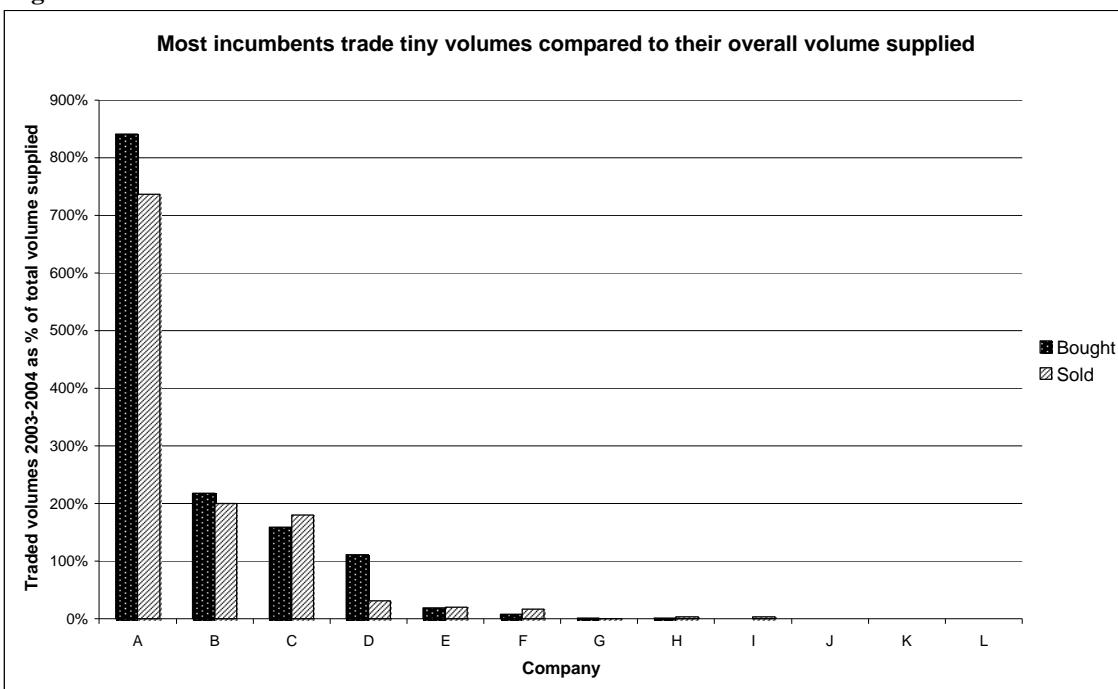


Source: Energy Sector Inquiry 2005/2006

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (98) The picture is therefore that only a small number of incumbents trade actively on a significant scale. Indeed, for most incumbents trading is insignificant as a proportion of the gas sold (see Figure 10). This graph does not show incumbents engaging in a trading pattern typical of liberalised markets, which would be likely to see trading of more than 100% of total supply<sup>74</sup>.

**Figure 10**



Source: Energy Sector Inquiry 2005/2006

- (99) The localised pattern of incumbent trading is also important. Only two incumbents are active across all European hubs, providing the arbitrage across geographic distance that will be necessary to create price convergence<sup>75</sup>.

### II.1.4. Barriers to new entry

#### *Entry and expansion barriers*

- (100) In view of the continued high level of concentration on many gas markets, it is important to seek to identify the entry and expansion barriers facing new market entrants.
- (101) In order for new suppliers to enter the gas market, as well as to expand existing activity, companies depend on a number of factors. New suppliers are dependent on stable access to gas, which has to be available both over a time-scale corresponding to the contractual time-scale required by customers, and at a competitive cost (including mechanisms for managing price risks).

<sup>74</sup> Centrica is not included on this graph.

<sup>75</sup> Destination clauses could also prevent trading across Member States.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (102) Suppliers also need to have transparent and non-discriminatory access to the transportation network on terms matching customer needs (this can include, for example, short-term capacity on the secondary market, reasonable liabilities, etc).
- (103) Linked to the previous two factors, a supplier also needs access to flexibility – both as regards predictable (gas volumes varying according to the known patterns of customer needs) and unpredictable events (such as production break downs). Such access to flexibility includes, inter alia, storage, balancing and contract terms, all of which need to be accessible in a form that is appropriate for the supplier's portfolio.
- (104) Downstream, the supplier obviously needs access to customers, which means that there must exist appropriate switching processes and an absence of exclusionary practices from incumbent suppliers.
- (105) Overall, the supplier must be able to achieve a sufficient gap between prevailing retail prices and costs. If gas is controlled by incumbents, networks are congested, flexibility is not easily available or customers cannot easily switch supplier, market entry or expansion will be difficult.
- (106) New entrants (including companies expanding their markets) in the gas sector are not a homogenous category. Since many countries/regions have in the past been dominated by a single (often monopoly) supplier, a broad definition would include all companies except the incumbents in that country/region.
- (107) The entrants with least barriers to overcome should be the gas incumbents (national or regional) expanding their business into a new geographic area, since these will normally already have a portfolio (including gas, network capacity, swapping capacity, storage, etc) constituting a good starting point for expansion. Nevertheless, as shown in chapter B.a.II.3, the activity of many of the larger incumbents has been surprisingly small outside their traditional markets.
- (108) Other entrants can typically include electricity companies moving into the gas sector (often bringing with them good customer relationships). Producers moving downstream will normally have access to gas and flexibility, while (rarer) gas consumers moving up-stream would have their own demand as a stable customer base. Pure new entrants lack initial access at all levels, and therefore face greater difficulties in building a successful wholesale business.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

### *New entrants' experiences*

- (109) Given the continued high level of concentration on wholesale markets, it could be expected that new entrants would express concern over all or some of the above-mentioned barriers to entry. This is indeed confirmed by many of the responses from companies that have responded to the Inquiry. The following responses mainly concern entrants with operations in Belgium, France, Germany, Italy, Netherlands and UK, since the majority of relevant responses have referred to these markets. The absence of comments for other markets should, therefore, not be interpreted as an absence of barriers to entry. Indeed in some cases a lack of response indicates that there has not even been any attempt to enter the market. It should, moreover, be noted that many small new entrants had difficulty responding to the inquiry due to resource constraints.
- (110) As regards access to gas, many new entrants have replied that they source their gas from the incumbent importer or domestic producer of gas, who is also in most cases the former monopoly supplier to end customers (i.e. a competitor). The exact nature of these relationships varies: from a framework contract allowing flexible offtake to a series of precise volume contracts. The delivery timescale is typically medium-term (a few years or shorter). Whereas the responses show that incumbents expanding into new markets, producers or large electricity companies can often manage to source at least part of their gas from producers/exporters, this is normally not the case for most other entrants.
- (111) A number of responses have pointed to poorly functioning wholesale markets, resulting in difficulties obtaining access to gas. In some countries, entrants can access gas through gas release programmes, but several entrants have commented that these programmes are not adequately designed to meet their needs (for example, in Italy, comments included criticism of procedures, small programmes and high prices). Comments as to the lack of liquidity, including on hubs, were made by a number of entrants in several countries (for the UK, such comments referred to the forward market). The lack of availability of L-gas and/or conversion capacity of H-gas to L-gas was also raised by entrants in different countries.

Quote from a new entrant: “[Incumbent] offers exclusive and non-exclusive agreements. The onerous terms of the non-exclusive agreements, which expose the purchaser to volume risk, and the position of [Incumbent] are such that, for new entrants, the only feasible option to purchase gas is by means of an exclusive agreement with [Incumbent], ruling out any competition with other (wholesale) suppliers of gas.”

- (112) Problems relating to network access are a recurring theme among new entrants. For example, regarding Belgium and the Netherlands several entrants voiced concern regarding the availability of network capacity. In Italy, many entrants were particularly concerned about the lack of import capacity. As regards Germany, concern was raised by several entrants regarding not only the availability of network capacity, but also the complex process for booking capacity. Such concern was also voiced by entrants wishing to transit their gas through Germany to other markets. Also for France, the complexity and costs of transporting gas through several zones, was raised as a problem. Comments on lack of network transparency have also been frequent.

Quote from a new entrant: “There is no comprehensive synopsis of all networks in Germany. A system user must identify all networks they need to use for transport activity which is strenuous legwork. An overview is necessary in Germany where a transport often entails three network levels and three to four system operators.”

- (113) Access to flexibility has also been raised as a concern by entrants in several countries. In particular, problems in relation to access to storage, including poor transparency, have been raised as a problem by many entrants. A number of entrants, especially in Germany, also pointed to difficulties in complying with balancing rules.
- (114) In relation to accessing customers, comments have included problems with metering services, with building physical connections to possible customers and with customers being contractually tied to an incumbent. The Commission is already investigating a case of alleged foreclosure due to a network of exclusive dealing agreements. There are indications that similar problems may exist in other markets.
- (115) Consequently, responses confirm that companies trying to enter the market, or expand their activities, face major barriers to entry in the form of difficulties in accessing gas, networks, flexibility and customers. Comments also point to onerous or ineffective regulations, onerous credit requirements and to a generally strong position of incumbents.

Quote from a new entrant: “There is insufficient transparency such that it is impossible to obtain a competitive supply at the burner tip by purchasing wholesale gas, transport, distribution and storage capacity discretely. The [Incumbent] companies have a decisive controlling interest at every level of the economic value chain.”

## Conclusions

Access to gas for new entrants is essential for the future development of European gas competition. There are three main sources from which gas may be sourced: imports, domestic production and wholesale trading. Gas incumbents remain dominant in their national markets by largely controlling gas imports and/or gas production. Control of imported gas is mainly exercised through long-term gas purchase contracts with upstream producers. Although incumbents trade only a small proportion of their gas on Continental hubs they nevertheless dominate trading on most hubs.

There has been little new entry into the European gas markets. The overall picture for new entrants is one of dependence on incumbents for services throughout the supply chain. This includes access to gas, networks and storage. When combined with the lack of transparency, ineffective wholesale markets and in the absence of effective regulation this dependence affirms the dominant position of incumbents and is seriously impeding the development of competition.

## **II.2. Vertical foreclosure**

- (116) Vertical integration of operators active at different levels of the supply chain through common ownership or control can foreclose the availability of crucial inputs for actual or potential competitors. Long-term contracts can have similar effects if they result in effective foreclosure of key inputs. Long-term contracts can also foreclose access to customers (downstream markets are discussed further in the Second Phase of the Inquiry).
- (117) As the previous chapter showed, incumbents control most of the gas present on the national market. This dominance (which arises mainly from long-term contracts with producers) is combined with customer relationships that are also largely concentrated in the hands of the same companies. There are also significant rigidities in these markets due to structural factors such as pipeline congestion and clauses in upstream contracts. It is therefore particularly important to ensure that this concentrated and rigid market structure is not propagated to the gas markets further downstream within Member States.
- (118) During the term of any long-term agreement *ex ante* competition for the customer or the input concerned is excluded. Therefore, the longer the duration of the contract, the greater the loss of scope for competition during its life. Furthermore, with concentrated markets, foreclosure through long-term contracts is a particular concern. For competition to develop, new entrants and existing competitors seeking to increase their market share must have the possibility to purchase the gas they require, to gain access to network and storage capacity and to contract with customers. Depending on market circumstances long-term contracts can result in foreclosure. This is particularly the case where they lead to a good part of customers or an available input such as transport capacity being tied to a dominant player.
- (119) Community legislation to open gas markets aims to ensure that access to markets is not foreclosed by lack of access to transport infrastructure. The Second Gas Directive also recognizes the relevance of access to other important gas infrastructure, notably storage. In gas markets not only access to infrastructure poses problems for new entrants. Incumbents also largely control the availability of gas, through their contracts with producers. Before turning to vertical foreclosure of gas infrastructure, the vertical foreclosure between production and supply is discussed.

### **II.2.1. Long-term contracts between producers and suppliers**

- (120) Existing import contracts cover the production from almost all existing gas fields from which gas can be transported to Europe by pipeline. “Free” gas sources that are available in the short term to entrants, and on economically viable terms are lacking<sup>76</sup>. In addition, wholesale gas markets in Europe are not liquid enough to provide confidence about gas availability. (The UK NBP being an exception.)

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<sup>76</sup> Such “free” sources may develop in the future, notably as LNG develops. As regards potential new pipeline sources, new fields are being explored and developed within Europe (particularly in the North Sea), but these tend to be smaller than the main past finds and will often be controlled by the incumbent. New fields are also being developed in Russia, but these would appear likely to be marketed in the traditional way to the former incumbents or companies in which Gazprom has ownership or other links.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(121) Given the lack of “free” gas in the upstream wholesale sector and the lack of hub liquidity, it is essential to analyse the characteristics of existing import contracts. In fact several characteristics of these contracts are of prime importance in assessing entrants’ possibilities to access gas.

- Upstream supply contacts are generally of long duration and are often extended in a way that does not allow for effective *ex ante* competition. In combination with other relevant factors such contracts may make it difficult for new entrants to obtain access to adequate supplies of gas. If significant volumes were re-contracted frequently then entrants would be able to bid at that time to interpose themselves as a newer buyer of gas. However, this is not the case<sup>77</sup>.
- Long-term supply contracts generally offer buyers a substantial degree of flexibility in terms of offtake. Incumbents can use this contractual arrangement to provide ready-made flexibility. They can also, despite take-or-pay obligations, avoid buying more gas than they need, which limits their need to buy and sell on hubs. The result is depressed hub liquidity reducing the availability of gas to new entrants.

### *Flexibility and risk allocation*

(122) The allocation of risk in incumbents’ import contracts generally follows a standard pattern. Price risk is typically borne by the producer, in the sense that the contract price is indexed to a basket of alternative fuels. These indexation practices are described in more detail in section B.a.II.5. The other main risk to be allocated through these contracts relates to volumes. The contracts stretch for many years into the future, which implies uncertainty about the buyer’s future needs (i.e. how much gas will be needed, given the evolution of its own customer portfolio). As already mentioned, gas contracts typically contain flexibility provisions which enable the buyer to vary the actual take.

(123) Many of these import contracts are for very long durations. The sample of contracts reviewed includes a number of contracts dating as far back as the early 1960s. The majority of the contracts reviewed were concluded during the 1980s or 1990s, but there were also a significant number of post-liberalisation contracts. Overall, a duration of 15-20 years is typical.

(124) Many of the older contracts have been modified significantly over their lifetime. These modifications (through annexes or side-letters) relate to a number of themes: the volumes to be delivered, the price-related terms, delivery points or interpretation of the contract. In a number of cases, contracts, that were initially restricted in time or in the volumes to be delivered, have been extended<sup>78</sup>.

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<sup>77</sup> Moreover, the typical characteristics of the long-term import contracts make it very difficult for most entrants to enter into such an agreement. The buyers in these contracts assume substantial risk that can most easily be managed by buyers with strong downstream market positions. This might be possible for certain entrants into energy markets as has been illustrated e.g. in the Spanish market. However smaller entrants would need to buy gas from other sources.

<sup>78</sup> Some European energy companies extend their contracts with gas producers, although the contracts still have a long time left before their expiry, e.g. in 2006, an incumbent’s upstream contracts with a producer were reported to have been prolonged from 2020 to 2035.

*Flexibility in import contracts*

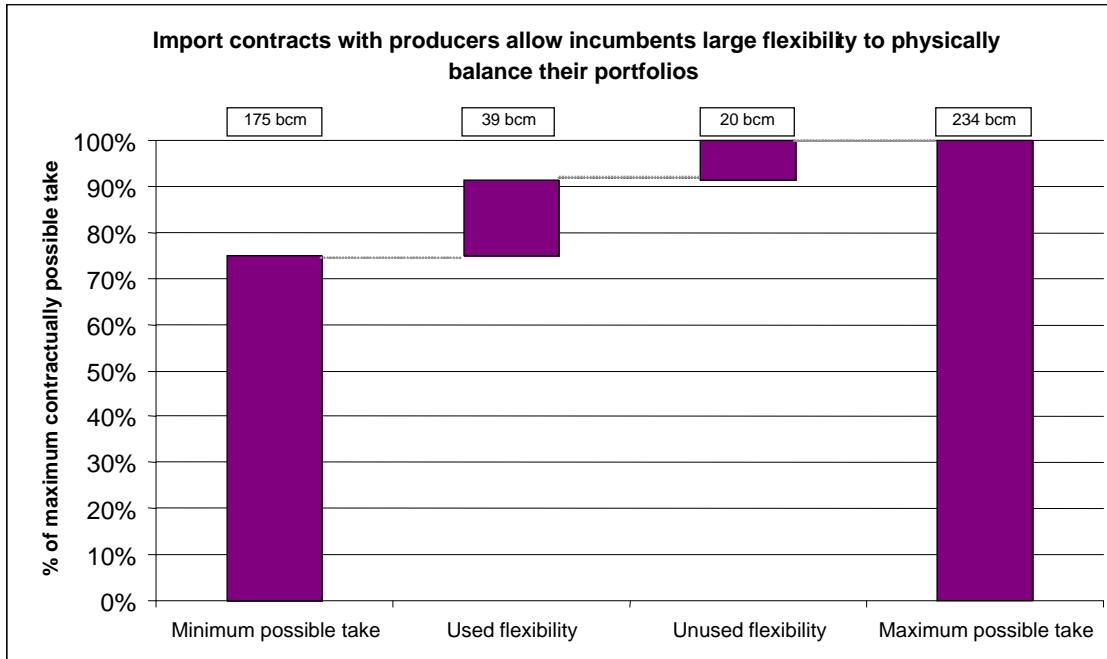
- (125) The exact nature of flexibility provisions varies greatly between import contracts and between regions. Some contracts establish a global amount that should be taken over the lifetime of a contract. Many contracts establish an “annual contractual quantity” but allow the buyer to take a defined percentage less or more than this over the course of a year. Many contracts also specify monthly or daily maximum or minimum quantities. Normally, where multiple limits apply, one of the limits is deemed to over-rule, or secondary limits are calculated on the basis of the main limit.
- (126) There are in addition a small number of contracts that have no contractual quantities, or where the quantities are to be nominated by the seller. These typically relate to small fields, and this mechanism might be used where the technical characteristics of the field make forecasting yield difficult.
- (127) These contracts typically provide specific rules for the situation where the buyer does not take the whole of the gas required in a given year. In these circumstances, the buyer may be able to defer delivery by one or more years, or delivery obligations might be averaged over a number of years. Alternatively, the buyer might be required to pay for gas not taken.
- (128) It is, however, extremely rare for suppliers to pay for gas not taken. The inquiry has analysed the purchase contracts of around 75 suppliers, and found only one clear example of such a payment being made, for a relatively small volume. We have, however, also seen a significant number of re-negotiations of contracts, involving prices as well as reduction of quantities or relaxation of limits. These re-negotiations often appear to constitute payment in exchange for not taking gas.
- (129) For whatever reason, it does not appear to be the case that European incumbent importers are substantially over-contracted, and so we should not expect a Europe-wide “gas bubble” to emerge for this reason in the coming years.
- (130) By far the most common scenario is that the flexibility inherent in long-term contracts has been sufficient, so that take-or-pay provisions have not been used. This flexibility is very large. Figure 11 shows the flexibility in our sample contracts<sup>79</sup>, and shows that collectively these contracts offered the buyers 25% flexibility (i.e. the minimum that could have been taken in 2004 under these contracts was only 75% of the maximum total take).
- (131) As noted above, the extent of flexibility varies greatly between contracts. Figure 12 shows the degree of flexibility (the margin between minimum and maximum possible take in 2004, as a percentage of the maximum possible take) for each contract in our sample. It shows that there are a relatively small number of inflexible or highly flexible contracts, but a typical contract has 20%-40% flexibility to increase or reduce the total annual take. (Note that this is annualised flexibility, not seasonal flexibility which would typically be greater.)

<sup>79</sup>

The sample includes 306 contracts representing 208 bcm actual take in 2004.

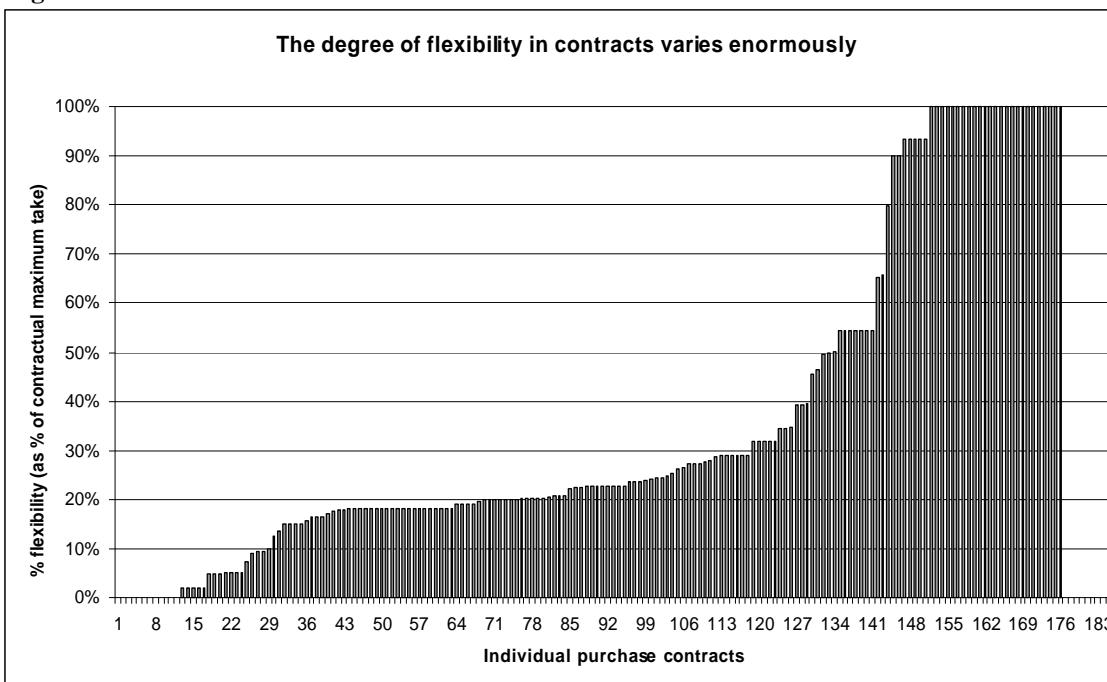
## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 11**



Source: Energy Sector Inquiry 2005/2006

**Figure 12**

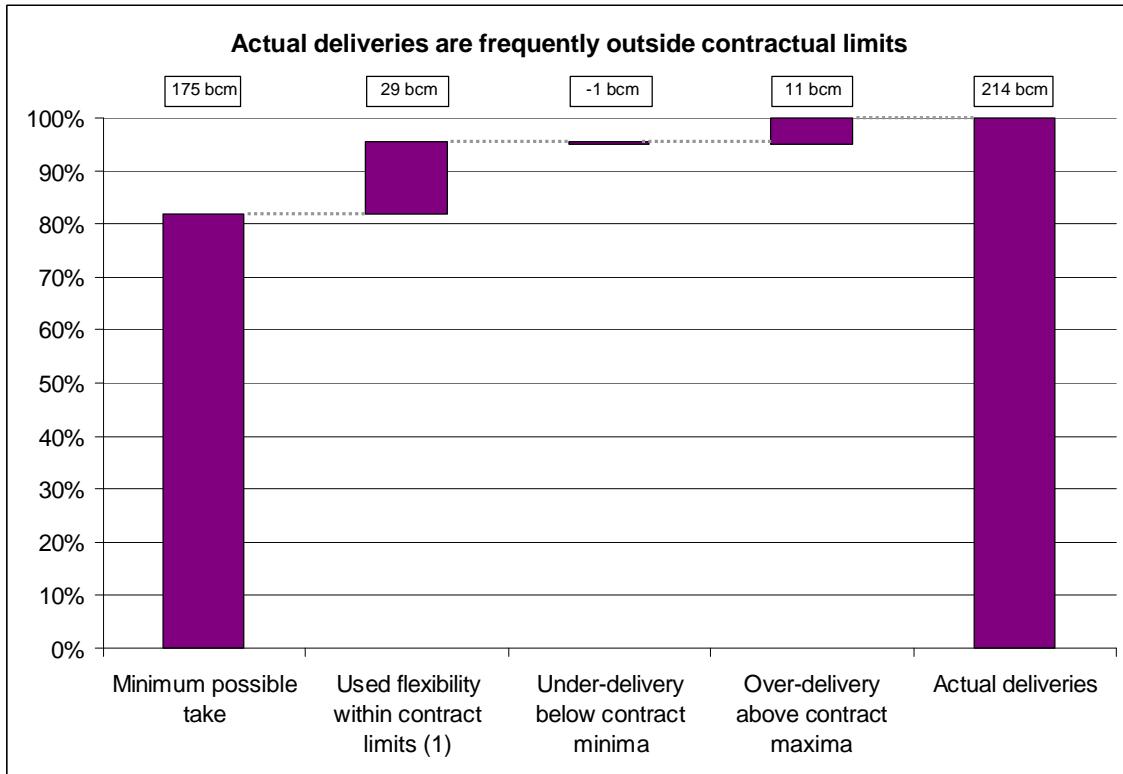


Source: Energy Sector Inquiry 2005/2006

(132) As well as the flexibility inherent in contract terms, for 11% of contracts the actual take in 2004 was, in fact, outside contractual limits. Figure 13 shows that the volumes of gas delivered outside contractual limits were overall relatively small, and that contracts delivering more than contracted volumes were much more important than those delivering less than contracted volumes. Nevertheless, the frequency with which producers agreed to deliver outside contracted limits underlines the flexible and co-operative nature of these contractual relationships.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

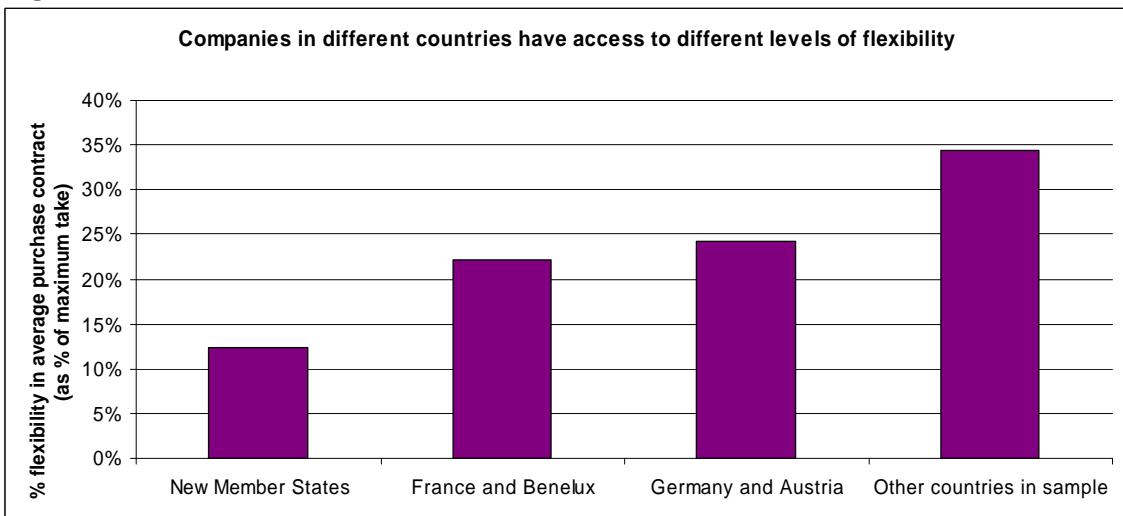
**Figure 13**



Source: Energy Sector Inquiry 2005/2006

- (133) The average level of contractual flexibility varies between buyers importing to different countries - see Figure 14. Typically, the least flexible contracts are those under which gas is bought by incumbents in the new Member States, while the most flexible are in the “other” countries (Italy, UK, Scandinavia).

**Figure 14**



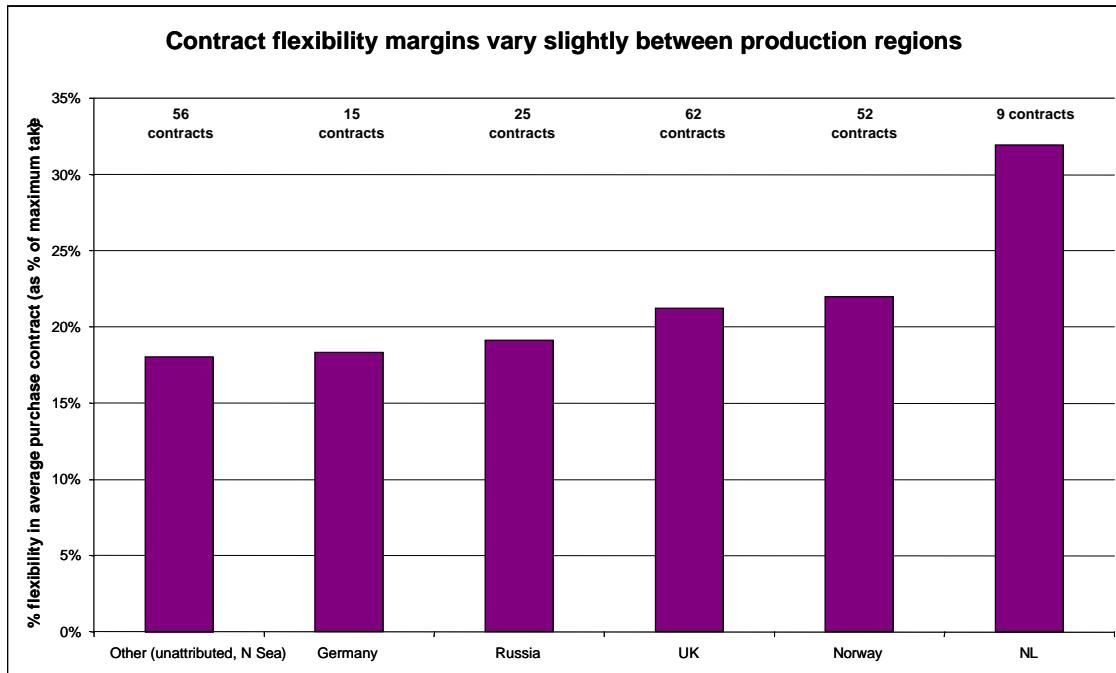
Source: Energy Sector Inquiry 2005/2006

- (134) The average level of flexibility may also vary slightly by the region in which the gas was produced. Figure 15 suggests that flexibility levels tend to be a little lower in contracts for Russian gas than in North Sea contracts. The graph also appears to show that the sample of contracts that are clearly for Dutch gas have larger flexibility

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

margins. This may be because of the importance of the highly flexible Groeningen field.

**Figure 15**



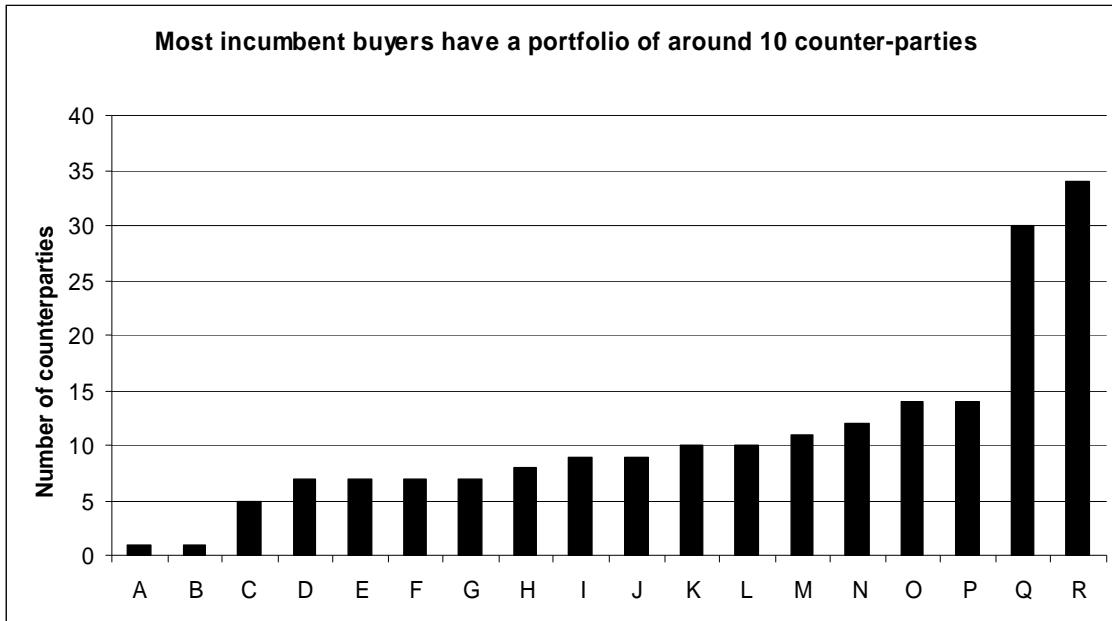
Source: Energy Sector Inquiry 2005/2006

### *Incumbent contract portfolios*

(135) Most incumbents have historically bought gas from diverse sources. The figure below provides an overview of the number of counterparties in the contracts. The picture is varied between Member States.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 16**



*Source: Energy Sector Inquiry 2005/2006*

*Note: Two of the companies analysed only buy through one contract. These are located in smaller new Member States which have traditionally had few purchasing options because of the physical configuration of pipelines and contractual limitations on counter-flow trading. Companies Q and R on this graph are also atypical in having a significant role in managing offshore production, and their much larger number of counterparties represents a role in aggregating production from smaller North Sea fields exploited by smaller producers.*

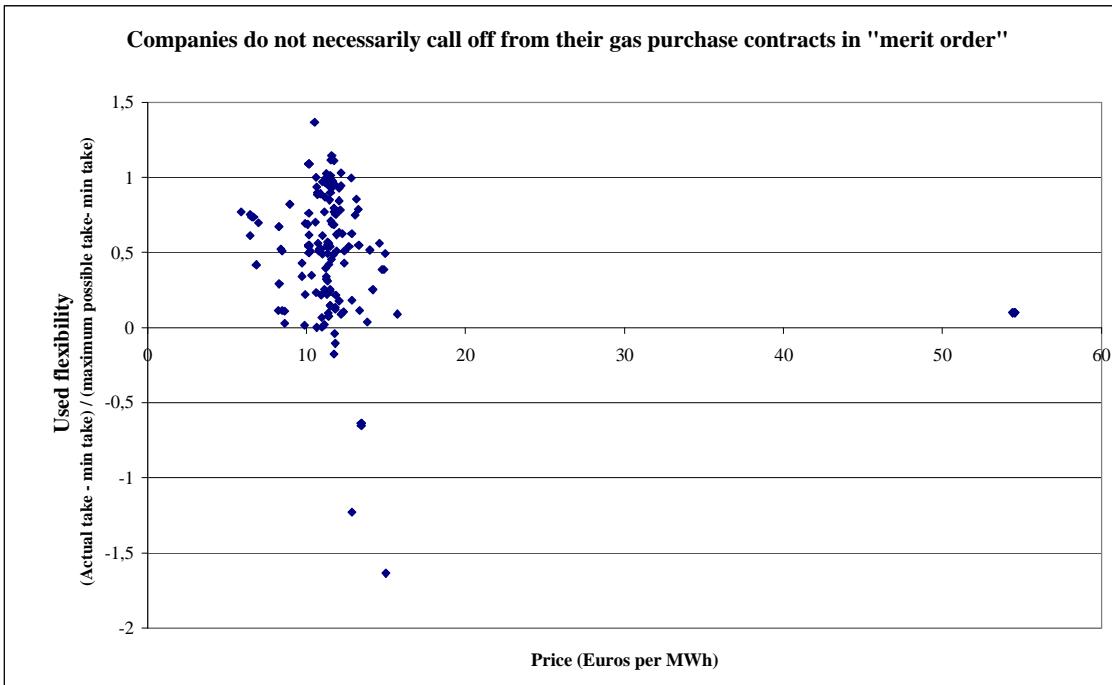
- (136) As Figure 16 shows, most incumbent importers buy gas from around 10 counterparties. The frequency of portfolios of 7-15 counterparties suggests this range is adequate for risk-management purposes. Of course, not all counter-parties are of equal importance. Most incumbent importers have one or more “lead suppliers”, which tend to supply 3 to 5 times more than the average supplier<sup>80</sup>.
- (137) The number of contracts tends to increase over time, as an importer will frequently sign a new contract with a producer instead of modifying an existing contract. This is far from being invariably the case, however, and in many cases side-letters are used to increase the volumes delivered under existing contracts.
- (138) It might be expected that the volumes actually taken under various contracts would depend mostly on the contract price. However, across our sample of contracts the relationship between contract price and flexibility used appears quite weak.

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<sup>80</sup> Put another way, the standard deviation in volumes taken from the various counter-parties in an incumbent’s import portfolio is generally between 120%-180% of the take from the average counter-party.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 17**



Source: Energy Sector Inquiry 2005/2006

(139) Figure 17 above shows the scatter of contracts across the two axes which represent the 2004 average price (on the X axis) and the proportion of flexibility that was actually used in 2004 (on the Y axis). A value of 1 on the Y axis indicates that all upward flexibility was used in the contract (up to the maximum take) whilst a value of zero indicates that all downward flexibility was used (only the minimum take was used). We might expect to see on the graph a trend from top left (the cheapest contracts being 100% exploited, or even more) to bottom right (the dearest contracts being used only to fill peak demand). However, such a pattern does not appear. In fact, what is most striking is that there does not appear to be any single pattern that explains the behaviour of all incumbent suppliers<sup>81</sup>.

(140) Consequently, the data implies that gas is not taken from contracts in a strict merit order under which cheaper contracts are nominated systematically before more expensive ones. This may be because the level of exploitation of a contract could depend upon the size of the take or pay clause, regardless of price. Closer analysis suggests that companies that systematically nominate to exhaust the flexibility margins in cheaper contracts before moving onto more expensive ones tend to be companies that buy gas predominantly from a single production region. They are also in many cases companies buying for markets that have not yet been significantly affected by liberalisation, so that the pipeline routes for physical delivery are straightforward. By contrast, the companies least likely to nominate the cheapest gas first tend to operate in more complex situations, handling various qualities of gas, and being located towards the geographic

<sup>81</sup>

There is no linear “best fit” line that can show an overall pattern with any degree of confidence. No linear best-fit line has an R-squared of more than 0,17. Even removing the outliers (below 25% and above 150%) only raises this to 0,24.

centre of Europe where pipeline congestion may mean they are physically unable to flow gas from certain sources<sup>82</sup>.

*Contract terms that affect competition conditions*

- (141) Incumbents' purchase contracts may contain terms and conditions which prevent the development of liquid wholesale markets or otherwise prevent cross-border trade. In particular, a number of contracts relating to new Member States contain territorial restrictions that prevent buyers from re-selling the gas outside a defined area (or other terms with equivalent effect, such as various forms of profit-splitting mechanism). Such provisions were historically included in many other contracts through which companies in Western Europe bought gas, but following a series of cases opened by the Commission those investigated to date have largely been removed<sup>83</sup>. Some of these cases were concluded by formal decisions stating that territorial restrictions infringe Article 81 of the EC Treaty<sup>84</sup>.
- (142) The inquiry has also found restrictions in contracts between suppliers and end-customers. Use restrictions appear to be common, that prevent the gas being used for any other than a defined purpose. For instance, this prevents a large industrial user from reselling gas to the market should the wholesale price rise above its contract price. Such restrictions have an evident negative impact on overall market liquidity<sup>85</sup>.
- (143) In addition, a significant number of contract terms have come to light that require either the buyer or seller to share confidential and competitively sensitive information with their counter-party, for instance when prices are reviewed.

**II.2.2. Vertical integration of supply and infrastructure companies  
Insufficient unbundling of networks**

- (144) The gas incumbents are often vertically integrated and active on several economic levels. Such a linkage between different economic activities leads to incentives for these companies to exercise preferential treatment of their own upstream or downstream branches as compared to third parties. This contributes to market foreclosure and thus hampers competition. The bundling of network and supply interests also has repercussions on incentives to invest in networks. At a time when very large investments are needed to promote market integration and ensure security of supply it is a very serious problem that vertical integration provides incentives to only invest in networks when it is in the interest of the firm as a whole including its supply business.

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<sup>82</sup> In addition, certain contracts reflect in the price the difficulty of using the gas. For instance, gas from one UK North Sea field, which falls out of the quality specifications for the UK market, is priced particularly cheaply since it can only be used in one power station (which has an exemption from the normal quality specifications, but incurs significant cost to use this gas). There is no reason to expect a contract of this kind to be fully nominated, even though the gas is low-priced.

<sup>83</sup> Cases are still active relating to territorial restrictions in contracts covering 11% of Italian consumption and 13% of Spanish consumption.

<sup>84</sup> See press notice IP/04/1310 Gaz de France/ENI/ENEL.

<sup>85</sup> Regarding long-term downstream contracts see the separate chapter C.b.I later in this Report.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (145) The Second Gas Directive imposes obligations on gas network operators with regard to legal and functional unbundling between transmission/distribution networks on the one hand and downstream supply functions on the other. The companies concerned are obliged to create separate legal structures for the network and supply activities and to install separate management for each of them. Ownership unbundling is not required under the Directive. The combined operation of transmission, LNG, storage and distribution remains possible. It is only required that, the combined operator is independent in its legal form and organisation from the remaining fields of activity.
- (146) Under management unbundling, the day-to-day management of the network operator and all related decisions must be made independently and without interference by the parent companies. The management of the network operator – from managing director to middle management - may not take any functions in other divisions of the operator, nor receive remuneration attached to the success of the supply company. Sufficient decision making power over the capital assets necessary for business management – including network development and maintenance - has to be granted to the network operator, within limits that may be contained in financial plans approved by the parent company. However, the parent company retains the right to approve the financial plan and thus all significant investments. It follows that while the management must be able to practice this power independently and may not be given any instructions by the parent company regarding the day-to-day business, the parent company retains control over strategic decisions including significant investments.
- (147) Regarding business organisation, the Directive does not contain any exact standards as to the extent that jointly used assets (such as buildings, data processing systems, personnel and finance services, car park) must be actually divided between the unbundled companies. Whenever services are shared, this must represent the most reasonable solution economically, also compared to the outsourcing of the services to third parties. The shared services are to be provided from outside the network company, for example by the holding company, and no cross-subsidies must take place.
- (148) Operators have to prepare a compliance programme serving as a formal framework to prevent discriminatory behaviour and to protect the confidentiality of business information. Employees of network operators have to refrain from making any recommendations to customers regarding the choice of suppliers. The compliance programme must be implemented actively by the network operators through appropriate training, written statements of acceptance of these rules, and a clear framework of sanctions in case of violations. Network operators have to submit annual reports on the implementation of the compliance programmes to the regulatory authority, in order to facilitate their supervision.
- (149) For operators of gas storage and LNG infrastructure, only accounting separation is required. Member States are authorised to relieve integrated gas operators supplying less than 100,000 customers, or small isolated networks, of the legal and organizational unbundling requirements. This was considered justified due to the perceived high cost of unbundling compared to the overall size of the company (e.g. duplication of departments). Member States are permitted to postpone legal unbundling of all distribution networks until the complete market opening on 1 July 2007. However, functional unbundling for DSOs is required from July 2004, as is legal/functional unbundling of transmission network operators.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (150) Incomplete legal and management unbundling is as such contrary to the Second Gas Directive and in addition lays the ground for discriminatory behaviour of vertically integrated operators in favour of their own upstream or downstream operating arm, to the detriment of new entrants. Such conduct could also amount to an abuse of the TSO's dominant position under Article 82 of the Treaty.
- (151) In a number of Member States, the unbundling provisions are still missing due to the lack of timely, complete or correct transposition of the Second Gas Directive into national law<sup>86</sup>. This is currently still the case for 8 Member States and the Commission has, as a consequence thereof, initiated infringements proceedings in April 2006 by sending letters of formal notice to Austria, the Czech Republic, France, Ireland, Italy, Poland, Slovakia and Spain. In these Member States, legal and/or functional unbundling is not yet complete and in some of them, the network operators still give preferential access to suppliers on the basis of historical contracts<sup>87</sup>. The Commission continued these proceedings in December 2006.
- (152) On the other hand, some Member States (Denmark, the Netherlands, Sweden, Spain<sup>88</sup> and the UK) have gone further than the legal obligations set out in the Second Gas Directive by introducing ownership unbundling. Other Member States are currently considering introducing ownership unbundling (Italy) or have adopted other measures restricting the ownership rights of TSOs (Belgium).
- (153) Even where Member States have adopted unbundling provisions required under the Second Gas Directive, this does not mean that TSOs necessarily comply with them. Furthermore, even if the unbundling provisions are fully implemented, incentives for preferential treatment within vertically integrated operators remain. Indeed, the Second Gas Directive does not change the incentives of vertically integrated incumbents but tries – through the creation of Chinese Walls – to ensure that network operators act independently from the incentives of the vertically integrated group. In the Sector Inquiry, the TSOs were asked to provide information about their practical implementation of the unbundling requirements. Where this has not yet been fully completed, the process is allegedly under way. The TSOs' replies however point to a certain number of admitted shortcomings as regards the current level of unbundling. For example, top management of the supply company often have access to strategic business information of the transport company, either directly or as a result of their representation in the Supervisory or Administrative Board of the latter. The same holds true for insight into the downstream activities of the affiliated distribution network operators, such as the market shares lost to other competitors in the historical supply areas. The Commission is in possession of clear indication that vertical links continue to be used in favour of integrated supply operations, even in cases where the national law complies with the Directive and where companies are, on paper, complying with the law.
- (154) In a number of cases concerns refer to the independence from the parent company if the network company (or a company which carries out network functions according to the TSO definition in the Directive) in one Member State (MS) remains under “control” of

<sup>86</sup> In addition, five Member States benefit from derogations under the provisions of the Second Gas Directive or do not have a functioning gas market.

<sup>87</sup> See Commission Press Release IP/06/430 and MEMO/06/152 of 4 April 2006.

<sup>88</sup> The transmission network has been ownership unbundled, while the infringement procedure mentioned above concerns the functional and accounting unbundling of the distribution network.

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the related supply/generation company in another MS. Especially in those cases where the related supply company is incumbent in the neighbouring market there is a conflict of interests when improvement of the TPA-regime on a pipeline system necessary to supply the incumbent's home market is required. Art 9 of Directive 2003/55/EC also applies to cross-border related activities. According to Art. 25 (1e) of the Gas Directive regulatory authorities should monitor effective unbundling. However, due to their competences being restricted to national activities regulatory authorities are unable to monitor cross-border related unbundling. Companies can therefore establish their cross border activities in a way that undermines the purpose of Art. 9 of the Gas Directive.

- (155) The Commission has also gathered indications that one TSO grants its affiliated supply company substantive rebates for the transportation fees as compared to non-affiliated network users. In doing so, the TSO directly supports the competitive position of the related supply company. This appears to be an overall business strategy carried out by some integrated gas companies despite the formal Chinese Walls created by the Second Gas Directive. The introduction of ownership unbundling would make this competitive advantage of the affiliated suppliers disappear, given that the transport tariffs would follow market principles and thus tend to be the same for all suppliers. If the ownership link is broken the incentives facing the network operator will change. It will seek to optimise its network business as opposed to acting in the overall interest of the vertically integrated group.
- (156) In other areas such as network services and balancing, the incomplete unbundling between transport and purchase/supply functions may be used to generate high margins for the integrated gas companies. For example, through their procurement of such network and balancing requirements TSOs are able to support the integrated group's gas purchase and trading business, according to concrete indications in the possession of the Commission. Ownership unbundling would lead to a reduction of those margins and to a significant reduction of such advantages, given that fully independent TSOs would have an incentive to engage in greater market orientation, through tenders or open season procedures for instance. This would contribute to a level playing field in the gas market, which is being perceived as a serious threat by the incumbents.
- (157) Indications of discriminatory behaviour have also been found with regard to investment decisions taken by the integrated gas companies. Certain investment decisions on network extensions of the transport company have to be approved by an investment committee of the parent company of the TSO. In a number of cases, companies have only invested in capacity expansions if their related supply arms had previously confirmed their interest for the bulk of the extra capacity. By contrast, the investment did not take place if the interest in extra capacity merely stemmed from competitors. For instance the incentives for TSOs to increase the capacity of their interconnectors are low, given that congestion benefits the vertically integrated company, which itself tends to have sufficient long-term reservations, by protecting its downstream market. This not only limits the transport companies' freedom, but also gives suppliers affiliated to the TSO a strategic insight into developments that are highly important for their own business.
- (158) In a case similar to the situation described above, the Italian Competition Authority adopted a decision on 15 February 2006<sup>89</sup> stating that ENI had abused its dominant

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<sup>89</sup> Case N° A358, see Press Release of AGCM of 15.2.2006

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

market position by hindering the entry of independent operators into the national market for wholesale gas supplies. The abuse consisted in discontinuing works, which had been started by the network branch in view of increased gas capacity requirements, for the expansion of a main import pipeline into Italy, running between Tunisia and Sicily (TTPC pipeline). The suspension of the works was decided by the parent company following complaints by the supply branch and occurred after ship-or-pay transport contracts had been signed with a number of independent shippers who were intending to use the new pipeline.

- (159) The Italian Competition Authority imposed on ENI a fine of Euro 290 million and ordered ENI to desist from its anti-competitive conduct by giving third parties access, by 1 October 2008, to 6.5 billion cubic meters (bcm) p.a. of additional gas transport capacity via the TTPC pipeline, to be allocated according to objective and non discriminatory criteria. A network operator without supply interests in Italy would not have had an incentive to discontinue the expansion of pipeline capacity. On the contrary, the expansion would have meant additional revenues for the company. The discontinuation of the pipeline expansion was driven by ENI's supply interests in Italy. In other words, the conflict of interest between network and supply activities was solved to the detriment of the network business and ENI's competitors on the Italian supply market, as well as severely compromising security of supply.
- (160) The degree of autonomy over investment decisions to be taken by the unbundled transmission arms of the vertically integrated companies tends to be too low to allow independent investment decisions in new infrastructure projects whose cost is often in the range of tens or hundreds of million Euros. The requirement for the legally unbundled TSO to obtain the parent company's agreement to all major investment decisions, which still exists in many cases, secures the supply company's decisive influence over such decisions. The current provisions do not completely eliminate this risk, given that certain coordination mechanisms are still allowed to ensure supervision rights of the parent companies regarding the return on assets. In particular, under the existing Directives, the parent companies are able to approve the financial plan and to set global limits to the indebtedness of its subsidiary.
- (161) Within many gas companies, trading names, brands and logos are still shared between the transport and supply companies. Some of the TSOs concerned point out that a separation of those intellectual property assets is currently under way. Several TSOs' replies, however, indicate that supply and transport companies still share physical assets such as office buildings and IT systems. The fact is that the people working for the supply and for the transport company still work in one and the same building, use the same computer systems and applications and see each other in jointly used facilities, such as company restaurants. This leads to continuous regular contacts, be it personally or electronically via mailing lists, between employees of both companies, who in many cases used to be direct colleagues. These persisting links obviously facilitate a co-ordinated approach between the supply branch and the transport branch of integrated gas companies. Again, some of the TSOs claim that separation of those assets is under preparation, with the construction of new premises or division of existing ones, or by setting up "Chinese Walls" in the IT systems.
- (162) However, as long as a complete separation of these assets is not achieved, the supply and transport companies remain visible in the markets as a joint entity. The existing provisions on management unbundling do not prevent the companies from using a

certain amount of shared services, provided that their independence is ensured in practice. This strengthens their competitive position compared to third party operators. In addition, the shared use of assets facilitates access to each others' business information which in an ownership unbundled company would be kept strictly separate. In this respect, it also needs to be considered that regulators are often not adequately equipped to verify that the unbundling provisions are correctly implemented in practice. In particular in Member States with a great variety of TSOs and DSOs, the regulators do not have the resources needed to carry out systematic inspections.

- (163) In many cases, a strong link between the transport and the supply company continues to exist due to personnel and career related issues. Often the head of the TSO participates in all the strategic discussions of the parent company, so that the transport branch is informed before any third party of the changing gas capacity needs of the supply branch. In addition the employees of the TSO are often invited to attend strategic business review meetings and training sessions organised within the whole group. Both managers and employees regularly change their positions between the transport and the supply branch. This creates dependencies and career strategies, which tend to maintain and even strengthen the co-ordinated business approach within the group.
- (164) A number of TSOs' replies indicate that the unbundling requirements have not been entirely implemented with regard to the management of gas capacities. Certain vertically integrated TSOs do not use separate contracts for gas supplies and gas transports, but continue to subject both activities to a unique contract, although under the unbundling provisions they have to be kept strictly separate from each other. In a few cases, the network companies even transport gas for affiliated suppliers without proper transmission contracts<sup>90</sup>. This means that the transport and supply companies, even if they are legally unbundled from each other, continue to be and act as a single vertically integrated operator. This contrasts with the expectation that contractual conditions for any gas transport through the networks, be it by a sister company within the same group or by an independent third party, must be set out in a separate contract in an objective and transparent manner, so as to prevent any discrimination.
- (165) Similarly, the nomination of gas transport capacities does not always follow the same standard procedure for all shippers. While the supply company of vertically integrated operators can nominate their capacities directly to the network's dispatching centre, third parties with short term interruptible contracts still have to nominate their capacities in advance to the TSO who aggregates them before sending them to the dispatching centre for execution.
- (166) Allegations have been made in a number of shippers' replies to the questionnaires that network operators offer preferential treatment to their supply companies and that this leads to discrimination to their competitors' detriment, which maintains or even increases market entry barriers. This concerns a number of different aspects of network access and occurs in various Member States.
- (167) A number of shippers allege that network operators continue to offer preferential treatment to their "associated" supply companies with regard to the access to available firm capacities on transit routes, notably in Austria, Belgium and Germany. This takes

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<sup>90</sup> See in this respect the category identified as "without contract" in section B.a.II.3.3 and footnote 128 below and more particularly with respect to the East-West transit axis.

place either through straightforward refusals of capacity reservation requests, or indirectly through considerable price increases for a limited quantity of reservations or stricter terms and conditions in the balancing regimes. This means in practice that independent shippers often run the risk of having to pay higher penalty charges for imbalances.

- (168) Such discriminatory behaviour is allegedly due to the fact that many incumbents still benefit from an aggregated management of their load within the network, with capacity rights historically used by the incumbents being perpetuated into the new system. One of the most clear-cut examples of alleged discrimination described in the context of the Sector Inquiry concerns the fact that one of the German gas incumbents was recently able to offer a gas delivery contract for a new power plant requiring a substantial import capacity, to be shipped through the network of its “associated” network company. At the same time new entrants were not granted firm capacity on an almost identical pipeline path, although the capacities they requested were substantially lower than the ones granted to the power plant. Another example from a different Member State is related to the fact that the vast majority of primary capacity on a transit pipeline is sold to the shareholders of that pipeline. Under the current provisions, such discrimination is difficult to detect , while ownership unbundling would reveal them more clearly.
- (169) A different alleged form of discriminatory treatment is the requirement for independent shippers to offer a bank guarantee or a bank deposit for an amount equivalent to several monthly invoices before receiving access to capacity reservations. In addition, several respondents complain about the lack of liquidity and transparency on the secondary market, which make commercially meaningful capacity reservations very difficult<sup>91</sup>. The reported lack of transparency for gas transports on transmission pipelines concerns reserved and available capacities over the length of existing long-term reservations, the announcement and publication of bottlenecks, physical congestion of interconnectors as well as details about transport interruptions. These data, when being made available to shippers within the same group, can provide them with important competitive advantages over independent shippers.
- (170) Various shippers allege that network operators offer their supply companies preferential treatment with regard to nominations management, due to a lack of harmonisation of the nominations procedure, and the high cost for independent shippers to use the TSOs’ nominations management systems. Furthermore, the access to transit capacities is in some cases made conditional upon the prior existence of gas purchase or supply contracts, so that planning ahead becomes difficult for smaller independent shippers. In addition, it was pointed out in the context of the Sector Inquiry is that gas incumbents do not offer new entrants wheeling services, enabling them to redirect gas flows of purchased capacities once put into the pipeline system.
- (171) On the basis of their experience when dealing with vertically integrated gas incumbents in the context of imperfect unbundling and the difficulties faced in the areas mentioned above, numerous market players claim that only full ownership unbundling will provide market-based network access and enable them to make efficient use of the mechanisms put in place in order to achieve competitive liberalised gas markets. A certain number among them expressed some scepticism, by pointing at the expected limitations of

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<sup>91</sup> The application as from 1st July 2006 of Regulation (EC) No 1775/2006 of the European Parliament and the Council on conditions for access to the natural gas transmission networks might contribute to improvements in this respect.

mandatory ownership unbundling for enhancing non-discrimination and transparency in practice. It is however noteworthy to stress that such comments were mainly made by incumbent operators. The majority of market players, mainly new entrants but also a number of national energy regulators as well as unbundled companies, stressed that ownership unbundling is crucial in order to create a level playing field and to improve investment incentives.

(172) Also, at the level of practical implementation, there are clear indications that ownership unbundling is the most efficient way to eliminate incentives for preferential treatment within vertically integrated operators and to ensure that network operators do not have investment incentives that are distorted by supply interests. Notably, the UK market experience of full ownership unbundling suggests that it significantly changes the behaviour of the transport undertaking: a fully unbundled and properly regulated TSO will focus on optimising revenues from its network. In addition, a number of TSOs that have undergone ownership unbundling in other Member States, on the basis of national provisions beyond the EU directives, have stressed that this measure contributed to clarifying their role and purpose as grid operators towards the market players.

(173) Through ownership unbundling, independent network operators would indeed have greater incentives to maximise the use of their infrastructure and to invest into further expansions. Moreover, as high prices for network related services such a balancing would no longer favour an integrated supply branch; ownership unbundling would also improve incentives to improve efficiency leading to lower prices for consumers.

### **II.2.3. Access to storage**

(174) The extent of storage capacity differs widely across Europe, due to varying geological conditions and historic investments. The ratio of storage capacity to consumption is particularly high in France, Germany and Italy. There is no gas storage in Estonia, Finland, Greece, Ireland, Lithuania, Luxemburg, Portugal, Slovenia and Sweden.

(175) There are different kinds of storage facilities. Gas can be stored in salt caverns, depleted fields onshore and offshore, aquifer storage and in tanks in the form of LNG. Storage facilities have their own characteristics related to the geology and the investments which have been made. In general, inflows and outflow can be more rapid in salt caverns than in depleted fields and aquifer storage. The former are therefore used for peak demand and the latter for seasonal swing. LNG storage is used as peak shaving plant.

(176) Storage for seasonal swing is filled up in summer, so that it can provide gas during the winter season and during very cold days: for the first requirement, there is a need of storage in terms of volume available and for the second, storage needs to have enough pressure to allow for a quick withdrawal. In addition, short term services (less than one year) are being developed in a number of Member States.

(177) It is therefore clear that storage facilities have a dual aspect. They contribute to security of supply and as storage facilities also provide an important flexibility tool, they play a crucial role for the development of competition in Europe. Storage facilities are, however, largely controlled by the historical incumbents.

(178) It was decided, in the first phase of the Gas Sector Inquiry, to focus on issues in storage complementing the work realised by the European Regulators Group for Electricity and

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

Gas (ERGEG) for the countries under review (Austria, Belgium, the Czech Republic, France, Germany, Hungary, the Netherlands, Poland and Slovakia).

(179) Whilst effective third party access to storage is of central importance<sup>92</sup>, there is no legal obligation, under the Second Gas Directive, to provide regulated access. Regulated access to storage facilities is only provided in Belgium, Italy and Spain. In the Czech Republic, United Kingdom, Hungary, Latvia and Poland, access is partially regulated. In Austria, Denmark, France, Germany and the Netherlands access is negotiated. Newcomers complain about a number of weaknesses in negotiated access: lack of transparency on storage use, inadequacy of storage services to their needs, lack of secondary markets, and high prices.

### *Guidelines on GGPSSO and the Gas Sector Inquiry*

(180) Non-binding guidelines on access to storage (Guidelines for Good TPA Practices for Storage System Operators - GGPSSO) have been developed in close cooperation between the Commission and the energy regulators. These were accepted by the industry in the context of the Madrid gas forum<sup>93</sup>. Regulators have recently investigated compliance with these guidelines and a report has been published in December 2005. Three main findings of this regulators' report can be underlined:

- On confidentiality requirements: the report states that it is important that effective market arrangements are put in place to ensure equal market conditions in particular where there is vertical integration. These arrangements apply to the quasi-totality of storage system operators as they are part of vertically integrated companies. These are: separate databases for storage operations, implementation of a code of conduct/compliance program for staff working in the storage business, effective monitoring of firewalls between the storage operator and the supply branch of the company, cost effective solutions to ensure that the storage operator and the supply business are not located in the same place. However, in the majority of cases, these arrangements are not monitored at national level and for more than 60% of storage capacity under review, compliance with the guidelines is unclear.
- On transparency requirements: the report states that publication of relevant data is crucial to the efficient and transparent operation of the storage market. However, there is very limited transparency on operational storage data in Europe, in particular about use of storage capacity. In addition, the main commercial conditions are sometimes not published although the requirement to provide these is in the Gas Directive.
- The development of secondary markets of storage capacities is still limited and this further reduces the use of storage capacity.

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<sup>92</sup> Other forms of flexibility also exist, but storage users have indicated that in many cases there is little or no alternative to storage.

<sup>93</sup> See: [http://www.europa.eu.int/comm/energy/gas/madrid/doc-9/d2\\_EGREG.pdf](http://www.europa.eu.int/comm/energy/gas/madrid/doc-9/d2_EGREG.pdf)

*Protocols*

(181) When a supply branch of a company is not legally unbundled from the storage branch, a protocol needs to be signed between both entities to set terms and conditions for the use of the storage and ensure that these terms and conditions do not discriminate against other users. The Gas Sector Inquiry has found that for four of the reviewed storage operators, it is not clear whether these protocols actually exist.

*Capacity excluded from TPA*

(182) The Second Gas Directive allows the exclusion from TPA of “the portion used for production operations; and [...] facilities reserved exclusively for transmission system operators in carrying out their functions”. With respect to TSOs, this refers to the security-of-supply function of storage, for example, by providing additional gas for unexpectedly cold winter periods. In the Netherlands capacity is allocated to production operations<sup>94</sup>, whilst in Poland, all capacity is booked for production operations and for TSO needs. Capacity of storage facilities in other Member States is also excluded from TPA for these reasons. Due to the fact that the amount of storage capacity excluded from TPA may be large in some cases, it is considered important that this procedure is monitored by National Energy Regulators<sup>95</sup>.

*Available storage capacity, long-term booking and contractual congestion management*

(183) The Gas Sector Inquiry has found that, across the countries reviewed, available storage capacity (that part of storage which is not excluded from TPA and which is not booked) is very scarce or non-existent. Out of about 25 storage operators analyzed whose storages are open to TPA only five of them indicated that they have available capacity. According to the sample, in four countries there is no available capacity at all. In another one, available capacity is very small compared to the total amount.

(184) Figure 18 below indicates that in two countries under review all storage capacity is booked long term and that long-term contracts prevail in two countries. These contracts will expire only very slowly. In Germany, capacity booked for more than 5 years (and in some cases for 15 years) represents around 80% of the technical capacity reviewed<sup>96</sup>. Eight storage operators, whose joint storage capacity amounts to around 15 bcm indicated that their storage is fully or nearly fully booked long term. In addition, apart from one exception, storage operators were not offering capacity for contracts lasting less than one year.

(185) When capacity is fully booked, and in particular in long-term arrangements, it is important that appropriate congestion management procedures are put in place to allow access to newcomers. For instance, in France, the “storage capacity follows the customer”: so that when a supplier loses customers, it also loses storage capacity linked to the customer. Where such congestion management procedures exist, it remains to be assessed whether they are efficient, provide for non-discriminatory access to storage and meet users’ needs.

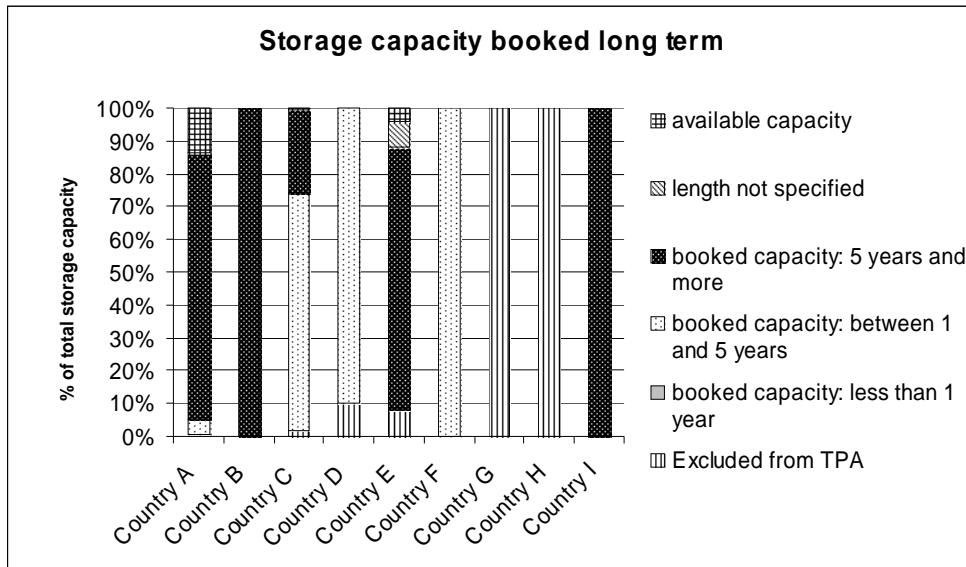
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<sup>94</sup> Some capacity is however made available to third parties on the primary market.

<sup>95</sup> These issues are considered in the DG Energy and Transport Note on Third Party Access to Storage Facilities (see: [www.europa.eu.int/comm/energy/electricity/legislation/doc/notes\\_for\\_implementation\\_2004/gas\\_storage\\_en.pdf](http://www.europa.eu.int/comm/energy/electricity/legislation/doc/notes_for_implementation_2004/gas_storage_en.pdf))

<sup>96</sup> More than 80% of German storage capacity has been analysed to arrive at this figure.

**Figure 18**



Source: Energy Sector Inquiry 2005/2006

#### *Storage use, physical congestion and use-it-or lose it provisions*

- (186) As a general rule, storage is filled at the maximum of its booked capacity in September and October, at the beginning of the winter season. The Gas Sector Inquiry has found that most of the storage from the sample which is fully booked has been more than 95% full at the beginning of the winter (in the period from January 2003 to mid-2005). In some cases, however, the use made has been less than 90%: this indicates that there may be some overbooking and/or that some use-it-or-lose it provisions should be implemented.

#### *Investments*

- (187) New investments in storage are needed due to the general high level of storage utilization rate and continuing increase in gas demand. Around 70% of the storage companies under review have planned investments in new storage capacity. Total declared investments extend up to 2015 and amount to around 20% of the capacity under review, i.e. an average annual increase of about 1.8%. This rate is lower than the general forecasts on gas demand. However, this increase is a minimum, as some companies have not indicated the amount of capacity they plan to develop and as others have also indicated that they are considering or may consider further investments. Less than 10% of the increase in capacity is made by newcomers alone while other capacity is being developed by entrants together with incumbent storage companies. This increases the risk that incumbent, vertically integrated, suppliers and storage companies plan the investments into new storage capacity less in line with market demand than in line with the demand of the vertically integrated supply business.

- (188) It is noted that in one country under review there is no planned investment; in another the increase in capacity is very small compared with the existing one, whilst in some cases, storage companies have mentioned a lack of geological opportunities to develop new storage sites. This underlines that, increasingly, the operation of storage would

need to follow larger-than-national demand considerations, which, however, rarely seems to be the case at present.

## Conclusions

Vertical integration of operators active at different levels of the supply chain and long-term supply agreements seem to foreclose the availability of crucial inputs for actual or potential competition:

### *Vertical Foreclosure*

Considering the highly concentrated upstream markets, it is particularly important to avoid that these structures propagate into market foreclosure downstream.

### *Access to gas*

New entrants can procure gas either directly from producers, or on national wholesale markets. Incumbents have long-term import contracts in place with producers, which cover the production of almost all existing gas fields from which gas can be transported to Europe by pipeline. New entrants are therefore largely foreclosed from procuring gas directly from the producers. At the same time, most national wholesale markets are not liquid enough to provide confidence about gas availability or that hub prices reflect the underlying supply/demand dynamic. This lack of liquidity is aggravated by flexibility clauses in the incumbents' long-term supply contracts which avoid situations of excess or shortage of gas, thereby reducing the incumbents' need to trade gas at national wholesale markets.

### *Access to storage*

Access to storage is seriously foreclosed by long-term reservations. In some cases booked storage is not being fully used. Moreover, separation of suppliers from affiliated storage operators is unclear, leading to concerns about non-discrimination. Investment into new storage capacity may be hampered by the interests of vertically integrated incumbents. A wider than national perspective on future storage demand is necessary.

### *Insufficient unbundling of networks*

Legal and organisational unbundling as foreseen by the Second Gas Directive is not yet fully implemented and, even after implementation, incumbent suppliers still have access to network information through representation on the Supervisory or Administrative Board of vertically integrated companies. Suppliers and networks often share names/logos, buildings and IT systems. A number of allegations of discrimination by network operators in favour of affiliates have been received even in Member States where the Second Gas Directive has been fully implemented. Moreover, vertical integration of network and supply interest leads to conflicts of interest resulting, *inter alia*, in distorted investment incentives.

## II.3. Market integration

- (189) Competitive pressure in national markets can come from cross-border supply, to the extent that the infrastructure connecting national markets allows such competition to develop. In some markets significant cross-border infrastructure exists in the form of pipelines that have been constructed to import gas from producers outside the EU. In fact, gas has been transported across Europe in this way for many decades. This “gas in transit” could compete in the respective markets provided that there are no contractual or other obstacles preventing this gas entering the markets. Unrestricted access to networks connecting national markets (hereafter referred to as ‘transit networks’ or ‘transit pipelines’<sup>97</sup>) is a vital prerequisite for both security of supply and competition. Indeed, cross-border sales and gas imports both from within the EU and from outside are crucial to allow gas to flow efficiently and in a reactive manner to the areas of greatest demand. Such demand tends to be reflected in higher prices on traded markets, to the extent liquid traded markets exist. Since no further major EU gas finds are expected<sup>98</sup>, imports from non-EU countries are likely to gain in importance and, correspondingly, the significance of having an effective regime for access to transit networks will increase.
- (190) The importance of pipelines connecting national markets for market integration has motivated a thorough analysis of the capacity situation on these networks. In addition, the inquiry has analysed “swaps” of gas in different locations as such swaps can provide an alternative to physical transport of gas. Before turning to these issues the extent of cross-border sales is highlighted.

### II.3.1. Incumbents’ sales in other markets

- (191) The strong market position of the historical incumbents in their domestic markets is mirrored by their lack of sales in other markets. The inquiry confirms that gas incumbents largely avoid engaging in cross-border trade although certain historic incumbents have significant sales outside their home market (up to 30%). However, their effect on retail competition in the market is limited, given that the sales are often through acquired affiliates with historical monopolies (i.e. local or even national incumbents). Although incumbents in Member States with more active competition at home have sought to be more active in entering other markets, most incumbents are active in only one or two markets beyond their historical home market. Figure 19 describes the amount of sales abroad realised by a number of incumbents in Europe.
- (192) In markets with a multi-tier structure, some former regional or local monopolists have tried to enter regions beyond their historical base (this has been the case in the UK and Italy<sup>99</sup>). However, many local companies (e.g., German Stadtwerke) comment that they have declined to make offers to customers located away from their traditional area or its immediate vicinity.

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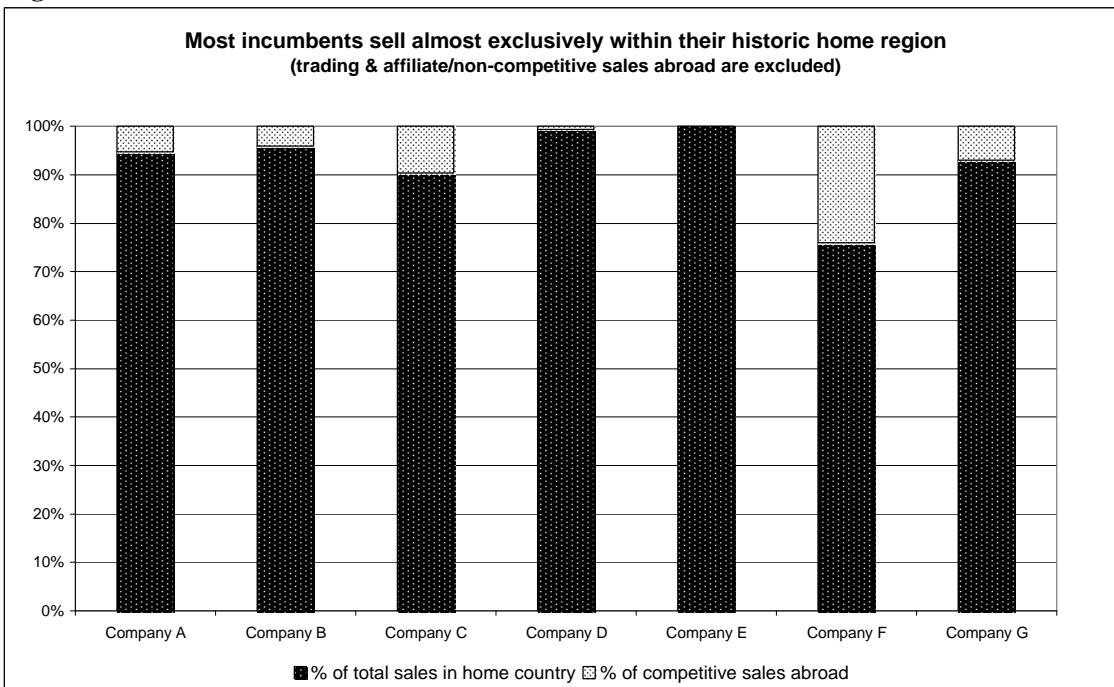
<sup>97</sup> The term ‘transit pipeline’ should be considered by the reader to refer also to any entry/exit points that form part of a transit route.

<sup>98</sup> See section B.a.I.1 “Main market features”.

<sup>99</sup> In Italy ENI is subject to an antitrust cap so it is obliged to be more active in other markets.

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**Figure 19**



Source: Energy Sector Inquiry 2005/2006

### II.3.2. Gas swaps

- (193) Analysis of the extent and nature of gas swaps offers useful insights into the functioning of the European gas market. In general, swaps are used to optimise the use of infrastructure; but they are diverse as regards their motivation, the volume of gas involved, their location, the pricing mechanism and the length of contract.
- (194) Our findings suggest that gas swaps (in which two parties agree to exchange gas at one location for gas at another location or quantities of gas over time) are not a marginal phenomenon<sup>100</sup>. The respondents to the questionnaire swapped at least 27 bcm in 2004. These swaps amount to just over 5% of the gas volume supplied in the EU, and they therefore play an important role in optimising use of the transport system. Even if more transport capacity was to be available, swaps would nevertheless take place, as one party might already have gas available where the other party needs it, therefore avoiding transport risks and costs. Swaps eliminate the risk of something going wrong along the transit route, since with a swap the gas is generally already where the parties want it.
- (195) Respondents to the Inquiry have identified various types<sup>101</sup> of swaps, depending on the reason for the swap. Geographic (point-to-point location) swaps aim to overcome some form of transport obstacle (avoidance of transit charges, of network congestion or of physical constraints of the gas network such as a pipe only flowing in one direction), while temporal swaps are used for volume adjustment purposes and often involve only smaller quantities<sup>102</sup>. Special types of temporal swaps taking place over a short period of

<sup>100</sup> The swaps analysis covers undertakings from member states including Austria, Belgium, Czech Republic, France, Germany, Hungary, Italy, Slovenia, the UK and Norway. Undertakings may swap gas with undertakings from outside the EU and where these have been reported they are included in the analysis.

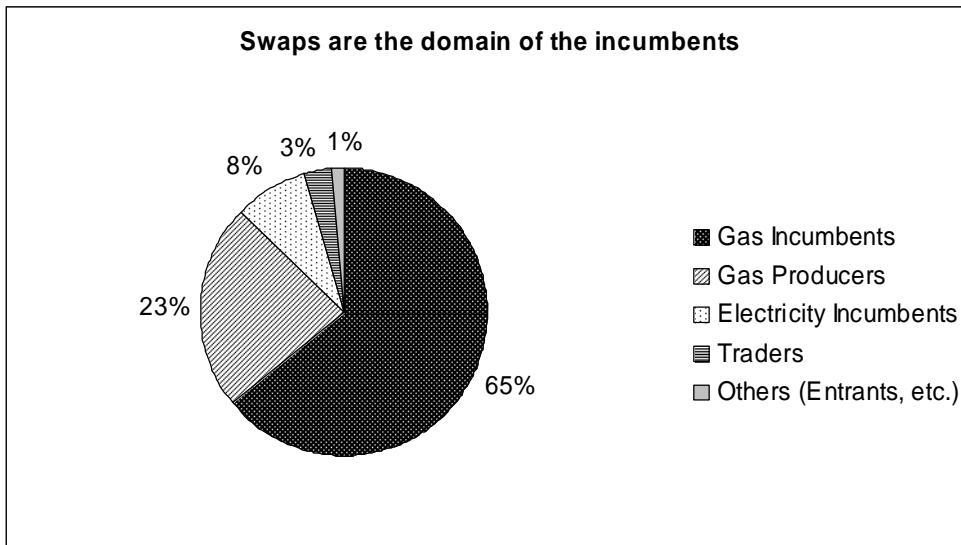
<sup>101</sup> It appears that different companies have different names for the various types of swaps; this is a general overview.  
<sup>102</sup> Swaps might also be used to deal with gas quality problems. This aspect has not yet been analysed.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

time are virtual swaps, mainly related to substituting storage. There exist also complex swaps combining the two functionalities of location and time.

- (196) The price of swaps will be zero if the value of the gas exchanged by the parties is perceived to be equal, or alternatively some function of the relative difference in prices between the two locations. Explicit prices for swaps can evolve. A party may pay a fee if it has a stronger incentive than the other to engage in the swap or if the terms and conditions of the two legs of the swap are not set equally. For instance, fees can arise from differing flexibility arrangements requested by one of the parties.
- (197) The duration of swaps can range from single-day swaps aiming to secure liquidity or to serve balancing purposes to several years-long framework contracts. In terms of their numbers the three largest groups are one- or two-days swaps, one-month swaps and half-year swaps, in that order. Only around 10% of the swaps examined have a duration of one year or longer, but these make up the largest part of the volume swapped in the period examined.
- (198) In terms of the volume of gas involved, the largest categories are: swaps over network points in Germany; LNG swaps; intra-hub swaps; swaps from upstream points into hubs; and cross border swaps from network points to hub. Hub-to-hub swapping is quite minor in volume. Germany is the only country where there is a significant volume of gas being swapped between network points within one country.

**Figure 20**



*Source: Energy Sector Inquiry 2005/2006*

- (199) Figure 20 shows that the great majority of swaps tend to be between large incumbent gas companies. There are also a significant number of gas producers and electricity incumbents engaging in gas swaps. Traders and market entrants only have a minor share of the volumes of the deals executed. Given the coincidence of circumstances necessary for swaps to take place<sup>103</sup>, and that gas incumbents have most of the gas, it is unsurprising that swaps tend to be the domain of the incumbents.

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<sup>103</sup> A swap will occur if party A has gas in location 1 that party B wants AND party B has gas in location 2 that party A wants.

### II.3.3. Access to transit pipelines

#### *Congestion management*

- (200) In the early 1990s, EU legislation aimed to facilitate the transit of gas within the EU without touching, however, the supply monopoly rights within Member States. With the adoption of the First and Second Gas Directives, as well as the Regulation on conditions for access to the natural gas transmission networks<sup>104</sup>, it was expected that access conditions for national transport<sup>105</sup> and transit<sup>106</sup> would converge and that new entrants would be able to compete on an equal footing with incumbents for access to cross-border transit capacity. In several Member States, however (including Austria, Belgium, the Czech Republic, Germany, and Slovakia), different conditions persist for gas transit and transportation. This situation is caused by both commercial and regulatory factors. The effect is that regulated third party access conditions as implemented by the regulators do not yet apply (fully) to transit pipelines or transit contracts<sup>107</sup>.
- (201) Since new gas sources to feed competition on national wholesale markets will originate mainly from imported gas, and new entrants face difficulties in securing primary transit capacity<sup>108</sup> on the same basis as incumbents, the effective management of congestion is crucial in order to facilitate competition.
- (202) Congestion occurs in two forms: contractual congestion<sup>109</sup> and physical congestion<sup>110</sup>. Contractual congestion arises in instances where all the available primary capacity on a pipeline has been sold. These sales may extend over a long period (in some instances capacity sales through long-term contracts can extend over a number of decades) and there might be no effective mechanism for interested shippers to obtain secondary capacity. Contractual congestion effectively occurs at the instant that interested shippers request capacity but are refused access on the basis that all capacity is already reserved.
- (203) In an efficient market, where TSO's commercial interests are not aligned with any single supply affiliate, the existence of contractual congestion should lead the TSO to employ, as far as they are legally permitted, effective congestion management measures such as use-it-or-lose-it (or UIOLI) to release contracted but unused capacity to the market. Indeed, Article 5 of the Gas Regulation obliges TSOs to maximise the commercially available capacity. The obligations to provide non-discriminatory access to networks are based on principles underpinning the “essential facilities doctrine” in competition law. This doctrine provides that, under a number of conditions, companies having control of an ‘essential facility’ may be obliged to offer available capacity to interested third parties<sup>111</sup>.

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<sup>104</sup> It is yet too soon to analyse the effects of Gas Regulation, which will only come into force on 1 July 2006.

<sup>105</sup> Transport directly to customers located within that country.

<sup>106</sup> Transport across a country, without access to customers located within that country.

<sup>107</sup> It should be noted that this is despite the fact that the EU Directives and Regulation specify a single set of rules for access to both national transport and transit.

<sup>108</sup> Primary transit capacity is capacity bought directly from the relevant TSO.

<sup>109</sup> Defined in the Gas Regulation as “...a situation where the level of firm capacity demand exceeds the technical capacity”, if there is unused capacity.

<sup>110</sup> Defined in the Gas Regulation as “...a situation where the level of demand for actual deliveries exceeds the technical capacity at some point in time”.

<sup>111</sup> See Judgment of the ECJ of 26/11/1998, C-7/97, Bronner, ECR, p. I-7791.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(204) TSOs and special capacity holders<sup>112</sup> in their responses to the Gas Sector Inquiry claim either that the UIOLI principle does not apply to transit pipelines at all, or at least that it cannot be applied effectively to transit. A number of the TSOs operating the pipelines, and special capacity holders controlling the capacity on the pipelines, insisted that the transit contracts signed before liberalisation cannot be touched<sup>113</sup>. They claim that the so-called ‘ship-or pay’ transport contracts, traditionally used to transport the gas bought under ‘take-or-pay’ import contracts, allow the historic capacity holder to re-nominate typically until two hours before the relevant gas flows are to commence. Thus, capacity not used by such historic players could be released on the secondary market only on a very short term and interruptible basis, giving potential users of the unused capacity little or no leeway to secure gas<sup>114</sup>.

(205) In order to gauge the existence of contractual congestion, the questionnaires sent in the context of the Gas Sector Inquiry included questions to TSOs, shippers and potential shippers about congestion and congestion management (including information on access refusals<sup>115</sup>). On the basis of these responses it has become clear that contractual congestion is occurring on a number of pipelines (and in some cases is quite severe) and yet there are often no mechanisms in place to manage this congestion.

(206) Physical congestion arises in instances where a transit pipeline is fully utilised (that is, where gas flows on the pipeline are close to, or at, the maximum flows possible) and therefore no further flows can be accommodated. In such cases it is clear that the demand for transit services is high. In an efficient market where investment incentives are not influenced by supply interests, such physical congestion should signal to the TSO<sup>116</sup> a need for additional capacity.

(207) It is clear that the TSO’s willingness to respond to such signals is crucial in order to facilitate effective competition in the internal market for gas<sup>117</sup>. Further, in an efficient market, TSOs would be proactive in seeking out and responding to such investment signals in a timely manner. According to the findings of the Gas Sector Inquiry, it is not clear that TSOs have in place, as a matter of course, systems to facilitate this activity. Moreover, in the case of vertically integrated TSOs they have little incentive to do so.

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<sup>112</sup> Where a company other than the TSO (although it can be a shipper affiliate of the TSO) has secured rights over a substantial amount of transit capacity on the relevant transit pipeline (in some cases this amount can cover the entire capacity of a pipeline), this company effectively takes on, in part, the function of a TSO in that it is primarily responsible for making available capacity to the market. Such a company is referred to as a ‘special capacity holder’ or ‘SCH’.

<sup>113</sup> This argumentation is largely based on article 32 of the Second Gas Directive which provides for a (transitional) derogatory regime for pre-liberalisation transit contracts fulfilling minimal conditions.

<sup>114</sup> The Gas Regulation does not enter into force until 1 July 2006 and therefore it is unclear at this time what impact the Regulation will have on this issue. In the case of existing transit contracts, the Gas Regulation requires that, in the event of contractual congestion, the relevant TSO shall offer unused capacity on the primary market at least on a day-ahead and interruptible basis *unless* this would infringe the existing transportation contracts.

<sup>115</sup> The term ‘refusal’ refers to a request to purchase transit capacity from a TSO or special capacity holder which was refused on the basis that insufficient capacity was available for sale (since it has already been sold – i.e. there is contractual congestion).

<sup>116</sup> Clearly an efficient TSO would be active in seeking out economically attractive opportunities to gain extra revenue through increases in capacity of its pipelines.

<sup>117</sup> The real incentives for a TSO to expand pipelines depends largely on the regulatory regime, if the expansion is indeed realised under that regime. If the pipeline expansion takes place, for whatever reason, outside a regulated regime, the economic incentives of the TSO might be more difficult to measure.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (208) That the issues of equivalent access to transit networks and congestion management are critical to the efficient functioning of the internal market for gas is underlined by the emphasis that traders, potential new entrants and large customers have placed on these issues in their replies to the Gas Sector Inquiry.
- (209) The following sections will present a detailed analysis of these congestion issues. First, an analysis of the extent to which important transit lines on key import routes may be foreclosed as a result of pre-existing long-term legacy contracts is presented. It should be noted that legacy contracts do not only create entry barriers due to foreclosure effects. Even when access can be obtained, new entrants often have no other choice than to reserve capacity with the supply affiliates of former monopoly companies, which are in fact competing suppliers. They cannot obtain such capacity from TSOs within the normal regulated regime. This state of affairs must raise concerns about confidentiality and discrimination.
- (210) Following the analysis of legacy contracts on key import routes an overview is provided on the state of congestion on around forty transit pipelines and important entry/exit points connected to transit routes. Finally, an in-depth analysis is undertaken of the issue of congestion management on a number of transit pipelines where the problem of congestion is particularly acute. This chapter ends with a discussion on derogations for new infrastructure investment.

### *Foreclosure of existing transit infrastructure by legacy contracts*

- (211) Pre-liberalisation contracts are the main reason why primary capacity is booked long-term by historical incumbents. The inquiry has found that in only two new Member States does it appear that any significant amount of primary capacity on important gas transit routes will become available in the coming years. In all other Member States, primary transit capacity is almost entirely fully booked long term. It also appears that a significant number of the contracts include provisions that can create further impediments to market opening by giving current holders of capacity preferential rights for prolongation of the capacity reservations beyond the originally foreseen end date.
- (212) Information on capacity reservations and available secondary transit capacity<sup>118,119</sup> relating to main transit routes in Europe has been compiled and analysed on two main axes of gas flows in continental Europe: the Benelux to Italy axis allowing Norwegian, Dutch and UK gas to flow through France and Germany in the direction of Southern Germany and Italy<sup>120</sup>; and the East to West axis allowing imports of Russian gas into the EU<sup>121</sup> (see Figure 21).

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<sup>118</sup> Secondary transit capacity is capacity purchased from parties other than the relevant TSO.

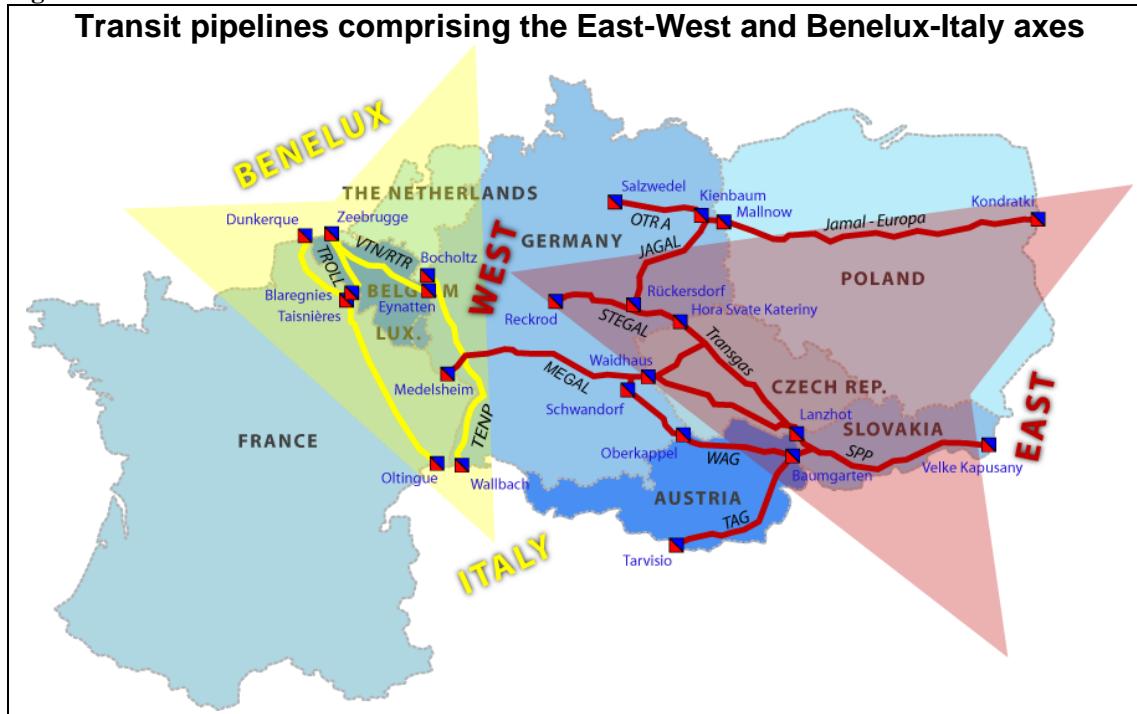
<sup>119</sup> For the purpose of this analysis, only those secondary capacity trades made by parties having firm rights over a significant share of the total pipeline capacity have been considered. The amount of actual secondary capacity trading may therefore be greater than that presented here.

<sup>120</sup> The sample includes data provided by TSO's and primary capacity holders on the following pipelines or network points: the Troll pipeline and VTN pipeline in forward flow on the Belgian network; exit point Oltingue on the French network; the TENP pipeline in Germany; and exit point Bocholtz on the Dutch network. Data on network exit points have been used in where entry/exit access regimes exist in the countries concerned.

<sup>121</sup> The sample includes data provided by TSO's and primary capacity holders on the following pipelines: JAMAL-Europa pipeline in Poland, SPP transit pipeline in Slovakia, Transgas transit pipeline in the Czech Republic, TAG pipeline, WAG pipeline in Austria, MEGAL pipeline, STEGAL pipeline, JAGAL pipeline and the pipeline linking up Poland with the NETRA pipeline (Kienbaum to Salzwedel) in Germany (labelled as 'OTR A' on the map).

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 21**



Source: Energy Sector Inquiry 2005/2006

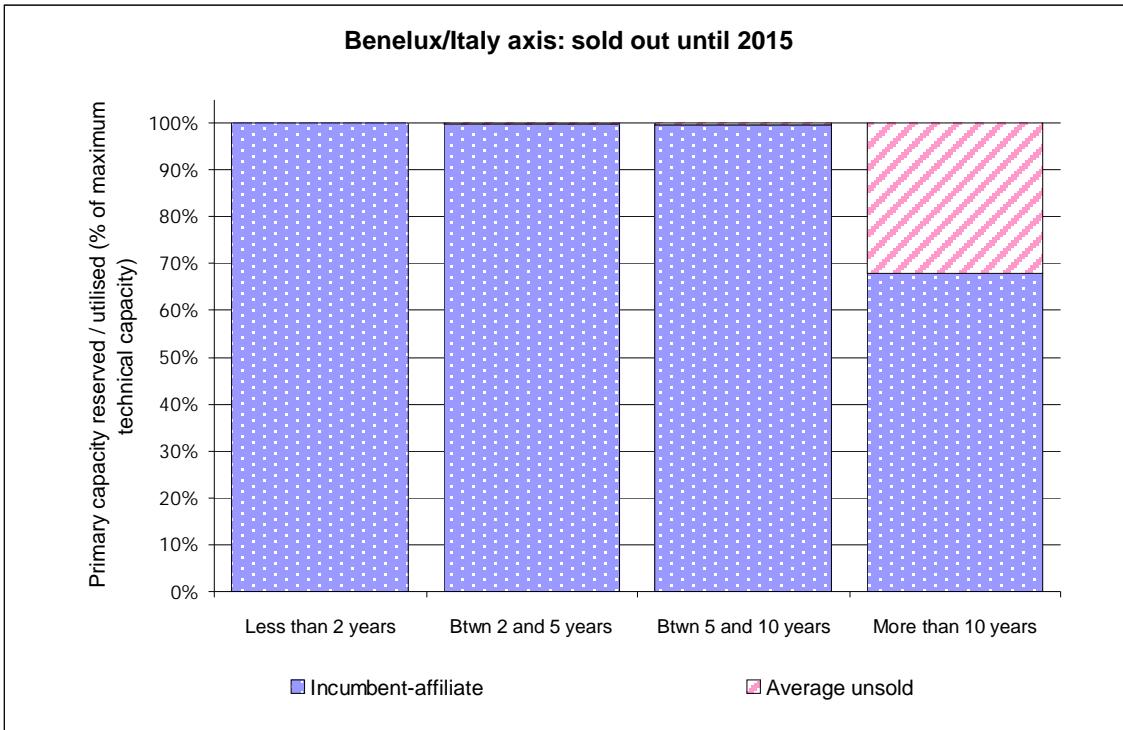
- (213) Information has also been gathered on other important transit routes (for instance the import route of Norwegian gas through Northern Germany). However, the large number of different pipeline systems and the high number of operators controlling the capacity on these routes<sup>122</sup> render the access conditions to these transit pipelines opaque, at least for those companies which have not historically flowed gas through these pipeline systems.
- (214) On the Benelux-Italy axis, the inquiry has found that, on average, primary capacity on these pipelines is booked until 2022<sup>123</sup>. It can be seen from Figure 22 below that the relevant pipelines are fully booked for at least 10 years starting from 1st of June 2005. In other words, all primary capacity on the pipelines of this axis has been attributed long term until 2015. In practical terms, this implies that any company wanting to flow gas on these pipelines will have to request capacity from the incumbent players for at least the next decade in order to obtain capacity on the secondary market. Only after 2015 will some of the primary capacity on certain pipelines become available.

<sup>122</sup> The capacity on many pipelines is often split through the so-called 'pipe-in-pipe' approach, where different primary capacity owners of a single physical pipeline act, de facto, as separate TSO's for the capacity they have acquired. This implies, in practice that no single TSO is in charge of allocating the entire available or unused capacity on those pipelines.

<sup>123</sup> This analysis has been conducted by taking a volume weighted average duration of each contract for capacity individually. However, this is likely to understate the actual duration effect since, for some pipelines, a single party may strike a number of shorter duration contracts 'back-to-back', which can be considered to have the same effect as a single longer term contract (for instance, three five year contracts which cover the period 2005 to 2020 can be considered equivalent to a fifteen contract).

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 22**



*Source: Energy Sector Inquiry 2005/2006*

(215) Moreover, the vast majority of the primary capacity is typically held by only one or two historical players, which are incumbents in their home markets<sup>124</sup>. When capacity is allocated on the secondary market (see Figure 23), roughly half of it is bought by affiliates of the primary capacity owners<sup>125</sup>. An important part of the secondary allocation also goes to other incumbents (typically an historic player from a neighbouring country) and to gas producers. Only approximately 5%<sup>126</sup> of longer term capacity allocation goes to new entrants<sup>127</sup>.

<sup>124</sup> Very often, when more than one historic operator owns primary capacity on a transit route, each of these operators will subsequently market capacity of this pipeline on an individual basis as if there were two physically distinguished pipelines (the so-called “pipe-in-pipe” system referred to previously). This means in practice interested companies have to turn to at least two operators for requesting capacity.

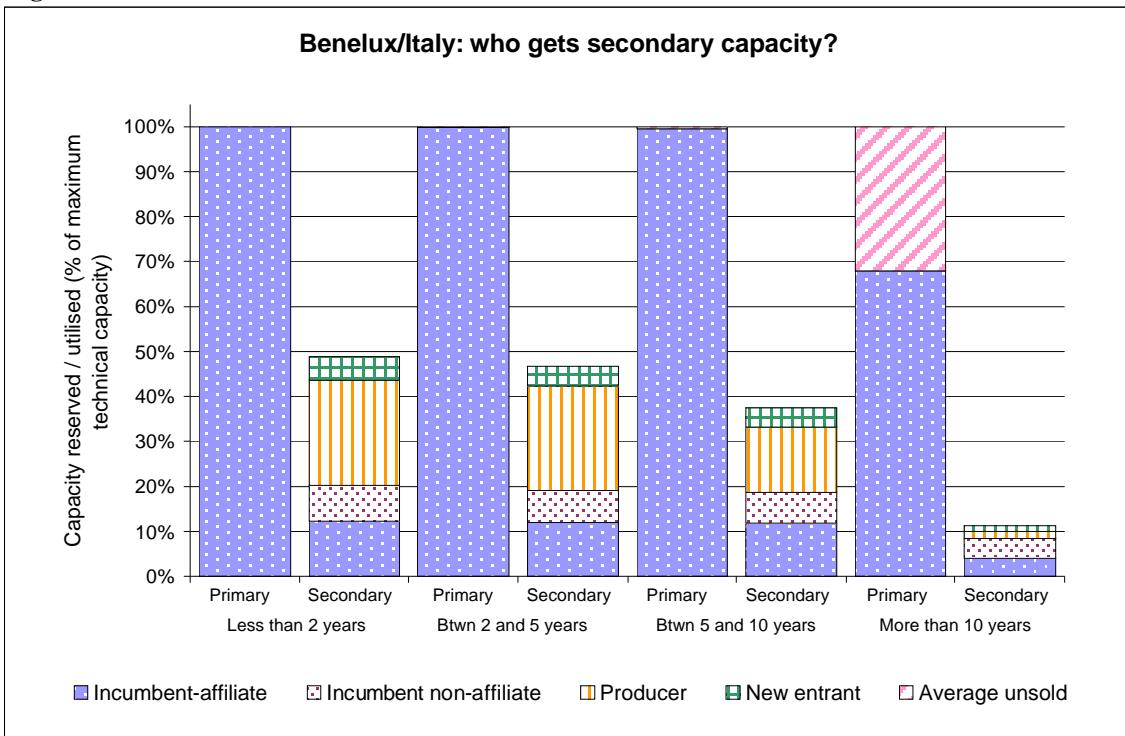
<sup>125</sup> For the purpose of this analysis, an ‘affiliate’ company of a primary capacity holder is one which has a significant shareholding in the primary capacity holder, or is one in which the primary capacity holder has a significant shareholding, or is one in which a third party has a significant shareholding as well as having a significant shareholding in the primary capacity holder.

<sup>126</sup> This figure is based on a volume weighted average figure for each of the five pipelines and therefore does not necessarily reveal that on three of these pipelines there were no sales to new entrants at all.

<sup>127</sup> For the purpose of this analysis, the definition of ‘new entrants’ includes both newly created wholesale companies and electricity companies becoming active on the gas wholesale markets. Although, in practice, the entry of ‘incumbents’ into new geographic markets is to develop as an important source of competition, all incumbents’ capacity reservations even outside their traditional territory have been classified within the ‘incumbents’ category, essentially because it is hardly possible to make a systematic distinction between traditional gas flows to their home country and flows enabling them to enter new markets.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 23**



Source: Energy Sector Inquiry 2005/2006

- (216) The Gas Sector Inquiry has found that on the East-West axis, a similar situation exists to that on the Benelux-Italy axis, with primary capacity booked on average until 2017. It can be seen from Figure 24 below that the relevant pipelines<sup>128</sup> are almost fully booked (or reserved ‘internally’)<sup>129</sup> for at least a period of 10 years starting from 1st of June 2005.
- (217) Furthermore, as shown in Figure 25, very little primary capacity is subsequently made available on the secondary market, with only around 3% of longer term capacity in the hands of new entrants.

<sup>128</sup>

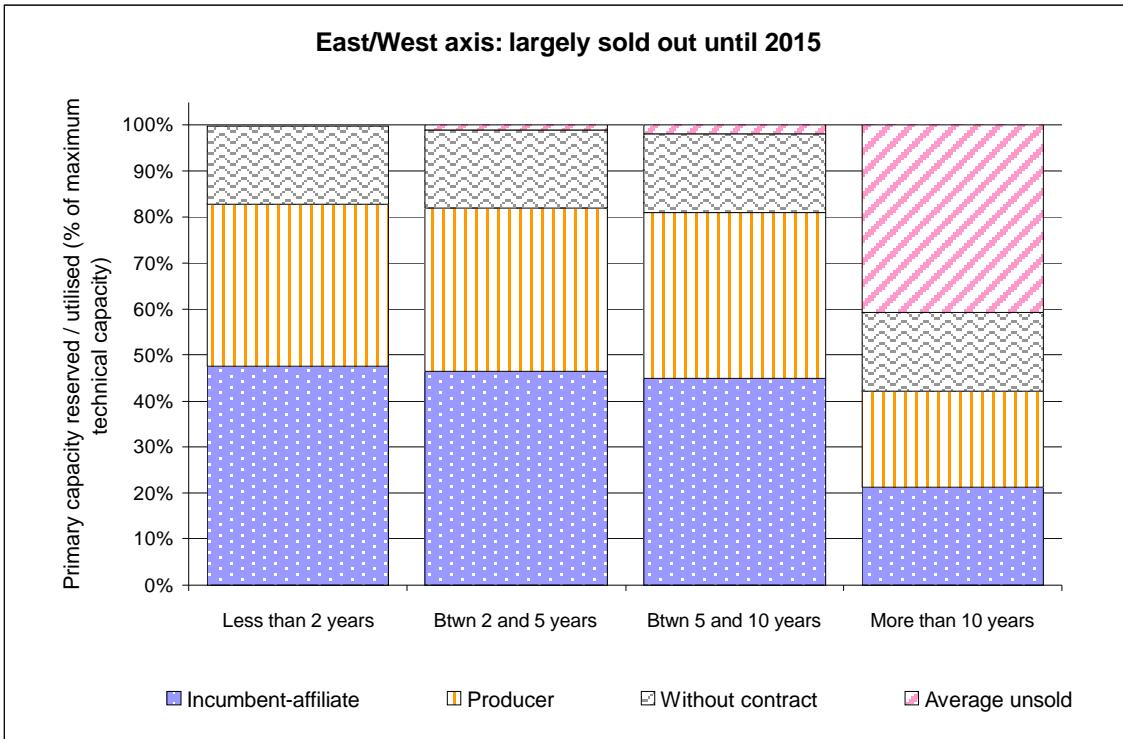
For the purpose of this analysis, the SPP transit pipeline system (Slovakia) and the Transgas pipeline system (Czech Republic) have been excluded. As described previously, the Commission has conducted its analysis on a pipeline by pipeline basis but, due to confidentiality concerns, the results presented in this section have been derived by taking an average of the results for each pipeline. Since the average employed is a volume weighted average based on the technical capacity of the individual pipelines, the results of the analysis for the SPP and Transgas transit pipelines tends to dominate the overall picture for the East-West axis, obscuring important trends in the information for other pipelines in the East-West axis, particularly those further to the West. Indeed, the SPP and Transgas transit pipelines appear, on average, to be less congested, both contractually and physically, than the other pipelines included in the East-West axis.

<sup>129</sup>

For the purpose of this analysis, the inquiry has explicitly identified transit capacity that has not been sold to third parties but has historically been reserved internally by the transit pipeline owner/operator for its own use, without a formal transport contract having been signed between a transport and a supply branch within the same group. This category is identified in the legend as “without contract”.

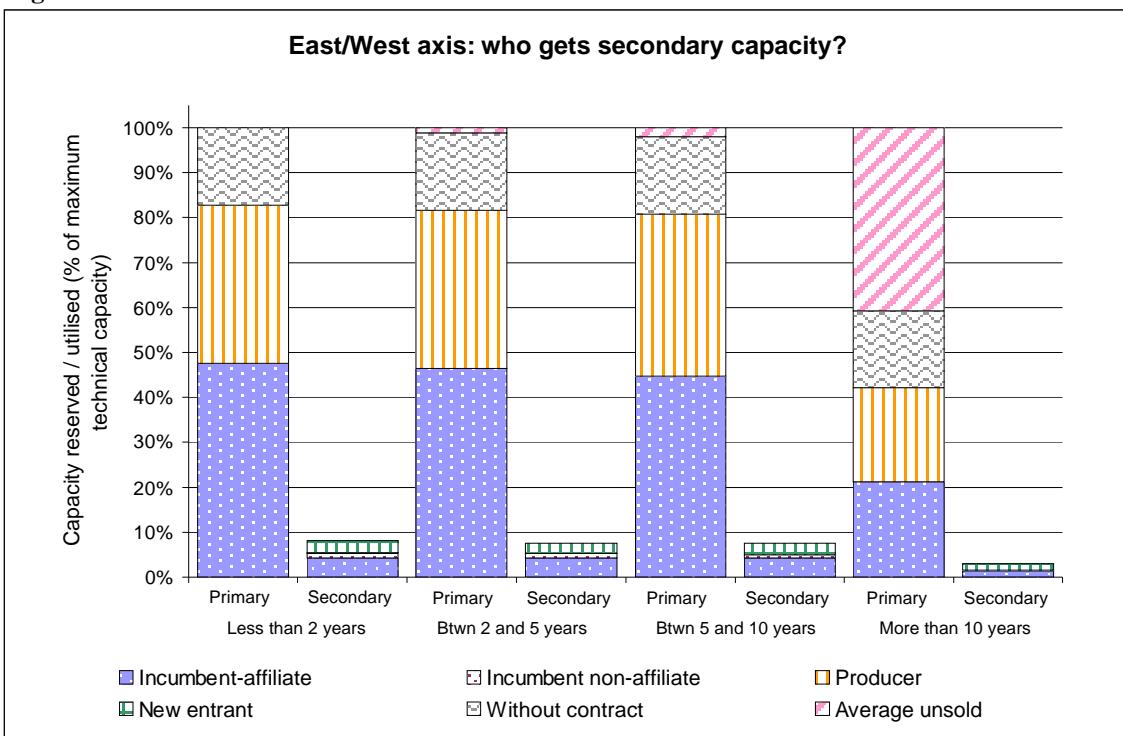
## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 24**



Source: Energy Sector Inquiry 2005/2006

**Figure 25**



Source: Energy Sector Inquiry 2005/2006

- (218) Compared to the Italy-Benelux axis, a significant part of the primary capacity on the East-West axis is held within integrated companies without any formal transport contract having been signed between a supply and transport branch within the company. This situation should improve with the implementation of the unbundling provisions of

the Second Gas Directive in Germany, amongst others. Moreover, a comparison between the graphs of the two axes shows that, on the Benelux-Italy axis, incumbent wholesalers control almost exclusively all primary capacity rights, whereas on the East-west axis the control of primary capacity is shared between incumbent wholesalers and gas producers.

- (219) It cannot be excluded that certain producers will develop into credible competitors that reduce concentration on European gas wholesale markets. The effects on competition of the entry of such companies must, however, be examined in detail in the light of the cooperation which exists between some of these producers and a number of incumbents players. In any case, the effects of long-term reservations by large gas producers remain the same for other potential new entrants.
- (220) The analysis above has shown that most capacity on crucial transit lines – which are vital for market integration – is in the hands of incumbent players. The transit contracts signed by these historic players before liberalisation will not expire, on average, until around 2020. As a consequence, new entrants have little access to most of the transit pipelines. The difficulty is likely to be even higher - if not impossible, in practice - if the gas has to be shipped over long distances covering several transit pipelines.

#### *Overview of transit congestion in the EU*

- (221) In order to make a broader assessment of transit-related issues, such as the potential for foreclosure due to pre-existing long-term legacy contracts and the extent of congestion on transit pipelines in the EU, the Gas Sector Inquiry has analysed around forty transit pipelines and important entry/exit points connected to key transit routes (see Annex A). These transit pipelines and entry/exit points represent critical infrastructure, linking areas of current and likely future gas production (the Netherlands, Norway, Russia and the UK) and consumption.
- (222) This analysis is presented in Table 2 below<sup>130</sup>. The fourth column (“Historical uncontracted capacity”) shows the level of potentially available capacity<sup>131</sup> over January 2003 to June 2005. It can be seen that, in this period, there have been very few transit pipelines on which it has been possible to purchase primary capacity. Although, for the most part, little primary capacity has been available, the fifth column (“Historical physical utilisation”) shows that in general, for the same period, these pipelines have not been fully utilised<sup>132</sup>. Clearly, in the absence of high levels of utilisation, one might expect significant amounts of interruptible capacity to be made available. However, as can be seen from column six (“Historical interruptible capacity”), the level of

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<sup>130</sup>

The table uses a simple colour scheme to represent the different levels of congestion.

<sup>131</sup>

For the purpose of deriving this table, the level of uncontracted capacity was determined by taking an average over the period under investigation of the monthly amount of uncontracted capacity. Each cell is given as white if the monthly amount of uncontracted capacity is greater than 5% of the technical capacity, and dark grey otherwise.

<sup>132</sup>

For the purpose of delivering this table, three measures of physical utilisation were combined to derive a single measure: the maximum monthly utilisation (the monthly utilisation is calculated by taking the monthly average of the daily flows on the pipeline as a proportion of the maximum technical capacity); the peak utilisation (defined as the average of the monthly utilisation for those months where the utilisation was above the total average utilisation for the period under investigation); and the average utilisation. Where the maximum utilisation was greater than 95%, the peak utilisation greater than 80% and the average utilisation greater than 50%, the cell is represented as dark grey. Cells represented as grey or white relate to lower levels of physical utilisation. This data do not take into account daily peaks in utilisation within the monthly periods.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

interruptible capacity sold as compared with the level of unused capacity<sup>133</sup> has been relatively low during this period. Finally, column seven (“Future contracted capacity”) shows the level of contractual congestion<sup>134</sup> expected in the future on the basis of long-term contracts currently in place. Again, it is clear to see that, on most transit pipelines, the problem of contractual congestion is unlikely to improve<sup>135</sup> in the medium and longer term.

- (223) The analysis of the broader EU picture in relation to transit capacity largely confirms the findings made on the Benelux–Italy and East-West axes, i.e. that most capacity on transit pipelines is in the hands of incumbent players. Further, in the case of primary capacity, this situation is likely to persist for the foreseeable future. It has also been found that although contractual congestion is common, most pipelines are not, in general, experiencing high levels of utilisation. In such circumstances, it would be expected that the relevant TSOs would be releasing interruptible capacity to the market. However, only on a small number of transit pipelines has a substantial amount of interruptible capacity been sold, indicating that these TSOs may not be maximising the efficient use of pipeline capacity.

### *Further analysis of congestion on five key pipelines*

- (224) In order to make a more detailed analysis of congestion issues further analysis was undertaken of five key transit pipelines on which there appears to be a particular problem with congestion. These transit pipelines are the TAG pipeline in Austria; the TENP and MEGAL pipelines in Germany; and the VTN/RTR in the forward flow direction (West to East) and TROLL pipelines in Belgium<sup>136</sup>.

### *Contractual congestion*

- (225) In order to assess the state of contractual congestion on the five highly congested transit pipelines, an analysis of the extent of future contracted capacity on these pipelines was first made. It can be seen from Figure 26 below that this analysis confirms the general picture found for the Benelux–Italy and East-West axes, where primary capacity is almost entirely contracted long term to the shipper businesses affiliated to the relevant TSO (over sixteen years in the case of these five pipelines).

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<sup>133</sup> The level of interruptible capacity was determined by taking an average over the period under investigation of the monthly amount of interruptible capacity made available. Each cell is given as white if the monthly amount of interruptible capacity is greater than 10% of the average unused capacity (unused capacity is capacity contractually booked but not flowed against), and dark grey otherwise. This data do not take into account daily peaks in utilisation within the monthly periods.

<sup>134</sup> For the purpose of deriving this table, the level of contractual congestion was determined by examining the amount of primary capacity reserved over four time periods: from 1 June 2005 to two years ahead; from two to five years ahead; from five to ten years ahead; and from ten to twenty years ahead. A pipeline was deemed as being congested under the following conditions: for the first time period, over 90% of the maximum technical capacity has been reserved; for the second time period, over 90% has been reserved; for the third time period over 70% has been reserved; and for the fourth time period over 50% has been reserved. Where, a particular pipeline is deemed to be congested for three or more of these time periods, the cell is represented as dark grey. Cells represented as grey or white relate to lower levels of congestion.

<sup>135</sup> Notwithstanding any issues in relation to new entrants sourcing gas, this situation is only likely to improve ‘organically’ if new entrants can build alternative transit infrastructure. Failing this, it may, in the future, become necessary to introduce regulatory and/or competition law measures to address this situation.

<sup>136</sup> It must be stressed that this selection does not imply that other transit pipelines, or transit routes that cross entry/exit regimes, should be considered as not congested.

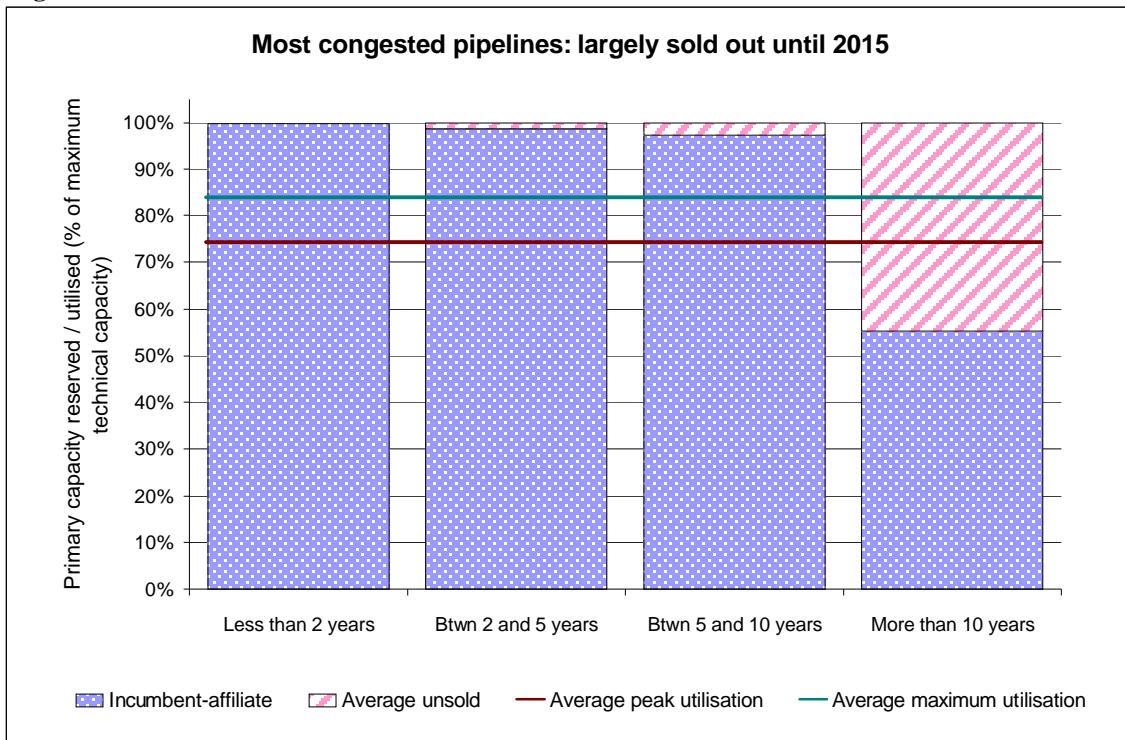
**ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)**

**Table 2**

Congestion on transit pipelines in the EU						
Pipeline	Technical capacity mcm / day	Route	Historical uncontracted capacity	Historical physical utilisation	Historical interruptible capacity	Future contracted capacity
SPP	315.9	E-W				
Transgas	180.5	E-W				
TAG	95.3	E-W				
JAGAL	80.1	E-W				
Ex Hilvarenbeek	67.7	N-S				
JAMAL-Europa	67.2	E-W				
MEGAL Nord	57.1	E-W				
IUK FF	54.8	N-S				
En Taisniere	50.4	N-S				
En Dunkerque	49.1	N-S				
NETG	44.5	N-S				
Ex Bocholtz	43.9	N-S				
TENP	40.5	N-S				
TROLL	40.5	N-S				
METG	40.1	N-S				
STEGAL West	36.0	E-W				
VTN/RTR FF	30.2	N-S				
Slochteren	27.5	N-S				
Ex 's Gravenvoeren	27.1	N-S				
BEB OTR 1	20.0	N-S				
STEGAL East FF	20.0	E-W				
Ex Oltingue	19.7	N-S				
BEB OTR 8	19.3	N-S				
En OSZ RG	18.6	N-S				
WAG	18.5	E-W				
En Emden EPT	18.2	N-S				
SEGEO	17.9	N-S				
En Emden NPT	13.1	N-S				
MEGAL Sud FF	11.1	E-W				
RWE OTR 3	10.9	N-S				
BEB OTR 3	9.6	N-S				
BEB OTR 5	6.9	N-S				
BEB OTR 10	6.7	N-S				
DEUDAN	6.6	N-S				
RWE OTR 2	3.7	N-S				
BEB OTR 7	2.6	N-S				
RWE OTR 1	1.6	N-S				

*Source: Energy Sector Inquiry 2005/2006*

**Figure 26**



Source: Energy Sector Inquiry 2005/2006

(226) It also appears that a significant number of the contracts reserving primary capacity on these five transit pipelines may create further impediments to market opening by giving current holders of capacity preferential rights for prolongation of the capacity reservations beyond the originally foreseen end date. Most prominently, a number of pre-liberalisation transit contracts were prolonged only few months before regulated third party access regimes were to be introduced. In cases where new major energy infrastructure is to be constructed, it can be argued that it may be necessary for the TSO to guarantee the financial viability of the project by signing longer term ‘ship-or-pay’ transport contracts for a substantial part of the pipeline’s capacity. However, the prolongation of existing transport contracts cannot benefit from such a justification, especially when the cost of the construction of the pipeline concerned has already been (largely) amortised.

(227) The practical problems faced by new entrants when encountering extensive contractual congestion could be mitigated by effective measures to facilitate the release of unused capacity, both in terms of longer-term firm capacity on the secondary market and shorter-term capacity. Indeed, it follows from Article 5 of the Gas Regulation, which itself builds on the obligations outlined in Articles 18 and 21 of the Second Gas Directive, that TSOs have an obligation to maximise the capacity made available to interested shippers, including unused capacity, under the conditions foreseen by the Gas Regulation. This includes also the obligation for the TSO<sup>137</sup> to facilitate trading activities of capacity rights by organizing an adequate and transparent platform for trading of secondary market capacities. These obligations arising from the Regulation apply both to (regulated) transport and to transit, which, as has been referred to earlier has, until now, been sometimes left largely unregulated at the national level.

<sup>137</sup>

Art. 8 of Regulation (EC) No 1775/2005.

Obligations similar in nature would apply to TSOs or other companies – i.e. special capacity holders – which might be considered as dominant on any given transport market between two geographical locations. The release of unused capacity appears to be all the more necessary when the capacities concerned have been unused for longer periods of time.

- (228) It can be seen from Figure 26 that the five highly congested pipelines under analysis are not, on average<sup>138</sup>, fully utilised. Therefore a substantial amount of unused capacity could be made available to the market. However, in the period under investigation, on only one of these five transit pipelines was a meaningful amount of interruptible capacity released. Indeed, no interruptible capacity whatsoever was released on three of these (highly contractually congested) transit pipelines, despite two in particular having a significant proportion of their maximum technical capacity unused. Further, on one pipeline where the entire primary capacity has been sold to an affiliate of the relevant TSO until almost 2030, no congestion management mechanisms whatsoever are in place. This is despite the average utilisation being only slightly over 50% of the maximum flows possible<sup>139</sup>.
- (229) That a lack of effective congestion management can lead to inefficiencies is shown in Figure 27 below. Here, an analysis has been made of the extent of refusals for requests for capacity of relatively short durations over periods when utilisation is traditionally low (i.e. summer). The chart shows the result of this analysis for the period summer 2004 on one of the highly congested pipelines under investigation<sup>140</sup>. The solid line represents the actual physical flow recorded on the pipeline in question and the dashed horizontal line represents the maximum possible flow. The hashed area represents the volume of requests for capacity over the summer period refused by the TSO/SCH in question. It can be seen that, had all these requests for capacity been granted and had this capacity been flowed against in full by its new holders, the level of utilisation of this particular pipeline would have been considerably greater<sup>141</sup>.
- (230) As set out previously, TSOs and special capacity holders insist that the UIOLI principle does not apply to transit pipelines at all, or at least that it cannot be applied effectively to transit, since their ‘ship-or pay’ transport contracts allow the incumbent capacity holder to re-nominate typically until two hours before the relevant gas flows are to commence. The apparent requirement for such short term flexibility in transit pipeline gas implies a significant degree of uncertainty, for instance in the demand of the customers supplied via the transit pipeline. There may well be more efficient outcomes

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<sup>138</sup> In the graph, the term “average maximum utilisation” was calculated by taking for each pipeline of the axis the (typically winter) month where any given pipe has been most used and taking an average over all the pipelines of that axis. “Average peak utilisation” uses the same methodology, but applied not merely on the month in which each of the pipes was used most, but for all months where use of the pipeline was more than the overall average usage rate of the pipeline. Thus the first line provides an idea of capacity which could be made available long term (for a full year including winter), whereas the second gives a general impression of the average unused capacity.

<sup>139</sup> Indeed, the maximum monthly flow was also relatively low at just 80% of the maximum flow possible.

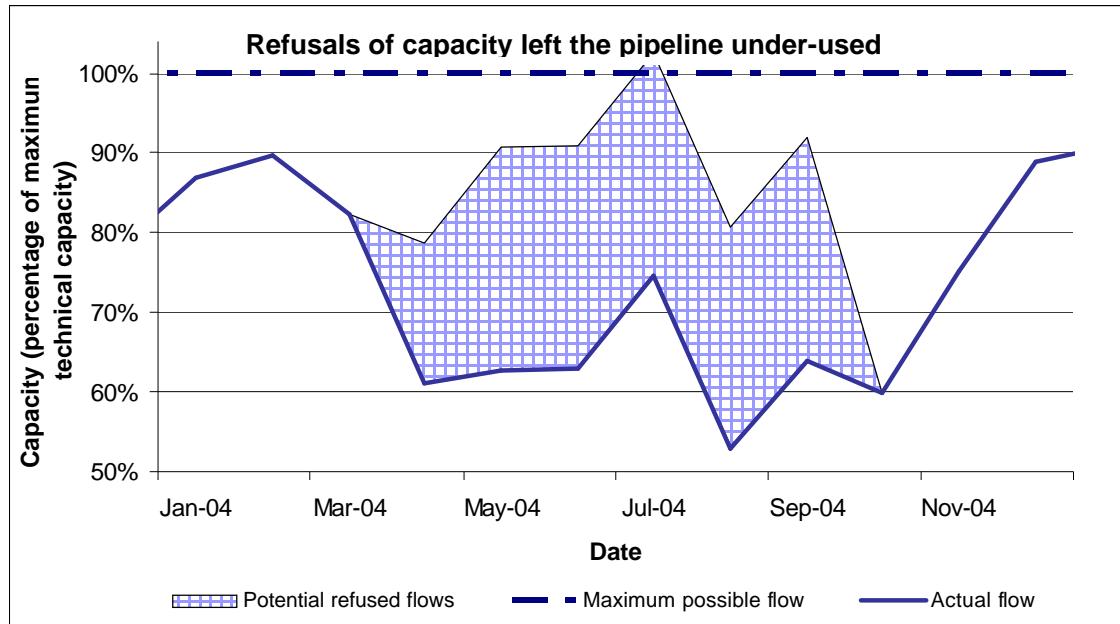
<sup>140</sup> For confidentiality reasons, it was decided not to specify the name of this pipeline in this report.

<sup>141</sup> The result presented in this chart is more broadly reflective of the situation on most congested transit pipelines. However, it should be noted that, in many cases, the answers submitted by TSOs and SCHs in relation to refusals was incomplete (for instance, where no record was made by the TSO or SCH of capacity requests made to it) and therefore a wider analysis taking into account a greater number of pipelines has not been possible. In mitigation of this, it should also be noted that, since it is common knowledge in the industry that many of the transit pipelines in the EU are contractually congested (i.e. there is no capacity available for sale), we consider that the data reported in relation to refused requests for capacity is likely to underestimate the actual level of unsatisfied demand since a new entrant, for instance, is unlikely to request capacity if they expect to be refused or have been refused in the past.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

possible overall, whereby the flexibility requirement is met through other sources, allowing the transit pipeline to be used more efficiently (i.e. increasing its utilisation closer to the maximum possible). However, in the absence of effective competition, the economic drivers on the market to seek out such solutions are diluted.

**Figure 27**



Source: Energy Sector Inquiry 2005/2006

(231) The Gas Sector Inquiry has found that a number of contracts reserving primary capacity include provisions giving the capacity holders preferential rights for prolongation. This means that new entrants may not be able to compete on an equal footing even after the current terms of existing long-term transit contracts expire (typically fifteen to twenty years hence). Furthermore, a detailed analysis of the utilisation of a number of pipelines has revealed that, in some cases, even when congestion is severe, no effective congestion management measures have been put in place. In one example, where the entire primary capacity has been sold to an affiliate of the relevant TSO until almost 2030, no congestion management mechanisms whatsoever are in place, despite the average utilisation being only slightly over 50% of the maximum flows possible. This analysis has revealed that there may be significant scope to increase efficiency in the allocation of transit capacity, in particular in respect of off-peak periods.

### *Physical congestion*

(232) As discussed previously, a particular transit pipeline can be both physically and contractually congested. Whereas the latter presupposes that not all booked capacity is systematically used to its maximum extent, the former indicates that the pipeline concerned appears indeed to be used up to its physical limits and no additional demand for capacity can be accommodated. In the case of the five highly congested pipelines under analysis here, only three can be said to be both contractually congested and also

experiencing some level of physical congestion<sup>142</sup>. However, where there are no effective congestion management measures in place, as is the case with a number of the pipelines here, pipelines that are only contractually congested can also exhibit the ‘symptoms’ of physical congestion in that unused capacity is not being efficiently released to the market.

(233) In this context it is necessary to determine how efficiently the company (companies) owning the infrastructure respond to continuous demand from the market for more capacity. That significant demand for additional capacity is present can be seen from Figure 28. The chart shows the volume of requests<sup>143</sup> for long-term capacity (greater than five years in duration<sup>144</sup>) that were refused by the relevant TSO/SCH<sup>145</sup>. It can be seen for a number of the pipelines that the volume of requests is material in comparison to the existing technical capacity of the pipeline, which indicates a significant level of unsatisfied demand for transit capacity<sup>146</sup>. Not every request for capacity presented here would have necessarily resulted in a firm bid for extra capacity<sup>147</sup>. However, it should be pointed out that, in an efficient market, TSOs would be proactive in seeking out and responding to such investment signals in a timely manner. It does not result from the inquiry that the TSOs in question have actually done this<sup>148</sup>.

#### *Transit and hub liquidity*

(234) Complexity seems to be a common feature of the transit market, particularly as regards the way in which different promoters and financiers of certain gas transit pipelines have been allocated long-term primary capacity in certain Member States. For instance, the location of the Zeebrugge hub along the VTN transit pipeline in Belgium does not necessarily facilitate liquidity on that hub and indeed different market players have complained about this issue<sup>149</sup>.

(235) From a physical perspective, the location of the Zeebrugge hub means that gas from other sources in the Zeebrugge region, for instance Norwegian gas landed at the Zeepipe terminal, gas landed at the Zeebrugge LNG terminal, local stored gas, or gas from the domestic transportation system, cannot easily be transported to the hub. From a

<sup>142</sup> Based on their actual level of utilisation. The nature of this physical congestion is transitory, however, since it only tends to arise around a small number of peak periods during the year. The fact that there is some degree of physical congestion means that UIOLI rules, though helpful during certain lower consumption periods, cannot remedy the structural problem of lack of capacity.

<sup>143</sup> The volume is expressed as a proportion of the maximum technical capacity of the relevant pipeline.

<sup>144</sup> This time period has been chosen to highlight the type requests that TSOs may consider required to stimulate additional investment in a pipeline to increase its capacity.

<sup>145</sup> For confidentiality reasons, DG Competition has chosen not to specify the names of these five pipelines in this chart.

<sup>146</sup> As set out earlier, we would note that not all requests for capacity may have been recorded by the relevant TSO/SCH and, in addition, some market participants may have been discouraged from requesting transit if they expect to be refused. Therefore we consider that the requests presented here understate the actually level of unsatisfied demand for additional transit capacity present in the market.

<sup>147</sup> TSOs have indicated that, in considering whether to invest to increase the capacity such infrastructure, firm bids for substantial volumes of capacity over long periods are required in order to offset the risk that the investment will become stranded.

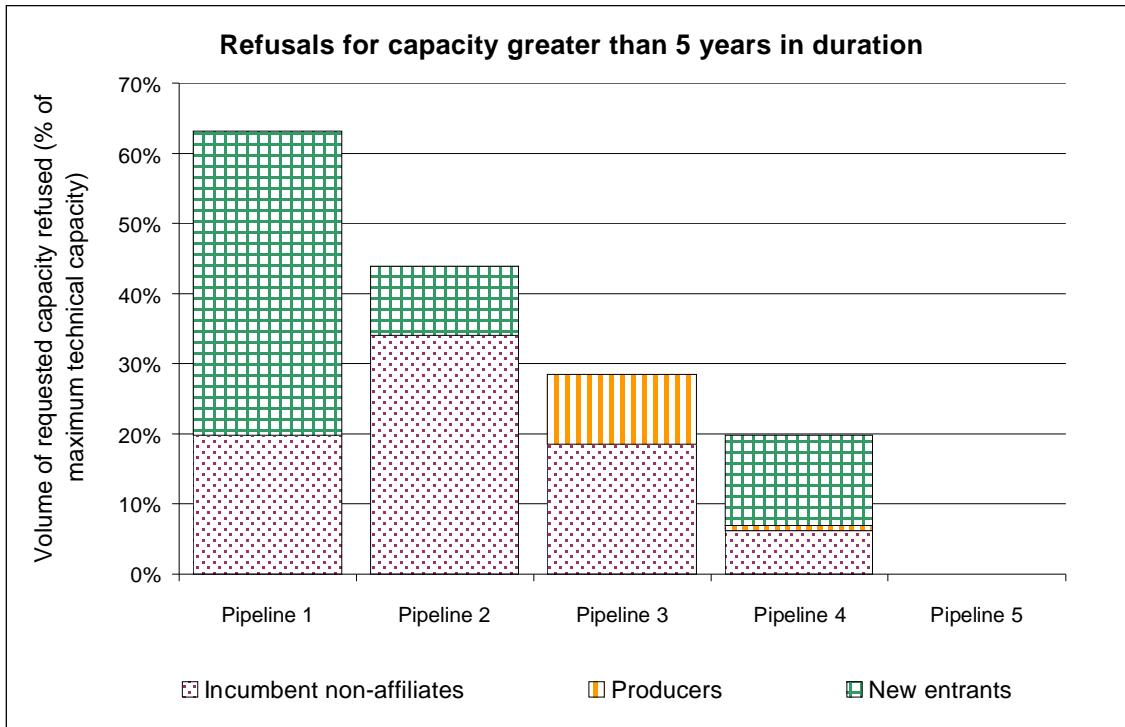
<sup>148</sup> Where a pipeline falls within the competencies of one or several energy regulators, one should presume that these regulators are ensuring that the necessary network enhancements are being made. However, as referred to earlier, it appears that a number of transit pipelines are still not completely under the scrutiny of a relevant regulator. Further, where a particular pipeline (for instance an interconnector) falls under the remit of more than one regulator, it may be the case that cooperation between the two regulations on an issue such as network enhancements is difficult due to their different aims and objectives.

<sup>149</sup> See also in this sense the opinion published by the Belgian energy regulator CREG in September 2005: <http://www.creg.be/pdf/Opinions/2005/GT112005/GSD-051017-rapportdeconsultationv6-EN.pdf>

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contractual perspective, the capacity of the VTN transit pipeline (which incorporates the location of the Zeebrugge hub) was allocated long term to Distrigas & Co (an affiliate of wholesale gas supplier Distrigas) shortly before liberalisation. Therefore, any shipper seeking to ship gas between the hub and the interconnector will have to request access to Distrigas (& Co) – or possibly another company having obtained secondary capacity from Distrigas (& Co) – and not from an unbundled TSO. It is considered likely that this peculiar arrangement has led to congestion at the Zeebrugge hub and has consequently hampered the development of higher levels of liquidity at this location.<sup>150</sup>

**Figure 28**



Source: Energy Sector Inquiry 2005/2006

### *New infrastructure and exemptions*

(236) The nature of gas flows across the EU is likely to change significantly over the medium-to long-term due to factors such as the relative decline of domestic production (for instance from the UK Continental Shelf) and the drive to further diversify supplies (for instance through an increase in LNG imports). In order to continue to meet the needs of end consumers, the market will need to ensure that the necessary transmission infrastructure is in place to cope with such a dynamically changing pattern in flows. This will most likely require substantial investment in new infrastructure such as transit pipelines, interconnectors and LNG-terminals.

<sup>150</sup>

Cf. also the Commission's analysis in case COMP/M.4180 – Gaz de France/Suez.

- (237) A number of projects are already underway either to construct new transport infrastructure (for instance the BBL interconnector from the Netherlands to the UK) or to upgrade existing infrastructure by increasing its capacity<sup>151</sup>. Since such projects require significant capital investment, the nature of the financing arrangements is key in order to ensure their viability. Typically, project developers attempt to mitigate their risk by long-term contracts, guaranteeing the developers sufficient future revenue to meet the costs of financing the project. It is important, therefore, that the regulatory regime strike a balance between providing the right incentives to build new capacity and ensuring that any long-term contracts do not have detrimental effects on competition.
- (238) The Second Gas Directive requires that transport infrastructure must be subject to regulated third-party access. This includes obligations on the TSO to ensure that the rules for access to the system are non-discriminatory and also requires that the tariffs charged for using the system are approved by the relevant regulatory authority. However, a derogation possibility exists in the Second Gas Directive by which new or upgraded infrastructure can be exempt from the third-party access rules<sup>152</sup>. The granting of an exemption is subject to a number of conditions, including, crucially, that the exemption not be detrimental to competition<sup>153</sup>.
- (239) The key facts to consider in assessing whether this condition is likely to be satisfied concern the nature of any contracts allocating capacity on the new or upgraded infrastructure, in particular the counterparties concerned, the scope of the contracts, and their duration. For instance, it has been widely acknowledged<sup>154</sup> that any capacity allocated on the new or upgraded infrastructure should be allocated pursuant to a pro-competitive process, such as an ‘open season’ or similar procedure, organised before the expansion and allowing for interested third parties to participate in the expansion.
- (240) New infrastructure can, by increasing cross-border competition and competition between outside EU producers, often have pro-competitive effects when allowing for new competitors in national markets or new sources of gas to reach the EU. Moreover, the financial incentives for large infrastructure projects are obviously of key importance, as projects without appropriate financial security will not take off at all. However, the existing long-term reservations on transit lines demonstrate the risk of cementing market shares in destination markets. Indeed, it appears that the additional primary capacity resulting from previous capacity increases on the five highly congested pipelines under analysis has, for the most part, ended up in the hands of the companies that already controlled the pre-existing primary capacity.

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<sup>151</sup> A number of companies have recently announced capacity enhancements, for instance Fluxys for the VTN pipeline, GTS for some border entry and exit points of the Dutch system and TAG GmbH for the TAG pipeline. However, in light of the fact that these projects are likely to take a number of years to complete, it is not clear to DG Competition that the significant unsupplied demand for transit services across these routes is being met in a timely fashion. Further, it appears that other congested pipelines, for instance the TENP pipeline, are currently not being considered for expansion.

<sup>152</sup> However, it should be noted that the receipt of an exemption is not a requirement in order for new infrastructure to be built. Indeed, the CEER paper ‘Investments in gas infrastructures and the role of EU national regulatory authorities’ states that “In some cases, new pipelines [...] may benefit of an appropriate enhanced [regulated] rate of return to compensate for higher risks” and that “The possibility for such exemptions is clearly envisaged to be an exception to the default arrangements”.

<sup>153</sup> The exemption criteria are set out in full in Article 22 of the Second Gas Directive.

<sup>154</sup> See again, for instance, the CEER paper ‘Investments in gas infrastructures and the role of EU national regulatory authorities’.

(241) Therefore, it is important to underline that the conditions of any open season are crucial to its success in terms of yielding an outcome that will not be harmful to competition. For instance, do the conditions indeed allow for different types of companies (both incumbents and new entrants) to participate in the expansion? The desire of the project developer to lay-off as much risk as possible through locking-in long-term contracts means that the level and length of financial commitments required from the participants is crucial to the success (in terms of competitive benefits) of any open season. It is evident that it will be much harder for new entrants, whose market share is not (yet) established to commit themselves to ship-or-pay contracts for 20 years, especially when the existing capacity on transit lines is booked long term.

(242) It is therefore important, in assessing whether to grant an exemption<sup>155</sup> from third-party access for new or upgraded transit pipelines and interconnects, to ensure that the conditions of any procedure for allocating capacity do not perpetuate the current level of foreclosure observed on existing transit lines. Indeed, the level of foreclosure established for the existing transit lines pleads for a more pro-competitive approach with regard to expansion projects.

#### **II.3.4. Case study: the investigation on gas imports to the UK**

(243) In December 2005 the Commission launched, as part of the Gas Sector Inquiry, a specific investigation into gas imports to the UK from Continental Europe and via the LNG Terminal of Isle of Grain. This investigation was prompted by low flows through the Belgium-to-UK interconnector despite the sharp increase in gas prices which occurred in the UK during the month of November.

Requests of information were sent to some 70 companies including gas suppliers, transmission and storage operators in Belgium, Germany, Netherlands and France, as well as traders at the Zeebrugge gas hub. Questionnaires were also sent to the operator and users of the Isle of Grain LNG terminal in the UK.

This section of the report sets out the finding of the investigation.

##### *Gas flows between the Zeebrugge gas hub (ZHUB) and the UK*

(244) In October and during the first week of November, the Belgian/UK interconnector was mostly in forward flow or transition in forward flow or transition mode because the prices at Zeebrugge were mainly higher than those at the NBP. This means that the interconnector was overall used to export gas from the UK to Continental Europe. After the first week of November, the flow direction changed along with the relative price increase in the UK. However, according to the replies provided by traders, the price differential between ZHUB and NBP was mostly not sufficient to justify additional gas flows to the UK. The subsequent analysis of the Commission therefore focused on gas flows upstream of the hub and interconnector facilities, i.e. on transit of gas within and towards Belgium.

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Even if a project developer chooses to make an investment in new infrastructure under a regulated regime, the points made here concerning capacity allocation are still relevant.

*Gas flows towards ZHUB and the Interconnector Terminal (IZT)*

(245) While prices at the ZHUB moved broadly along with those at NBP during November 2005, important price differences seem to have remained between the prices at the ZHUB in Belgium and some neighbouring Member States. Although important amounts of gas flowed from these countries towards Zeebrugge, this increase in supply was not sufficient to align prices at ZHUB to the lower prices in those Member States, suggesting that there was residual demand. As a matter of fact, according to the findings of the Commission, arbitrage opportunities were constrained by the following factors.

Physical congestion

(246) The analysis of data on physical flows of gas submitted by TSOs and shippers highlighted the existence of physical bottlenecks in the second half of November at some critical points of the North-West continental European systems.

Physical congestion notably occurred at the border between Belgium and Germany, at the exit points of the systems of the two transmission system operators (E.ON Ruhrgas and Wingas) from which gas flows onto the Belgian pipeline VTN. As regards the border between Belgium and The Netherlands, the investigation highlighted that it was not possible to flow gas to Belgium via Zelzate<sup>156</sup>. Furthermore, physical congestion occurred at the exit points of the system of the Dutch transmission system operators (GTS) in s' Gravenvoeren.

In addition to these findings, lack of available capacity was also signalled by certain shippers on transmission systems ‘upstream’ of these facilities (i.e. in the Netherlands and in Germany).

Contractual congestion

(247) During the investigation some indications were found of possible contractual congestion in the area of Zeebrugge which is a sensitive part of the Belgian transit system. This may have notably affected the connection between the ZPT, i.e. the landing terminal of the Zeepipe, which brings Norwegian gas to Zeebrugge, and the IZT/Hub facilities. Contractual congestion seems also to have been an issue on the VTN (although a less critical one when physical congestion arose at the German border).

As it is mentioned in paragraph (235) above, possible contractual congestion may have been made easier by the fact that all primary transit capacity on these facilities was allocated on a long-term basis to the Belgian shipper Distrigas (& Co), rather than being managed by the TSO.

A further problem of contractual congestion arose in relation to the LNG terminal in Isle of Grain in UK, as illustrated below.

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<sup>156</sup> Only virtual gas flows are possible towards Belgium. These are conditional to the existence of physical flows towards the Netherlands.

Actual and potential increase in domestic demand in other Member States

(248) Shippers have consistently reported that they exploited – as expected – the arbitrage opportunities due to the high prices in the UK and at the ZHUB . Their ability to do so was however conditional upon the need to meet contractual obligations vis-à-vis domestic customers in a context of actual and potential increases of demand and hence to limit their potential exposure to imbalance charges in those Member States. Various respondents pointed to the fact that it is unusual for shippers to withdraw substantial quantities of gas from storages at the beginning of the winter.

Gas quality specifications

(249) A further element emerging from the investigation is that not all gas available in North-West continental Europe could be exported to the UK which has so far adopted narrower specifications in terms of gross calorific value and Wobbe index<sup>157</sup> of gas. This means that, while gas coming from Norwegian producers and from Germany can be considered suitable for exports to the UK, the same may not be true for gas of different origins (e.g. Algerian gas transported to the LNG terminal in Zeebrugge). It is however unclear whether and to which extent this factor did reduce last winter's gas supply to the UK.

*Imports to the UK via the LNG Terminal of Isle of Grain*

(250) The entire capacity of the LNG terminal in Isle of Grain in the UK has been allocated for 20 years to a joint venture between BP and Sonatrach. During its investigation, the Commission found that an important share of the berthing slots of the terminal were not used by the two shippers. The Grain LNG operator offered some of the available capacity to the market by publishing a notice on its website, but no third party expressed an interest in using these specific slots, regardless of the general interest that several gas companies had expressed in using the terminal facilities. Following these facts, Ofgem asked the operator and the users of the Isle of Grain terminal to review the mechanism for allocation of secondary capacity to third parties. Changes to the arrangements for secondary trading of berthing slots and capacity at the Isle of Grain facility have since been introduced by BP and Sonatrach earlier in 2006.

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The Wobbe index is calculated on the basis of gross calorific value and density of gas.

## Conclusion

Cross-border sales do not currently exert any significant competitive pressure in EU wholesale markets. The strong market position of the historical incumbents in their domestic markets is mirrored by their lack of sales in other markets. New entrants are unable to secure *primary* transit capacity on key transit routes due to the predominance of long-term contracts signed between incumbent TSOs and, typically, their supply affiliates. This situation is expected to persist for the term of the pre-liberalisation legacy contracts (typically of fifteen to twenty years duration) but also potentially beyond this time due to the existence of provisions allowing these contracts to be extended. Swaps are not a marginal phenomenon and can substitute physical transport of gas. However, they are largely tools used by incumbents.

On a number of the most congested transit pipelines the volume of requests for additional capacity (much of it from new entrants) is material in comparison to the existing technical capacity of these pipelines, indicating a significant level of unsatisfied demand for transit capacity.

Even in instances where the capacity of particular transit lines has been increased, the resulting new capacity has, for the most part, ended up in the hands of the companies that already controlled the pre-existing primary capacity. The current process for financing new investment risks cementing market shares in destination markets and forming a barrier to smaller players participating in the market.

Moreover, access to *secondary* transit capacity, which should be in theory open to new entrants, has in reality not been obtained by them, with the majority being secured by incumbent suppliers from other Member States or large gas producers. Due to the lack of effective congestion management mechanisms on the majority of transit pipelines, it is seldom possible for new entrants to secure even smaller volumes of short-term, interruptible capacity.

The Commission's investigation into the reasons for less than expected gas flows to the UK at the beginning of last winter, allowed a more in-depth analysis of the functioning of transit networks in the North-Western part of the EU. Its results confirm the general findings of the report as regards the role played by physical and contractual congestion of transit gas networks in preventing cross-border gas flows. These findings point to the need for more investments in cross-border networks and to the importance of establishing transparent and well-functioning secondary markets. In addition, they also illustrate the relevance of congestion management as regards new infrastructures such as LNG terminals.

## II.4. Transparency

### *Introduction*

- (251) Lack of transparency prevents new entry, as market operators are unable to take sound commercial decisions without sufficient information. Transparency regarding infrastructure (available transport capacity, available storage and other aspects of the gas markets such as balancing) creates a level playing field as it ensures that all operators have access to the same information. Transparency also plays an important role in building confidence in the market. This has in particular been highlighted where unbundling requirements must be fulfilled. Reliable and publicly available information on transport capacity will reassure users that they are treated equally and thereby demonstrate an appropriate application of the unbundling requirements.
- (252) It may be a concern that excessive transparency could facilitate collusion between the major markets players, particularly on an oligopolistic market. A balance must certainly be found as to what data is published and how it is published, in order to improve transparency without enabling collusion. However, the existing lack of transparency means that it is more necessary to enhance transparency than to limit it.
- (253) The Sector Inquiry confirms that gas wholesale operators have contrasting views on the question whether the amount of information available on network capacity is sufficient. Incumbents are usually satisfied, whereas most new entrants find that information is lacking, suggesting that vertically integrated incumbents have privileged access to information. Networks users were asked about the importance of specific information elements to establish what information should be made available. In view of the importance of transit for the creation of a single gas market<sup>158</sup>, the Sector Inquiry has focused on transparency in access to transit lines and concentrated on certain aspects, namely on the impact of the so-called “three or more” rule and on information on unused capacity. The Sector Inquiry also examined transparency regarding storage.

### II.4.1. Transparency on access to transit pipelines

- (254) Generally, the Sector Inquiry findings show that, despite a certain amount of information being published<sup>159</sup>, transparency should be improved. A number of TSOs indicated that they publish whether capacity is available in the form of traffic lights, without accompanying it with precise numerical information. TSOs added that network users should contact them to receive more detailed information.
- (255) As explained above, the situation in transit is complicated by the fact that primary capacity is often booked for long periods by incumbent players. Network users complained that this means that they often need to turn to a competitor to have access to transit capacity on the secondary market and are obliged to share detailed information with them in order to optimise their portfolio of transport contracts. They would therefore prefer to see capacity administered by an independent TSO.

<sup>158</sup>

See section B.a.II.3.3 “Access to transit pipelines”

<sup>159</sup>

For an analysis of the implementation of the Second Guidelines of Good Practice see the CEER “Monitoring report 2004 concerning compliance with the guidelines for good third party access practice to gas transmission systems”. We concentrated on the analysis of transparency regarding transit lines, whereas the regulators worked mainly on national networks.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(256) A number of network users complained about the lack of transparency regarding available transit capacity and difficulties encountered in getting access to it in a timely and effective manner. The incumbent supplier in Belgium has acquired all capacity rights on the VTN and the Troll pipelines (Zeebrugge-Blaregnies) and does not publish information on available capacities but provides it only upon request. Its stated reason for not publishing information is the need to evaluate each capacity request on a case-by-case basis, and the fact that capacity reservations in forward and reverse flows at entry and exit points influence each other<sup>160</sup>.

(257) The inquiry confirms that information should also be easily accessible (see Table 3). Generally, about 74% of network users favoured centralised systems of information, be it a European-wide web-platform or a sole website for each transit line. About 24% answered “other” and specified that information should be published by the TSO. Some respondents added that this would mean that the TSO would be acting on behalf of the primary capacity holder.

**Table 3**

<b>According to the respondents, information on the capacity situation on transit pipelines should be:</b>	
	% of total number records
Centralised for all transit pipelines and published on an EU-wide web-platform	29.8%
Other - Specified: TSO	23.4%
Published on the website of each primary capacity holder	21.3%
Centralised for all primary capacity holders and published on a sole website for each transit line	21.3%
Available only upon request to each primary capacity holder	4.3%

*Source: Energy Sector Inquiry 2005/2006*

(258) The regulatory framework has attempted to remedy the lack of transparency regarding access to networks first through Guidelines of Good Practice<sup>161</sup>, more recently through the Gas Regulation. Basic principles regarding transparency requirements are set out in Article 6 of the Regulation. These are applicable to gas transmission networks, including those lines which are generally considered as “transit lines”. Under these rules, TSOs should publish information on the services they offer, on tariff derivation and on the capacity situation.

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<sup>160</sup> For further information on this issue, see “Le fonctionnement du marché belge, rapport de consultation de la CREG », September 2005.

<sup>161</sup> The First Guidelines of Good Practice were adopted in 2002.

- (259) In particular, Article 6.3 of the Regulation - which is to be read in the light of the obligation imposed on TSOs to maximise the capacity made available to network users - obliges these TSOs to make information available to the public on at least technical, contracted and available capacities. This information should be on a numerical basis, and cover all relevant points including entry and exit points<sup>162</sup>.
- (260) Answers received within the Sector Inquiry emphasized the importance of rather detailed information. Information on available capacity is considered, unsurprisingly, indispensable by most users (about 79%) and important by about 15% of them (see Table 4). Information on maximum technical capacity is also considered important by network users.

**Table 4**

<b>According to the respondents, information on available capacity is:</b>	
	% of total number records
Indispensable	78.7%
Important	14.9%
Useful	4.3%
Not useful	2.1%

*Source: Energy Sector Inquiry 2005/2006*

- (261) Network users would like information on the capacity situation to refer to daily or hourly periods. Most of those who chose an alternative option specified that information on capacity should refer to periods coherent with the balancing regime: hourly if balancing is hourly, daily for daily balancing.
- (262) Information on the capacity situation should be kept well up-to-date. The majority of network users would like to see information up-dated daily (about 43%) or even in real-time (about 30%). Most of those who answered “other” explained that the frequency of the up-dates should depend on the balancing regime. About 10% of users found updates once a week would be sufficient.
- (263) All network users replying consider long-term forecasts of available capacities to be at least useful. Indeed, about 45% found them indispensable, about 35% important and about 20% useful. According to most users, these forecasts should refer to daily or monthly periods (see Table 5). Some networks users also indicated that the forecasts should be in accordance with the balancing regime (hourly or daily). Network users also mentioned that forecasts of available capacities should cover the same number of years as for which capacity can be contracted.

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<sup>162</sup> Guidelines annexed to the Regulation, provide for a minimum degree of harmonisation. These binding guidelines can be amended by the Commission through the comitology procedure. They define technical information necessary to gain access to the system, relevant points for transparency requirements and the type of information to be publish as well as the schedule for publication of information. Guidelines on third party access services and on the principle underlying capacity allocation mechanisms and on the application of congestion management procedures are also annexed to the Gas Regulation.

**Table 5**

<b>According to the respondents, information on forecasts of available capacity should refer to:</b>	
	% of total number records
Daily periods	38.3%
Monthly periods	25.5%
Other - please specify below	21.3%
Hourly periods	12.8%
Weekly periods	2.1%

*Source: Energy Sector Inquiry 2005/2006*

- (264) Network users made similar considerations on information regarding historical flows. According to the vast majority of network users, information on historical flows should cover at least the last three to five years. A number of network users specified that information on historical flows since the start of operation of the pipe should be available. Information should be detailed; according to the majority of users it should concern daily or hourly periods. Some network users specified that it should be in line with the balancing regime; while others indicated that it should be particularly detailed when referring to peak periods. Information on historical patterns of interruption was considered useful by about 38% of network users, important by about 30% and indispensable by about 25% of them.

#### **II.4.2. The “three or more” rule**

- (265) According to the Gas Regulation, the amount of information made public can be limited if making this information public would risk harming legitimate commercial interests of supply companies shipping gas on the lines concerned. This would allegedly be the case where two or less network users have contracted capacity at the same network point. The Regulation explicitly provides that regulators shall not grant an authorisation to limit the amount of information made available by the TSO “where three or more network users have contracted capacity at the same point”. This rule is referred to as the “three or more rule”.

- (266) On the basis of the information provided by the TSOs and the companies controlling considerable amounts of primary capacity on transit lines (the so-called “special capacity holders”), the inquiry looked at the extent to which these companies could try to claim, on the basis of the reservations reported to DG COMP for the years 2003-2005, that confidentiality issues would indeed prevent them making available to the market full information about technical capacity, contracted capacity, available capacity and used/unused capacity on transit lines<sup>163</sup>. Indeed, potential new entrants (amongst others) have expressed concerns at the extent to which confidentiality claims could hamper full transparency on accessible capacity on transit lines.

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<sup>163</sup> In any case, the Gas Regulation states that national regulators’ permission is required for any limitation of transparency, and they must take account of competition as well as confidentiality in deciding whether to give permission.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

- (267) Therefore, for each of the two main transit axes covered by the inquiry, we investigated: first, if for each of the pipelines included in the axis, there were three or more primary capacity holders; and second, if for each of these pipelines, there were three or more primary and secondary<sup>164</sup> capacity holders<sup>165</sup>. It would appear that the argument of confidentiality is based on the number of actual users of the capacity rather than on the actual contractual situation.
- (268) The results of this strand of analysis are represented below. With respect to the Benelux-Italy axis, the graph demonstrates that on an average of 80%<sup>166</sup> of the pipelines on this axis only one or two primary capacity holders control the entire capacity. A restrictive interpretation of the rules would mean that on the vast majority of the pipelines of this axis - which is crucial for developing market integration - only limited transparency should be provided on the capacities of the pipelines because disclosure of this information would reveal sensitive commercial information about the commercial behaviour of these one or two primary shippers. If one were to consider that both primary and secondary capacity reservations on the Benelux-Italy axis have to be taken into account - corresponding to the logic of the confidentiality argument<sup>167</sup> - the picture looks less bleak. However, even in such a scenario, approximately 20% of transit lines could still endeavour to justify that transparency is not required. This would be on the basis that no secondary capacity whatsoever has been granted by the primary capacity owner(s).
- (269) With respect to the East-West axis, Figure 30 demonstrates that on an average of 65% of the pipelines on this axis only one or two primary capacity holders control the entire capacity. This means that the amount of transparency could be limited on this axis. If one takes into account both primary and secondary capacity reservations, the picture does not change fundamentally. This can be explained by the fact that, as compared for instance with the Benelux-Italy axis, the amount of secondary capacity allocation is quite limited<sup>168</sup>.
- (270) On the vast majority of transit lines only one or two companies own primary capacity rights. These companies could try to make use of these rights – which they have often obtained under pre-liberalisation monopoly conditions – to argue that full application of transparency requirements would damage their commercial wholesale interests. Such an approach would mean that a high number of gas highways, which are crucial to develop competition and market integration in Europe, would not provide the transparency required.

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<sup>164</sup> For the purpose of this analysis only, and without prejudice to any future interpretation of the provisions of the Gas regulation, DG COMP has only taken into account secondary capacity reservations with a duration longer than 3 months in within any given year.

<sup>165</sup> It must be highlighted that the confidentiality requirements –as they are laid down in the gas Regulation refer to transparency with respect to network points, whereas the information gathered in the context of the present inquiry concerns entire pipelines.

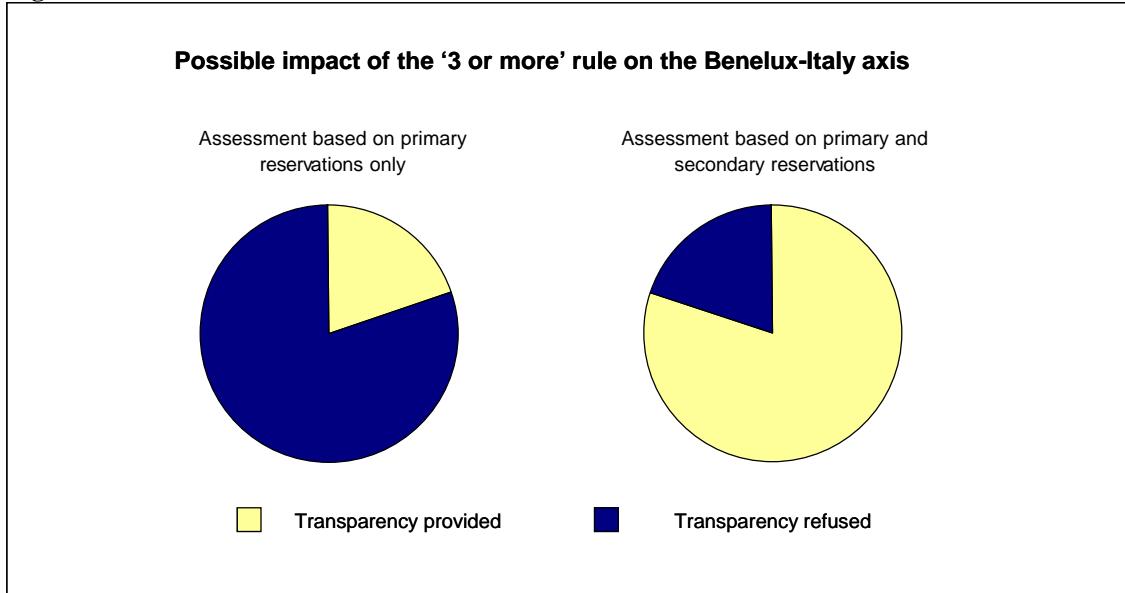
<sup>166</sup> For this exercise, identical weight has been granted to all pipelines within the axis.

<sup>167</sup> Secondary capacity allocations - even if they are not necessarily always reported by primary capacity holders to the TSO of a given pipeline - should logically be taken into account for the purpose of determining whether or not information about gas flows reveals sensitive commercial information about the behaviour of the shippers. Indeed, information about the usage of a particular pipeline, for instance, will only reveal commercially sensitive wholesale market information if the flows can, with sufficient certainty be attributed to a single shipper.

<sup>168</sup> See above section B.a.II.2.3.

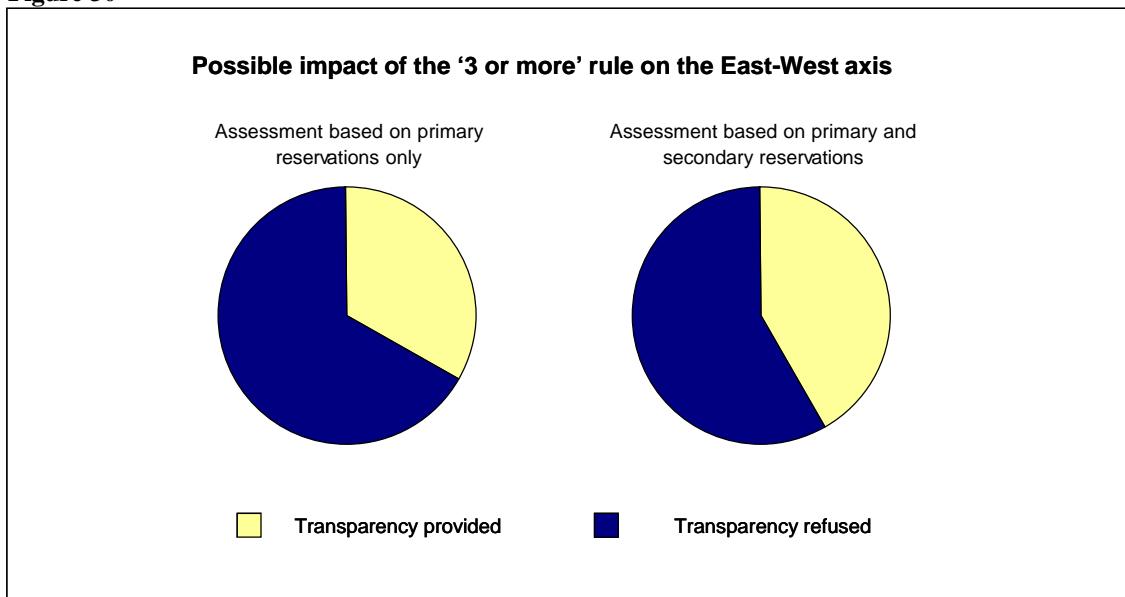
## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 29**



Source: Energy Sector Inquiry 2005/2006

**Figure 30**



Source: Energy Sector Inquiry 2005/2006

- (271) It should be highlighted that the analysis above has been undertaken without taking into account the extent to which the TSOs and/or primary capacity holders of the pipelines included in the axes have provided some transparency on a voluntary basis. However, a number of TSOs indicated that they do not publish information when there are less than three network users<sup>169</sup>.
- (272) New entrants criticised the fact that no information is published on available capacity when there are less than three network users.

<sup>169</sup> When the regulators analysed how the Second Guidelines of good practice were implemented, it appeared that not all TSOs who abstained from publishing information on the basis of that rule had actually applied for an authorisation from their national regulator. See the CEER “Monitoring report 2004 concerning compliance with the guidelines for good third party access practice to gas transmission systems”, p. 100.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(273) If precise numerical information on available capacity is to be considered harmful for confidentiality when there are less than three network users, the publication of a range (e.g. between 30 and 40% of the capacity is available) should provide some transparency without allowing the capacity holders to determine the exact amount of capacity held by the other one. About 77% of the respondents to our transparency questions found that it would be useful (about 42%), important (about 26%) or indispensable (about 9%) to publish the number of capacity holders. This would create clarity on any justification given for the lack of transparency.

### **II.4.3. Secondary trading - Unused capacity**

- (274) Article 5.3 of the Regulation foresees that in the event of contractual congestion, the TSO shall offer unused capacity on the primary market at least on a day-ahead and interruptible basis. Networks users shall also be entitled to put contracted capacity that they do not wish to use (or are unable to use) on the secondary market. There are no specific provisions on transparency regarding unused capacity<sup>170</sup>. Currently, information on unused capacity appears to be seldom published. Some TSO's explained that they have or will set up bulletin boards where network users can offer unused capacity.
- (275) The large majority of the respondents to our questionnaire (about 74%) indicated that information on aggregated unused capacity was either indispensable or important (see Table 6). This is also the case when there are fewer than three network users holding capacity (see Table 7). Many of those who responded that such information is not useful are incumbents.

**Table 6**

<b>According to the respondents, information on aggregated unused capacity is:</b>	
	% of total number records
Indispensable	40.4%
Important	34%
Useful	12.8%
Not useful	12.8%

*Source: Energy Sector Inquiry 2005/2006*

<sup>170</sup>

The Regulation does require TSOs to publish information on interruptible capacity but this does not necessarily mean that all information on unused capacity is published.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Table 7**

**According to the respondents, information on aggregated unused capacity, when there are fewer than three network users holding capacity, is:**

	% of total number records
Indispensable	27.7%
Important	25.5%
Useful	25.5%
Not useful	21.3%

*Source: Energy Sector Inquiry 2005/2006*

- (276) New entrants explained that the identification of capacity holders would facilitate secondary trading in capacity. The majority of users found that information on the identity of primary capacity holders was important (about 32%), useful (about 28%) or indispensable (15%). Information on the identity of secondary capacity holders is also considered useful by about 36% of the users, important by about 24% and indispensable by about 13% of them.
- (277) Responses differed as to whether the identity of capacity holders, be it primary or secondary, should be revealed when there are fewer than three network users: those who answered that this information is not useful were mostly incumbents, whereas those who found the information useful, important or indispensable were new entrants (see Table 8 and Table 9).

**Table 8**

**According to the respondents, information on identity of primary capacity holders, when there are fewer than three users holding capacity, is:**

	% of total number records
Useful	34%
Not useful	29.8%
Important	23.4%
Indispensable	12.8%

*Source: Energy Sector Inquiry 2005/2006*

**Table 9**

**According to the respondents, information on the identity of secondary capacity holders, when there are fewer than three users holding capacity is:**

	% of total number records
Useful	38.4%
Not useful	31.9%
Important	19.1%
Indispensable	10.6%

*Source: Energy Sector Inquiry 2005/2006*

- (278) The practical organisation of secondary trading of capacity is of course of major importance and its rules should be made public. This opinion is shared by all users. Information on how to transfer the title for capacity is indispensable for about 58% of the users or important for about 36% of them. Only 6% of the users found the information merely useful. The cost of the transfer of capacity title is an indispensable piece of information for about 60% of the users; it is important for about 38% and useful for about 2% of them.

#### II.4.4. Transparency regarding storage

- (279) The importance of having access to information on technical and available storage capacity was underlined by the vast majority of users. Unsurprisingly, information on available storage capacity was considered indispensable by about 51% of the users and important by about 38%. About 2% of the users found the information merely useful and about 8% of them found it not useful. Information on maximum technical capacity was considered important by about 38% of the users, indispensable by about 34%, useful by 19% and not useful by about 8% of them. Information on contracted and unused storage capacity was also considered important by the users (see Table 10 and Table 11).

**Table 10**

**According to the respondents, information on contracted/held storage capacity is:**

	% of total number records
Important	36.2%
Indispensable	29.8%
Useful	17%
Not useful	17%

*Source: Energy Sector Inquiry 2005/2006*

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Table 11**

<b>According to the respondents, information on unused storage capacity is:</b>	
	% of total number records
Important	40.4%
Indispensable	31.9%
Not useful	21.3%
Useful	6.4%

*Source: Energy Sector Inquiry 2005/2006*

(280) Storage users would like to receive detailed information<sup>171</sup>. The GGPSSO do not foresee to what time periods information on the storage capacity situation should refer to. Most respondents would like it to refer to daily periods (see Table 12). Those who answered “other” to the questions on the reference period for information on available storage indicated that information should be detailed in accordance with the type of storage (seasonal or peak-shaving) and refer to combinations of annual periods, seasonal periods, monthly periods, weekly periods and/or daily periods. According to about 38% of the users, forecasts of available capacity should cover the next three years (see Table 13). Some users indicated that forecasts of available storage capacity should go as far in the future as capacity can be booked (10 years forecasts if capacity can be booked for 10 years).

**Table 12**

<b>According to the respondents, information on the storage capacity situation should refer to:</b>	
	% of total number records
Daily periods	40.5%
Other - please specify below	25.5%
Hourly periods	17%
Weekly periods	10.6%
Monthly periods	6.4%

*Source: Energy Sector Inquiry 2005/2006*

<sup>171</sup>

The implementation of the GGPSSO has been monitored by ERGEG. The Final 2005 Report on Monitoring the implementation of the Guidelines for Good TPA Practice for Storage System Operators (GGPSSO) has been approved on 7 December 2005.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Table 13**

**According to the respondents, forecasts of available storage capacity should cover the next:**

	% of total number records
3 years	38.4%
year	19.1%
Other - please specify below	17%
2 years	14.9%
18 months	8.5%
6 months	2.1%

*Source: Energy Sector Inquiry 2005/2006*

### **Conclusion**

Network users request more transparency on access to networks and transit capacity, as well as on storage. Users would like to see more detailed information than is currently provided for by the minimum requirements set by the Gas Directive and the Guidelines annexed to it. Notably, network users question the “three or more” rule and favour the enhancement of secondary trading by the publication of unused capacity. A number of new entrants would welcome the creation of a single transparent and integrated web platform providing information on available capacity for all transit pipelines.

## II.5. Price issues

### II.5.1. Prices in import contracts and on hubs

(281) Wholesale market prices are in most European markets dominated by the indexation mechanisms in contracts with producers. The Sector Inquiry has therefore focused on the indexation mechanisms actually used in these contracts. The investigation has established the proportions of gas prices indexed to inflation, crude oil, heavy fuel oil, light fuel oil, coal, electricity, spot gas or any other variable<sup>172</sup>. This report presents<sup>173</sup>:

- total indexation of long-term contracts in the EU
- indexation by region of the company producing gas
- indexation by region of the company importing gas

(282) Pricing on hubs is based on the supply and demand situation on each traded market. Although the pricing on the individual hubs has not been analysed in detail, a comparison is made of price levels on the three main trading hubs in the EU (NBP, Zeebrugge and the TTF-) with monthly prices paid by a sample of purchasers<sup>174</sup> under long-term contracts over the period of January 2003 to December 2004. This gives a certain indication of general price levels paid under long-term contracts with those found in traded markets. It also highlights the price volatility of the open markets compared to that found in the long-term contracts.

(283) Finally, in order to compare the price levels and volatility of different types of long-term contracts, we compared the overall price level paid by a sample of gas purchasers under long-term agreements principally indexed to hub gas prices with prices paid under contracts indexed to oil and oil derivatives' prices.

### II.5.2. Oil indexation of long-term gas contracts in the EU

(284) The findings of the inquiry confirm the widely known fact that prices in European long-term gas contracts are mainly linked to oil and oil derivatives.

(285) Since the continuing practice of linking gas to oil and oil-derivatives' prices is widespread in Europe, contract prices paid by different producers to different suppliers move in an almost identical manner through time. As a result, prices paid by purchasers under long-term contracts do not react smoothly (or at all) to changes in the supply and demand of gas markets. This effect is exacerbated by the fact that the indexation in long-term contracts is usually linked to variables calculated with trailing averages, further reducing response to price signals. No trend towards less distortive, more market based pricing mechanisms can be observed at this stage.

<sup>172</sup> It should also be noted that a wider range of pricing arrangements are often included in the contracts, such as options to reduce off-take, summer discounts, seasonal prices and options to take a proportion of gas at a spot or fixed price.

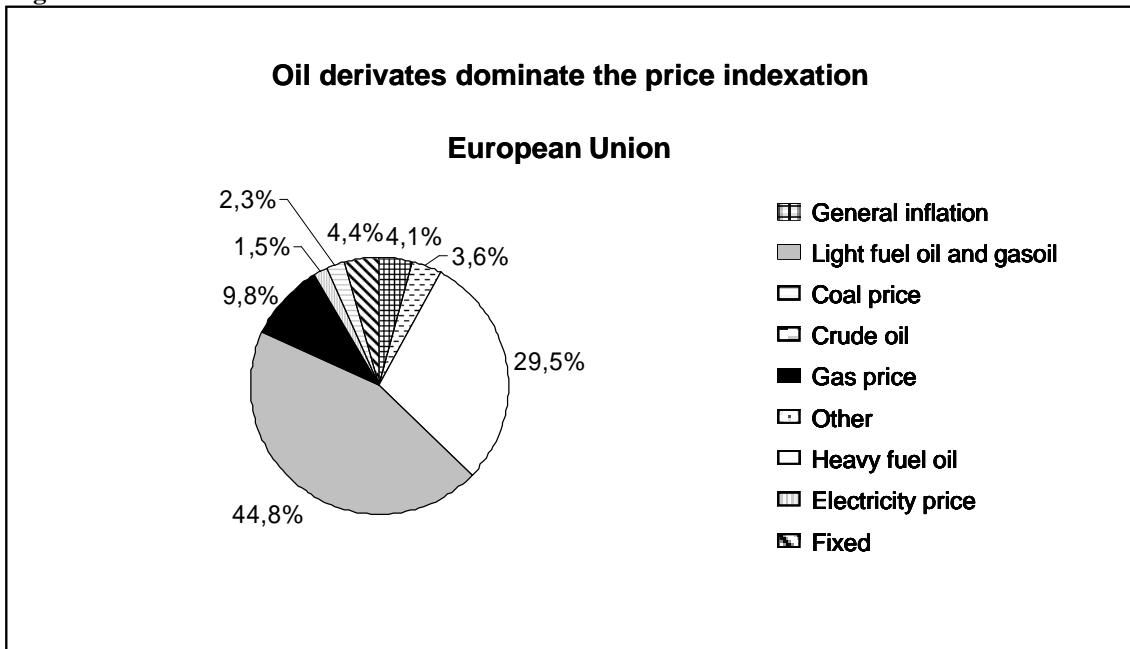
<sup>173</sup> For the report, the inquiry has analysed oil price indexation in long-term purchase agreements of thirty major producers and wholesalers of gas. Over 500 long-term contracts (for our analysis, any contract of over 12 months was considered to be a long-term contract), representing around 400 billion cubic metres of contracted gas, were reviewed. These contracts include those between companies exporting gas to Europe and major EU gas wholesalers, as well as contracts between different EU gas wholesalers.

<sup>174</sup> Our sample includes contracts from 11 major gas purchasers, buying over 270 billion cubic metres of gas per year.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(286) The link between the purchase price of gas under long-term gas agreements and oil and oil-derivatives can be seen clearly in Figure 31 below. The graph shows the price indexation in our sample of long-term gas supply contracts. The analysis is based on data for calendar year 2004 and indicates the average volume-weighted indexation found in our sample of contracts.

**Figure 31**



*Source: Energy Sector Inquiry 2005/2006*

(287) The indexation arrangements in the pricing of gas under long-term contracts result in wholesale prices for gas that reflect the developments of the oil market<sup>175</sup>, and in particular the market for oil derivatives such as heavy or light fuel oil (these account for around three quarters of gas price volatility). Given the similarity of the price indexation between most long-term contracts, the difference between the actual prices paid by different purchasers of gas under long-term gas contracts will primarily reflect the difference in the underlying base prices (i.e. the original contract price).

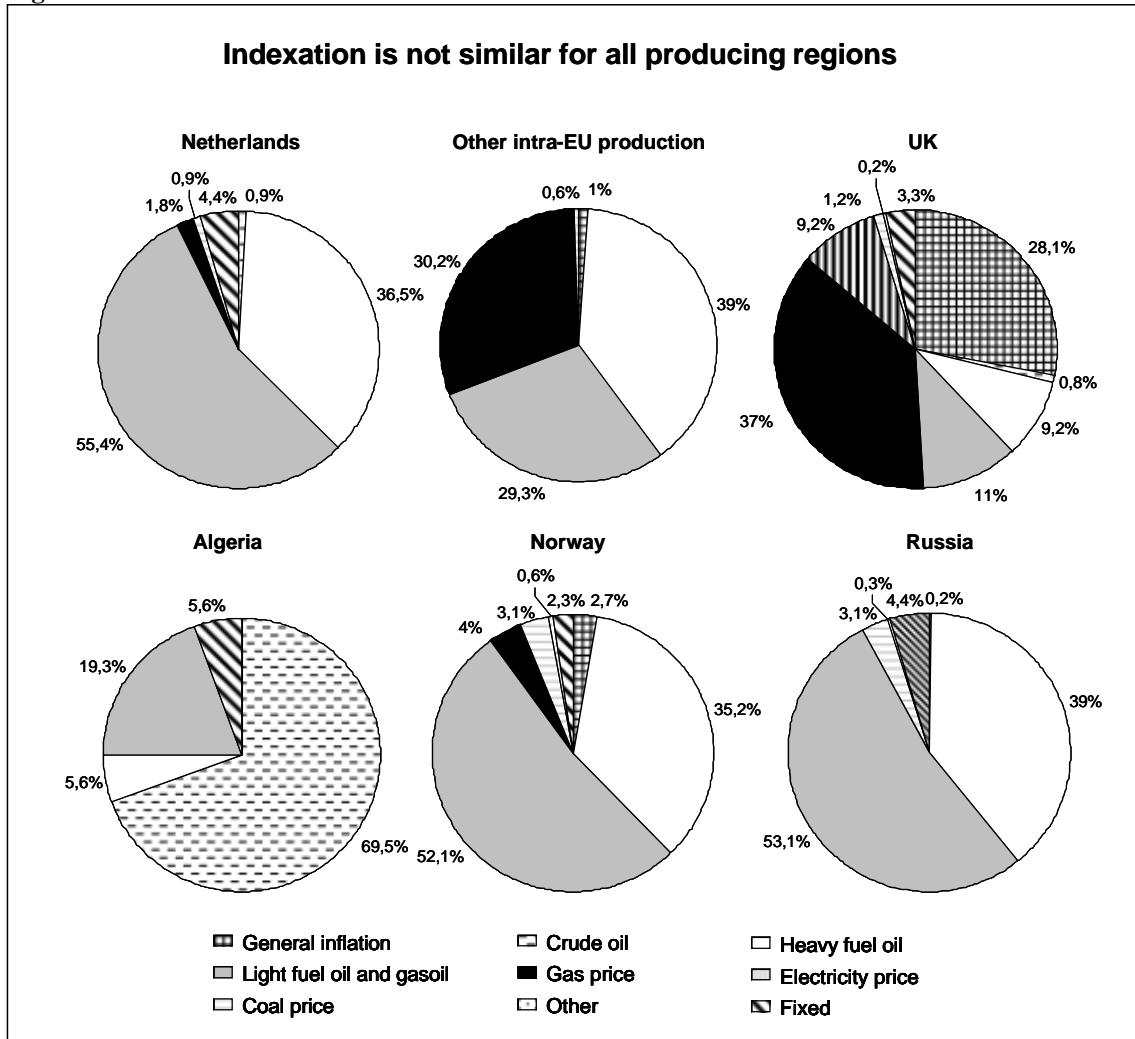
(288) Following the general analysis of the indexation of long-term gas supply agreements in the EU, the Sector Inquiry has looked at indexation by source region<sup>176</sup>.

<sup>175</sup> There are often ceiling clauses on crude oil, light fuel oil and heavy fuel oil prices within gas contracts. In the contracts analysed in the inquiry, however, these do not apply to the full amount indexed within the contract but only to a specific part; for instance, if the contract includes 50% indexing to light fuel oil, the ceiling might only apply to 20% of the total light fuel oil element.

<sup>176</sup> This comparison is based on data for calendar year 2004 and indicates the average volume weighted indexation found in our sample of contracts (excluding those for which it was impossible to determine the source of the gas).

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

**Figure 32**



Source: Energy Sector Inquiry 2005/2006

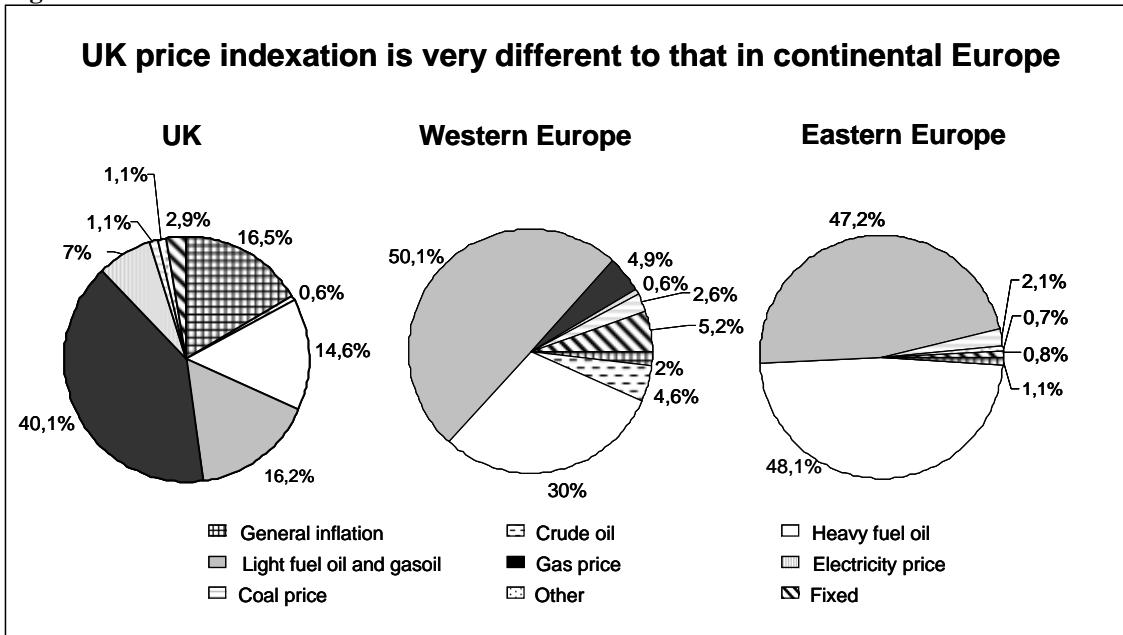
- (289) It appears that long-term contracts from the Netherlands, Norway and Russia have almost identical indexation patterns, including over 80% of heavy and light fuel oil indexation. Because these three regions produce over 275 billion cubic metres of gas which is consumed in the EU, representing around 60% of the EU's natural gas needs, their indexation model will clearly have the most influence in determining the prices paid by European companies under long-term gas supply agreements.
- (290) As to the other three regions, the inquiry found that Algerian gas was even more directly linked to oil prices, with almost 70% of changes to the price level being determined by crude oil prices, and an additional 25% by heavy and light fuel oil.
- (291) Long-term gas sourced from UK fields has a very different indexation pattern than gas from the other regions, with the main determinants being hub gas prices (around 37%) and general inflation indices (just under 30%). Heavy and light fuel oil account for a further 20% of price indexation.
- (292) Regarding other intra-EU gas production, whilst the 70% of heavy and light fuel oil price indexation is predictable, the rest of the price indexation is almost entirely made up of hub gas prices. One possible explanation for this would be that other intra-EU gas production was being sold mainly to UK wholesalers. However, this theory was not

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

corroborated by the available evidence. Another possibility is that the proximity of traded markets such as Zeebrugge and the TTF is starting to have an effect on the price indexation of long-term contracts for gas produced in surrounding areas. However, the price of long-term gas from the Netherlands, which has the TTF gas hub, is only 2% indexed to hub gas prices.

- (293) The Sector Inquiry also looked at the indexation according to the region of the purchasing company. Long-term gas supply contracts were split into three groups depending on whether the buyer was from the UK, Western Europe<sup>177</sup> or Eastern Europe<sup>178</sup>.

**Figure 33**



Source: Energy Sector Inquiry 2005/2006

- (294) As can be seen above, the indexation present in long-term contracts for gas supply to continental Europe is very different to that found in the UK, where over 40% of the price volatility of gas under long-term contracts is determined by changes to the actual hub price of gas (usually the NBP or IPE prices). For Western Europe, changes in hub gas prices only account for around 5% of indexation. Within our sample of Eastern European long-term gas purchase contracts we were unable to find any contracts with indexation to hub gas prices.

- (295) Conversely, the importance of heavy fuel oil and light fuel oil to determine the price level paid under long-term contracts is much higher in Western Europe (over 80% of indexation) and Eastern Europe (around 95% of indexation), than in the UK (around 30% of indexation).

<sup>177</sup> The Western Europe sample consists of long-term gas supply contracts to companies in Austria, Belgium, Denmark, France, Germany, Italy and the Netherlands.

<sup>178</sup> The Eastern Europe sample consists of long-term gas supply contracts to companies in the Czech Republic, Hungary, Poland, Slovakia and Slovenia. Again, the analysis is based on data for calendar year 2004 and indicates the average volume weighted indexation found in our sample of contracts.

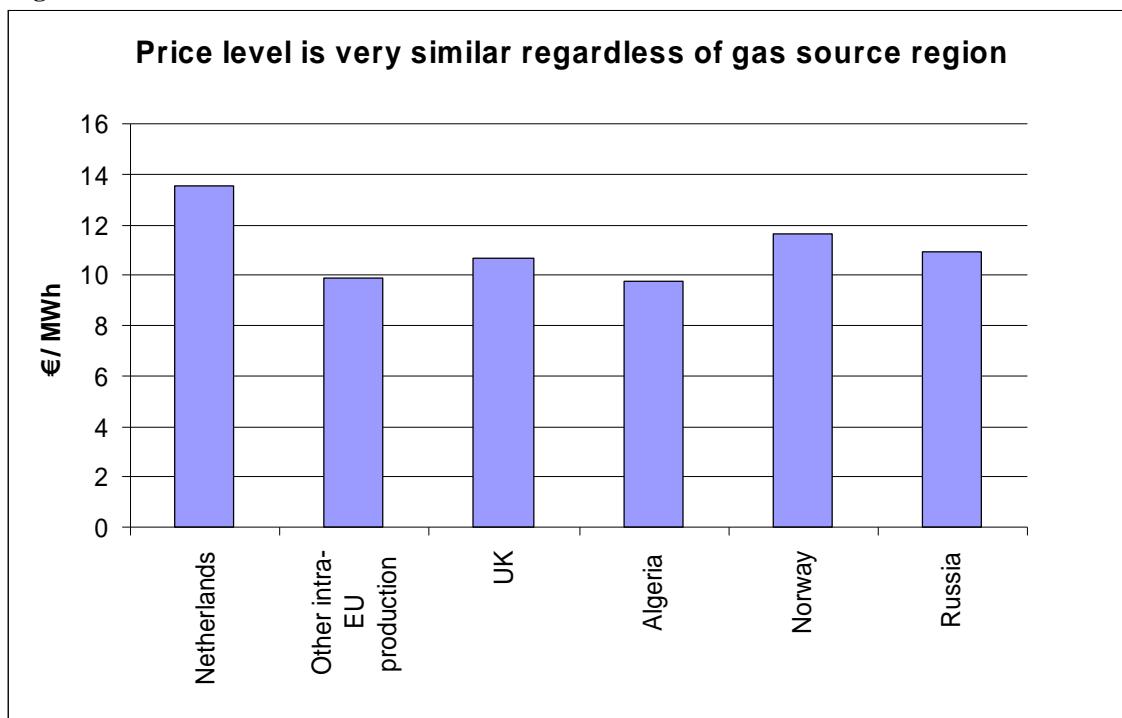
## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(296) Apart from heavy fuel oil, light fuel oil and hub gas prices (in the UK's case), there are no other indices which have a major effect on prices of gas imported by European companies under long-term contracts. However, in the Western European market, crude oil and fixed price arrangements (each has around 5% of total indexation) also have a minor influence, as do, in the UK, electricity prices (around 7%) and general inflation indices (around 16%).

### **II.5.3. Price levels of long-term contracts**

(297) In addition to the above analysis of indexation by source region of gas, we also examined the actual price levels of gas by region, in 2004<sup>179</sup>. Using the same sample as before, we calculated the average price paid during 2004 under each long-term gas agreement. We then calculated for each region the volume weighted average price.

**Figure 34**



*Source: Energy Sector Inquiry 2005/2006*

(298) As can be seen above, the average price level during 2004 for gas from long-term contracts varied between around 9.8€/MWh for Algeria and 12.8€/MWh for the Netherlands. All other regions settle between these two values, with most gas being purchased at levels between 10.5€/MWh and 11.5€/MWh. Note that, whilst the contract indexation is unlikely to have changed since the analysis period, the absolute price level of gas has risen significantly to around 20-22€/MWh<sup>180</sup>, owing to the dramatic increase in oil prices.

(299) The fact that gas purchased from the Netherlands, Norway and Russia have similar price levels is not unexpected, seeing as they have comparable indexations patterns. Although gas purchased under long-term contracts from the UK displays distinct indexation

<sup>179</sup> Note that all our analyses of gas prices under long-term contracts only consider commodity prices and do not include any capacity charges.

<sup>180</sup> European Gas Markets, Heren Energy, 15 September 2006.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

patterns, its overall price level is similar to that purchased from other gas regions. This could be due to the increasing bond between the UK market and the continental European market via the Interconnector and to the fact that the UK has become a net importer of gas.

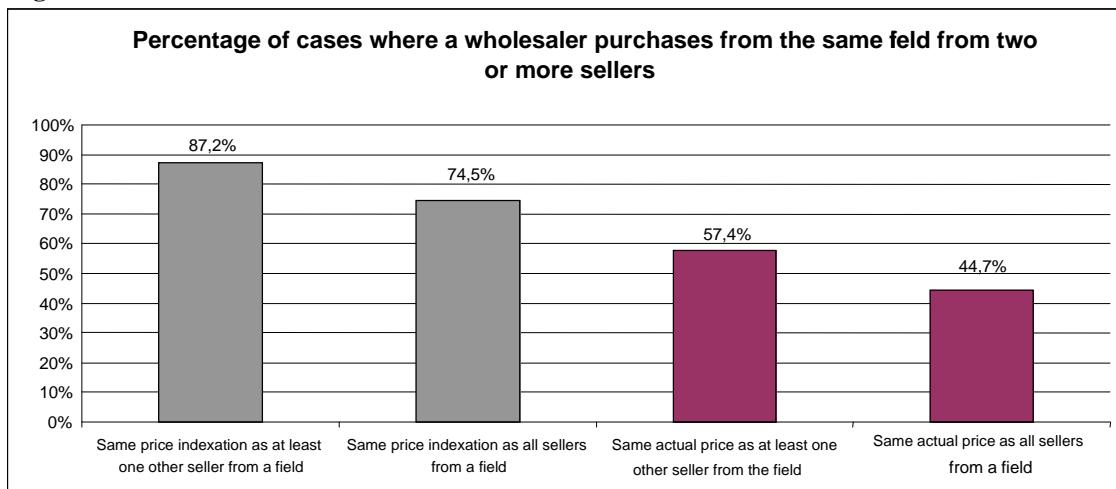
- (300) The results for Algeria should be mitigated by the fact that the sample is smaller than that of the other regions<sup>181</sup>, which reduces our confidence in this finding.

### **II.5.4. Price indexation and contractual arrangements for gas from the same field**

(301) The enquiry has indicated a very strong similarity between the indexation in long-term supply contracts of different producers selling from the same field. Most likely as a consequence of this, there is also a strong similarity between the actual prices paid by a wholesaler to several gas producers selling from the same field.

(302) The inquiry looked for all long-term gas purchase agreements involving deliveries of gas from the same field by more than one gas producer to the same gas wholesaler. We then analysed whether in these cases the price indexation formula included in the long-term contracts was the same for two or more of the contracts. Finally, we also looked at whether the actual price being paid by the purchaser to the producers was also the same. Figure 35, below, details our findings for calendar year 2004.

**Figure 35**



Source: Energy Sector Inquiry 2005/2006

(303) In almost 90% of cases where two or more producers are selling from the same field to the same wholesaler, the price indexation in the long-term contracts is the same. Furthermore, in almost two thirds of these cases, the same actual price is being paid by the wholesaler to the producers.

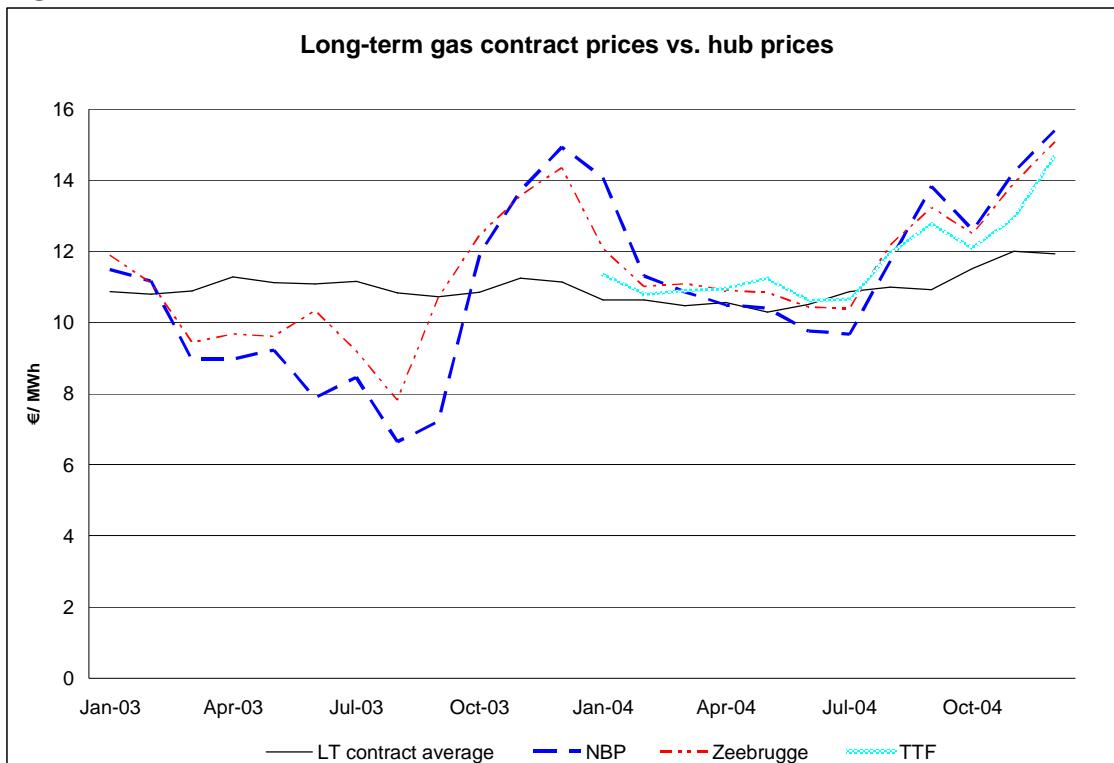
<sup>181</sup>

Since Spain was not included in the geographic scope of our inquiry, we do not have a very large sample of long-term gas contracts from Algeria.

### II.5.5. Prices: seasonality of hub prices

(304) In order to compare prices paid by wholesalers under long-term contracts with hub gas prices, the average volume weighted monthly price in a smaller sample of long-term gas supply contracts<sup>182</sup> was compared with the day ahead price of gas at the three principal hubs in Europe, the NBP, the Zeebrugge Hub and the TTF, over the period January 2003 to December 2004.

**Figure 36**



Source: Energy Sector Inquiry 2005/2006

(305) It is evident from this comparison that long-term contracts are much less volatile than hub gas prices, as can be seen by the almost straight line in the graph above. This result is obvious in part because indexed formulae are often calculated using trailing averages of their components.

(306) Second, there is a seasonality to the hub gas prices which does not exist in long-term gas contracts as a whole. Whereas the hub gas price reflects a fall in demand in the summer months (April to September) and a rise in demand in the winter months (October to March), long-term gas prices remain constant throughout.

(307) This lack of reaction to demand signals means that the gas market does not react as it should to the signals coming from the seasonality of demand. This means that operators do not behave in a manner leading to the most economically efficient outcome which results in an inappropriate, sub-optimal, level of investment in storage.

<sup>182</sup>

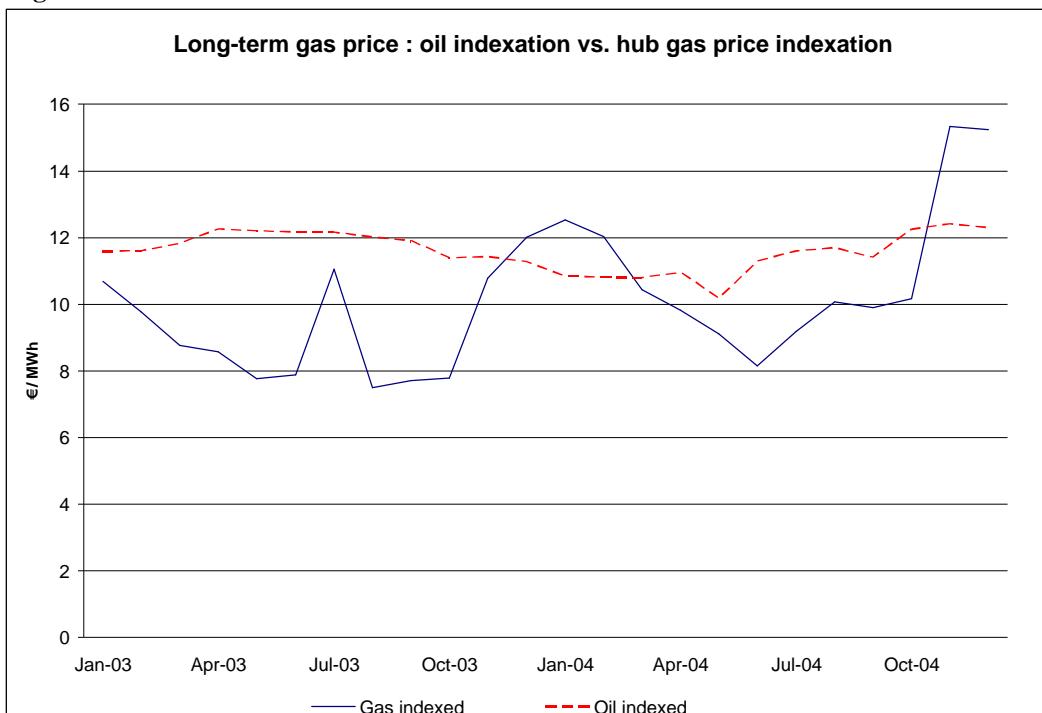
We analysed the long-term gas supply contracts of 11 major gas purchasers, with a total purchased volume of 270 billion cubic metres.

## ENERGY SECTOR INQUIRY – FIRST PHASE (Gas)

(308) The inquiry analysis also compared the actual price paid under long-term contracts, depending on whether the majority of the price indexation was to oil derivatives or to gas prices<sup>183</sup>. We discarded contracts which had mixed indexation pricing or which were fully indexed to other variables.

(309) We then calculated a volume weighted average monthly price for each month in the period January 2003 to December 2004, for long-term contracts mainly indexed to oil derivatives, and for long-term contracts mainly indexed to hub gas prices. The following graph, Figure 37, presents our findings.

**Figure 37**



Source: Energy Sector Inquiry 2005/2006

(310) The graph shows similar findings to those of our previous analysis. Long-term contracts indexed to oil are much less volatile than those indexed to hub gas prices. In this case, hub gas prices are below oil indexed prices for the majority of the analysis period, with the exception of the period November to February.

(311) The overall level of prices in oil indexed contracts was higher than in gas-indexed contracts for most of the period. However, the short periods when oil-indexation was cheaper were also the periods of highest volume (in winter). We suspect that, on a volume-weighted basis, there was no clear commercial advantage either way. However, the period of analysis is short relative to contracts durations, and developments subsequently have introduced considerable volatility (e.g. because of increasing oil prices), so this situation may have changed.

<sup>183</sup>

As for the previous graph, we took the sample of long-term contracts from 11 major gas purchasers, but this time we only kept those long-term contracts which were 50% or above indexed to either oil derivatives or hub gas prices. The total volume of contracts indexed to hub gas prices in our sample was 22 billion cubic metres. The total volume of contracts indexed to heavy or light fuel oil was 235 billion cubic metres.

**II.5.6. Interplay between a regulated and a “free market” price**

- (312) In a number of Member States, regulated retail prices co-exist with free market prices for some or all customers. A majority of Member States regulate prices to households and small businesses, while at least six Member States set a regulated price that is available to all customers. However, the proportion of end-users that have stayed with the regulated tariff varies between Member States.
- (313) Regulated tariffs will have a negative effect on competition, particularly if they are set too low, so as to make cost-based competitive prices unattractive. The anti-competitive effect may, in addition, be greatly strengthened if incumbent suppliers are permitted to adjust the terms of a "tariff" service to suit a particular customer, as has been alleged by some respondents from France. The inquiry has also been informed that competing suppliers in Spain are unable to offer interruptible services because they cannot compete with the terms offered under the regulated tariff scheme.
- (314) Newcomers have also strongly complained about political intervention in the setting of regulated supply tariffs, which has made their entry plans unsustainable and will further dissuade future entry into European energy markets.

## Conclusions

Prices in European long-term supply contracts are currently mainly linked to heavy and light fuel oil.

Companies from the Netherlands, Norway and Russia, three of the major gas producers in Europe, all sell long-term gas with a price which is principally linked to heavy and light fuel oil. Companies from the UK and other intra-EU producing countries have a more mixed indexation in their pricing formulae, including an element of hub gas prices.

Whilst the price paid for gas under long-term contracts by companies from Western and Eastern Europe are principally indexed to oil derivatives, in the UK hub gas prices are the most important variable in determining the prices paid by companies purchasing gas under long-term supply contracts.

The overall price level of gas is similar for all gas producing regions. The inter-quartile range of long-term gas contract prices seems to be dependent on the amount of hub gas price indexation present in the contract.

In almost 90% of cases where two or more producers are selling from the same field to the same wholesaler, the price indexation in the long-term contracts is the same. Furthermore, in almost two thirds of these cases, the same actual price is being paid by the wholesaler to the producers.

Long-term gas contracts exhibit a constant price throughout the period January 2003 to December 2004, whereas hub prices are much more volatile. In particular, hub prices change significantly from the summer to the winter, due to increased demand for energy. These price signals are not incorporated into the pricing mechanism of most long-term gas supply contracts.

Long-term contracts with prices indexed mainly to gas also display seasonality, but on a volume-weighted basis their price level tends to be in line with that of long-term contracts indexed to oil, which do not display any seasonality or response to demand signals. This is because contracts indexed to hub gas prices are more expensive during the peak winter months when most gas is consumed.

A number of Member States have some form of regulated prices which will have negative effects on competition, where these prices are set too low.