COMMISSION OF THE EUROPEAN COMMUNITIES

11. Jan. 2007

Brussels, 10.1.2007
SEC(2006) 1724

VOLUME III

COMMISSION STAFF WORKING DOCUMENT

Accompanying the

COMMUNICATION FROM THE COMMISSION

Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final Report)

{COM(2006) 851 final}

C. SECOND PHASE OF THE SECTOR INQUIRY

a. RESULTS OF THE PUBLIC CONSULTATION

I. Gas

Introduction

(618) Out of the 60 responses to the public consultation, 36 respondents commented on the gas part of the Preliminary Report. The range of organisations responding on gas included vertically integrated gas suppliers, new entrants, national regulators and competition authorities, consultancies and law firms, energy traders, transmission and distribution system operators, customers, industry associations and national government agencies.

(619) These organisations commented both on pan-EU problems as well as Member State specific issues. Some respondents focused only on the Member State in which they had their main operations, whilst others commented on their efforts to expand operations into other Member States. Respondents were mainly based in the EU although comments also came from a non-EU company with close ties to the EU market.

(620) The vast majority of the respondents to the Gas Sector Inquiry welcomed the report and its findings. There was broad agreement with the analysis presented in the report. Where

views were divergent, the focus was rather on the best way forward rather than on the analysis itself.

(621) In particular, views on structural unbundling varied. Incumbent gas companies argued against such an approach, whilst other types of respondents tended to be favourable. Out of all the respondents on the section dealing with gas, more were in favour of structural unbundling than were against it, while many did not declare a definitive position on this issue.

(622) The comments received on each chapter in the Preliminary Report (i.e. Concentration, Vertical foreclosure, Market Integration, Transparency, Prices) are reviewed in the sections below. Where respondents chose to comment on specific issues, their comments are discussed under the most relevant chapter heading.

Concentration

(623) The majority of respondents agree that EU markets are highly concentrated. Broadly speaking non-incumbent respondents tend to see this as a serious problem which leads to higher prices and market foreclosure. These companies were particularly critical of the levels of market dominance in wholesale and retail markets in a number of Member States. They expressed the view that, due to the ongoing dominance of incumbents, new entrants will continue to find it difficult to enter many EU markets, even with full implementation of the existing legislation.

(624) Many respondents outlined their experiences of how high levels of concentration were detrimental. For example, new entrants emphasised that they had problems getting access to gas noting that incumbents appear to be reluctant to trade, even in circumstances where it is clear they have "spare" gas.

(625) New entrants and customers also cited other barriers to entering the gas market including difficulty of getting access to network capacity, storage capacity and conversion capacity. There are also criticisms that existing dominance is frequently exacerbated by political benevolence and intervention in support of 'national champions'. Respondents also noted that rising wholesale prices have significantly enhanced the market power of incumbents.

(626) By contrast, vertically integrated incumbents tended to argue that there is a need for a limited number of strong market players in order to deal with the high level of concentration of gas producers outside the European Union as well as the financial risks in gas trading and the necessity for high investment in infrastructure. Incumbents take the view that concentration in itself is not the problem and that, in any case, market integration will alleviate concentration in national markets. They argued that the full implementation of the Directives and the additional transparency requirements in the Gas Regulation will go a long way to creating effective competition[318].

[318] One vertically integrated incumbent argued that *Germany* is less concentrated than other Member States and that there is a lot of potential for competition. By contrast, customers and new entrants in Germany are highly critical of the current market structure and complain that the high degree of concentration in Germany combined with the existence of long-term contracts is highly problematic for them. From their view-point, national / regional dominant positions still exist.

(627) *Gas hubs* were generally welcomed as a valuable potential source of liquidity which should enable new entrants to get access to gas more easily. However, respondents highlighted problems with low levels of liquidity on the hubs, as well as problems in getting access to hubs in terms of access to transport capacity to and from, and between hubs. Incumbents expressed the view that prices on new gas hubs are, however, too short term to provide indicators for new investment and that new players seem reluctant to 'assume a part of the investment risk' by entering into long-term transit contracts. They also noted that obliging parties to trade on hubs may lead to hubs being dominated by the same players and so discourage entry.

Regarding *suggested remedies* the following comments and proposals were made:

(628) Most respondents were fully supportive of the Commission's intention to launch individual ***anti-trust investigations***. Some were concerned about possibly anti-competitive behaviour by dominant undertakings such as cross subsidies and potentially predatory behaviour. It was also noted that more co-operation between National Competition Authorities and regulators would help to identify market power abuses. A focus on the compatibility of down-stream long-term contracts with competition law was also generally supported.

(629) Meticulous ***scrutiny of mergers*** was advocated in many responses. Respondents called for structural remedies to merger cases and for steps to promote liquidity through obligatory trading on hubs and gas release programmes (i.e. imposed auctions of parts of contracted volumes bought under long-term import contracts).

(630) ***Gas release programmes,*** as a potential remedy to market concentration in merger proceedings and other antitrust and regulatory proceedings, received particular attention. Incumbents and producers tended to be against the use of gas release programmes, except in some merger situations. They considered that such programmes are a serious breach of the principle of legal certainty, have negative effects on security of supply and would decrease incentives for investment. They also noted that in so far as suppliers have obligations to end-customers, they cannot rely on winning an auction for getting access to gas supplies. They also argued that gas release programmes may not have the required effect on liquidity in national markets as the gas released may be exported from the Member State where it is supposed to create more liquidity.

(631) Other respondents, including customers and entrants, were more positive about gas release programmes. Customers considered them to be a good way to overcome market concentration and support their more general use. Other respondents considered that gas release programmes can be an effective method to make gas available for new entrants, especially when the downstream market is dominated by one or a few players. However, there were many calls for proper terms and conditions when applying gas release programmes to ensure that markets are created with sufficient liquidity. Some respondents considered that, so far, existing gas release programmes had not delivered fully competitive markets and that such programmes must be combined with access to networks (e.g. by capacity release) as well as access to storage, flexibility and suitable balancing services. Suggestions were made that gas release "tranches" should vary in terms of size, duration (including short duration lots) and location, and that auctions should be carefully designed and implemented to prevent incumbents deterring entry by third parties.

(632) It was furthermore suggested that the effect of market concentration could be reduced by **promotion of liquid trading**, e.g. through an obligation to make the unused flexibility of existing long-term contracts (or a percentage of new long-term contracts) available to the wholesale market on hubs. Moreover a system of Hub to Hub trading (a European Title Transfer Facility) might be considered. Other proposed remedies to high concentration included ***asymmetric regulation*** for dominant companies in order to facilitate market entry as well as ***market share caps*** to establish liquidity. Respondents also proposed ***caps for long-term cross border capacity contracts.*** These should be limited in volume and duration which would lead to more integration of markets at EU level and thereby reduce concentration. Generally, in order to facilitate market entry, ***effective secondary markets*** for trading gas and capacity were called for by some respondents.

(633) Finally, deeper and ***more effective unbundling*** was frequently suggested as a remedy to high concentration since it would be likely to bring about more effective integration of the European gas market and reduce the significance of any individual market participant.

Vertical foreclosure

Long-term contracts and Take or Pay Agreements

(634) Many respondents commented on the role of long-term contracts between producers and suppliers and their effect on investment incentives. Most respondents were in favour of a stable framework for investments in new infrastructure. In this context, historical gas market players, including producers and suppliers, strongly favoured the continuation of long-term contracts, whilst entrants and customers were concerned that these contracts can foreclose the market.

(635) Historical gas producers and suppliers argued that long-term contracts are fundamental to the EU gas market. Although some acknowledged that there is a role for short-term business in the gas market, they maintained that the gas business in Europe is fundamentally orientated to long-term arrangements, especially given the increased dependence on imports. They argued that long-term contracts limit the risk for investors in gas infrastructure (transit, transmission, storage and LNG) and enhance security of supply. Others expressed the view that undermining existing contracts would breach existing property rights and hence reduce incentives to invest.

(636) One incumbent gas company considered that long-term contracts encourage external gas producers to supply to the EU rather than other countries. They argued that, without long-term contracts, external producers could more easily manipulate wholesale market prices. In their view the current framework allows customers to benefit from more reliable and stable supplies.

(637) By contrast other respondents agreed with the preliminary Sector Inquiry findings that a network of long-term contracts forecloses the market and that there is a lack of effective congestion management on pipelines where such contracts exist. They, therefore, argued that the awarding of long-term contracts should be rigorously monitored and that, in any case, strict use-it-or-lose-it (UIOLI) conditions must be applied. They called on the Commission to make clear that legacy contracts are not exempt from the provisions of the Gas Directive relating to regulated third party access. However they also accepted that long-term contracts do play an important role in investment decisions. They concluded that the Commission should issue guidance on this subject in order to dispel uncertainty and encourage investment.

(638) Other respondents considered that long-term contracts are acceptable in the upstream segment, to underpin investments, but share the Commission's concern at the existence of such contracts in the transmission network and at downstream level.

(639) Regarding the *take-or-pay obligations,* which constitute a characteristic feature of upstream long-term contracts, one vertically integrated gas market player argued that such flexibility is a necessary part of their long-term contracts since it takes into account the volume risk taken by them as a buyer and provides them with an alternative source of flexibility to balance their portfolio. Contrary to this view, entrants noted that take-or-pay obligations effectively internalise the role of wholesale markets in managing price and volume risks with the harmful consequence of impeding the development of more effective and efficient wholesale markets. They argued that liquid wholesale markets would obviate the need for such flexibility clauses since the market could then be used to

hedge the price exposures and provide flexibility to match customers' and suppliers' evolving requirements.

Vertical integration of supply and infrastructure

(640) Many respondents' comments chime with the analysis in the Preliminary Report. Entrants and customers described problems experienced with regard to vertical foreclosure. Customers, in particular, are clearly concerned about the market position and influence of vertically integrated incumbent companies. They are concerned that TSOs favour their own supply businesses and particularly that long-term contracts between TSOs and their affiliates are allowed to effectively dominate capacity on transport pipelines making market entry difficult. Energy intensive industries also made the point that they need to access producers and suppliers directly on a transparent market basis.

(641) Entrants are particularly concerned about what they consider to be serious anti-trust and regulatory issues in several areas: access to gas infrastructure (transit, transmission and storage); lack of transparency; and lack of effective anti-hoarding measures (secondary trading and UIOLI). They noted that non-discriminatory open access to transit capacity and other infrastructure (i.e. gas storage) is vital if the ultimate goal of a single European energy market is to be realised. Concern was expressed that the market structure suffers from systematic conflicts of interest resulting from vertical integration.

(642) Regulators [CEER] also identified insufficient unbundling as a major impediment to the development of competitive markets.

(643) By contrast vertically integrated incumbents appear to be satisfied with the current situation or point to expected improvements as new laws and rules on access, transparency and legal unbundling bed in.

(644) Regarding *suggested remedies*, there was, on the one hand, general support for ***competition law remedies*** especially in cases of discrimination by dominant companies.

(645) On the other hand, the discussion strongly focussed on the regulatory situation and the need for ***additional regulatory measures***. There was a lively discussion of the level and *effectiveness of the implementation of the Directive* and many suggestions indicated that there is a lot more to be done. A call for ***more effective regulation*** was generally supported. There was vivid discussion of the pros and cons of ***regulated versus negotiated third party access to LNG terminals, transit and transportation pipelines and storage***. In this context, regulators acknowledged the need for regulatory certainty for continued investment in the sector but agreed that ***'grandfathered' access rights*** under contracts signed before the Second Gas Directive[319] and the Gas Regulation[320] are in many cases preventing development of competition. Regulators suggested guidelines to clarify responsibilities of long-term capacity holders.

(646) Many respondents argued for ***more powers to national regulators and strengthening of their independence***. There was concern that many national authorities choose to implement only the minimum requirements of the Directives. One respondent

[319] Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas (OJ 2003 L 176/57).

[320] Regulation (EC) No 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks (OJ 2005 L 289/1).

commented that many national regulators do not have the resources, competence, powers or the willingness to change the market. These respondents called for more legislation to increase the powers of national regulators, especially so they can implement the ERGEG Regional Initiatives. There was also concern that decisions are often reached in a non-transparent & non-accountable manner. Risks that independence of national regulators would be curtailed by national laws were also highlighted. Views on the need for a ***European Regulator*** were split. German incumbents considered that ERGEG and CEER are sufficient. By contrast, some entrants argued that a ***pan-European grid code*** and/or a European regulator would facilitate required consistency and coordination for cross-border regulation.

(647) Some respondents were cautious about extending regulation provided that effective competition was developing well. They noted that regulation could be used as an important tool in areas where competition for various reasons has not yet developed but once competition takes off regulation should be gradually softened or removed. This argument was set out in particular in view of the UK market.

(648) A large number of respondents commented on unbundling and the discussion very much focussed on the issue of ***ownership/structural unbundling***. There was widespread consensus among respondents that effective unbundling is essential for fair and non-discriminatory access to networks.

(649) The majority of respondents to the gas Sector Inquiry were in favour of full structural unbundling. However, there were a range of views expressed from those strongly against full structural unbundling to those strongly in favour.

(650) Vertically integrated incumbent gas companies tended to be against full structural unbundling and argued rather for the full and effective implementation of legal unbundling. In their view, full structural unbundling is not necessary to ensure effective competition is delivered across Europe. Some noted that there is no legal basis, at present, for ownership unbundling. It was also argued that it is not empirically proven that ownership unbundling leads to more competition and a higher degree of transparency and network optimisation. Furthermore they considered the process of separating in ownership terms to be cumbersome and that it could be seen as amounting to expropriation. This would create significant uncertainty and cost for many companies, even in markets where competition is established. Finally it was argued that ownership unbundling was adopted in countries which had large gas resources and developed distribution networks and that the negative effects of separation were not felt so much in these countries.

(651) Other comments, while generally in favour of ownership unbundling, were undecided as to whether the conditions were right for enforced ownership unbundling. It was noted that some Member States have achieved full structural unbundling under the existing Directives, whereas the fact that, in other cases, not even the existing unbundling provisions have been fully implemented makes it difficult to assess the real benefits of additional measures. Other suggested that legal unbundling could be effective if rigorously regulated, but that the current situation was inadequate in this respect. They concluded that national regulators should, at this stage, prioritise effective implementation of existing unbundling requirements to ensure transparency and non-discriminatory access to networks and that Member States should take urgent action to

ensure that the unbundling provisions of the Directive are implemented in a manner which guarantees independent network operators.

(652) In aggregate, a larger group of respondents commented in favour of structural and/or ownership unbundling. These include customers, incumbent companies (from Member States in which there is already ownership unbundling), new entrants, regulators and traders.

(653) The consensus of this group is that if companies are unable to demonstrate effective internal separation, then a third legislative package should enforce full structural unbundling.

(654) The respondents in favour of ownership unbundling argue that there are the following ***advantages to ownership unbundling***:

- It removes an incentive to distort the market.
- It eliminates the concern that the network manager can set out investment plans to favour its mother company and prevent new entry by maintaining congestion at entry points to the network.
- It does not require the close and costly compliance monitoring which is needed to ensure that internal separation is effective.
- It encourages the TSO to maximise the use of systems, including for cross border pipelines.
- It increases market confidence and thereby encourages investment and entry.
- New entrants do not have to ask their competitors for capacity.
- It eliminates the concern that supply companies would discover confidential information while TSOs could more easily aggregate information to be published.
- It fills the gap in cross-border surveillance of unbundling provisions.
- It ensures a level playing field.

(655) Regulators [CEER] supported these views and called for further action on unbundling of TSOs. They considered that the goal of unbundling arrangements is to ensure, so far as is possible, that the TSO behaves independently of any commercial interests among the users of the networks, such that it acts to promote competition on the wholesale market. They argued that a TSO which is effectively unbundled will, for example, actively pursue transparency and information handling goals, since it would thereby generate confidence among its customers. Equally they argued that an effectively unbundled TSO would have the incentives to maximise the availability of network capacity, including through new investment where there is a market need, which can, for instance, be determined through a transparent Open Season procedure. Regulators were also concerned about a gap in the current rules regarding cross-border monitoring of legal unbundling: where TSOs in one Member State have ownership links with supply businesses in a neighbouring Member State, relevant unbundling rules need to be enforced across national borders. This view was shared by most traders.

(656) As far as DSOs are concerned, regulators pointed out that they have an important role in the customer switching process so it is also essential for effective competition that they do not discriminate between different suppliers.

(657) Two notes of caution were struck by respondents in favour of ownership unbundling. Regulators remarked that in some circumstances it would be necessary, even after ownership unbundling, to assess the impact of long-term contracts, which can have similar effects (on incentives and on the development of competition) as ownership links between companies, thus indicating a risk of contractual circumvention of ownership unbundling. Second, it was pointed out that ownership unbundling will only improve non-discriminatory access if it goes along with effective measures regulating the network activities.

Specific comments on storage

(658) A substantial number of respondents specifically commented on *storage*, where unbundling and access provisions lag behind those at transmission level. Whereas, as many comments pointed out, access to storage is crucial for new entry and the risk that foreclosure of entry occurs at this level is significant. In addition to the question of ownership unbundling, issues relating to negotiated versus regulated access ranked high among the comments received. Virtually all respondents who commented on storage were of the view that there is a ***need for further investment*** in storage capacity. [321]

(659) Vertically integrated incumbents acknowledge that most of the existing storage capacity is integrated into their other infrastructure and not the subject of specific unbundling measures. However, they asserted that storage is a competitive activity as there is a large potential relevant market for flexibility instruments including imports. They supported negotiated third party access system rather than regulated access and tended to be sceptical about the applicability of the use it or lose it (UIOLI) principle. Incumbents argued that long-term storage agreements are necessary because new storage facilities require a high level of investment which should be encouraged through a stable regulatory regime.

(660) Customers and entrants tended to take the view that the storage market is foreclosed by ***long-term reservations***. In their view, it is practically impossible for any new entrants to enter some markets, because there is not enough storage available. They are concerned that the current arrangements, where most access to storage facilities is under negotiated access terms, presents opportunities for vertically integrated incumbents to abuse their dominant positions on the storage market, including in ways which are very difficult to detect as the area is so non-transparent, and thereby prevent entry and distort competition. Amongst other things, customers argued that it is unclear to what extent storage facilities are needed by the (vertically integrated) TSOs for the operation of the network and therefore are not available to the market. They also argued that negotiated access to storage facilities and long-term reservations cause rigidity in storage use and prevent the realisation of efficiencies for users of storage. Some comments in favour of ownership unbundling of storage were included in the discussion above.

[321] In this context, some respondents also argued that Article 22 exemptions should be used to encourage new entrants in the storage market where this would not undermine the competitiveness of the internal market.

Market integration

(661) Many respondents considered market integration to be of utmost importance. Respondents argue that a harmonised European energy market will boost operational integration and thereby maximise efficiency. They noted that further integration and thus an increase in the scale of the market (volumes, number of players and liquidity) was an essential requirement to increase competition and security of supply. There was widespread ***agreement between respondents that there is a lack of market integration*** between Member States but there are diverging views on the reasons for and the solutions to this problem. There was also agreement on the need for investment in infrastructure, but there is disagreement over how to maximise the use of current infrastructure.

(662) Most vertically integrated incumbents agreed that there is a ***need for investment in both new and existing infrastructure*** (cross border transit infrastructure, new pipelines bringing gas from further away, storage and LNG facilities). With regard to gas transit they indicated that such investment is typically linked to long-term contracts, reservation of storage capacity and long-term down-stream supply commitments. They argued that future investment largely needs to also be based on similar arrangements – for example using the possibility for exemptions from requirements for third party access under Article 22 of the Gas Directive. In addition, many system operators and incumbent suppliers considered the sanctity of existing long-term transit contracts should be respected, arguing that these contracts give customers security of supply.

(663) Some incumbents also argued that unused transport capacity has a security of supply role for example in cold weather and for unforeseen circumstances. Other incumbents agreed that unused capacity can be released but only on an interruptible basis in order not to compromise security of supply.

(664) New entrants and customers explained in detail the problems they face due to a lack of market integration. These are generally centred on ***difficulty getting access to capacity to transport gas*** and difficulty transporting gas between hubs as a result of pipeline congestion. Entrants indicate that ineffective access to transit is a serious impediment to the development of the internal gas market. They noted that ***network congestion*** is both a commercial and behavioural as well as a physical problem as booked capacities in the pipelines often remain unused. They considered that mechanisms to reduce cross border congestion are inadequate and even in some cases non-existent. These factors have made it difficult for them to move gas between hubs. Taken in their entirety the arrangements for cross-border capacity allocation and congestion management in the gas sector are seen as ineffective by traders and customers and as frustrating the prospect of any future competition in the gas market. Some concern was also expressed that there is widespread non-compliance with new Gas Regulation[322] especially the articles relating to secondary capacity trading and short term UIOLI. Customers emphasised the need for speedy reforms indicating that the consequences of delay could be closure of industrial energy intensive plants in Europe.

---

322 Regulation (EC) No 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks (OJ 2005 L 289/1).

(665) German industrial customers and power companies in particular indicated that there is almost no cross-border competition or competition between the main TSO areas in the German gas market. These customers expressed the view that foreign suppliers can only get capacities, storage and balancing to a limited extent. They stated that industrial customers cannot switch suppliers as there is no rucksack principle whereby capacity moves with the customer. Instead, the old supplier keeps the capacity rights in the pipelines.

(666) Responses from customers also contended that the return on capital from network investments are generally much higher than rates on financial markets and that the Directive does not define a proper access regime to entry points.

(667) Finally, there was also criticism that market integration is impeded by political intervention in support of 'national champions'.

Suggested remedies

(668) Many of the suggestions set out by respondents to remedy the lack of market integration ***overlap with remedies suggested to other issues*** in this report. This refers in particular to the following points:

- Measures to create efficient and liquid wholesale gas markets also increase integration.
- Greater transparency is a pre-requisite for more integration.
- Tackling existing long-term cross-border contracts to minimise foreclosure furthers market integration. Part of the cross border capacity should be released to the market.
- New entrants expressed the view that market entry was the best way to increase integration.
- The Commission needs to fully play its role to prevent nationalistic behaviour by Governments that favour national incumbents and discriminate between companies of different Member States. This applies in particular (but not exclusively) to the scrutiny of mergers.
- Deeper unbundling will have an effect on incentives to fully use existing capacity.

(669) Two aspects received particular attention: how to maximise the use of the existing capacity (via secondary trading and the application of the UIOLI principle) and measures to stimulate investments in capacity by granting exemptions from third party access to new infrastructure under Article 22 of the Gas Directive.

(670) Regarding the ***maximisation use of existing cross-border capacity***, the development of an efficient system to release unused capacities (at least as interruptible capacities) was generally regarded as necessary.

(671) Incumbents tended to prefer secondary capacity trading to use it or lose it (UIOLI) mechanisms. They argued that secondary trading is the most effective method to promote access to capacity which is currently booked long term. Other incumbents agreed that if there is no functioning secondary market for transit, UIOLI should be applied to unused capacity on an interruptible basis.

(672) Entrants, customers and regulators called for effective UIOLI mechanisms. They argued that such mechanisms, on which some respondents make more detailed suggestions, would oblige the current holders of capacity to release and transfer non-used transit, transportation and storage capacity. Some respondents argued that holders of unused capacity should not only be obliged to make the free capacity available on the market but also be obliged to actually sell it to other market players.

(673) Entrants, customers and regulators also believed that, as prescribed by the Gas Directive, transit should be subject to regulation and to the control of independent regulators. In their view, this should be carried out with the objective of establishing trans-national cross-border market areas and to create a single European gas market. Transit tariffs should therefore be regulated and cost reflective. Network tariffs should take into account the cost of capital of transmission companies according to the WACC method and that this would lead to a reduction in transit costs. Comments from this group also suggested that the 'essential facilities doctrine' plus new or reinforced powers for regulators should be used to ensure freedom of trade in gas over major pipelines.

(674) ***Exemptions from third party access to new infrastructure*** under Article 22 of the Gas Directive and the current system for granting them are generally supported by respondents who commented on this issue.

(675) Some respondents who are beneficiaries of exemptions expressed the view that an exemption can be a good way to protect an investor against regulatory risks after the investment in infrastructure has become a 'sunk cost'. They also pointed out that Article 22 has up to now been fundamental in enabling investment in new import capacity in the UK and that the rigorous scrutiny by the Commission and the national regulator will protect competition. In the view of these companies, the level of exemption (e.g. whether there should be a cap of 80% of capacity) should take into account individual merits of the project and whether there are any market power issues. The current case by case approach enables regulators to impose conditions such as measures to prevent capacity hoarding, allows investment to be funded privately and can enhance competition.

(676) Regulators and other commentators expressed the view that exemptions must be assessed according to the principles set out in Article 22 of the Directive. This implies, for example, that a new LNG facility should be granted an exemption if the undertaking benefiting from it has a low market share and where this infrastructure will allow such a company access to downstream markets (allowing entrants to challenge incumbent's dominance of imports). However they noted that if the infrastructure is proposed by a dominant company then any exemption could contribute to reducing the contestability of downstream markets.

(677) Customers and other market players were of the view that, as a rule, national regulators should determine the conditions, tariffs, access and use of networks in consultation with the entire gas market including customers in order to improve the efficient operation and integrity of networks. They argued that if exemption from TPA is granted then effective UIOLI requirements should be placed on infrastructure owners and capacity owners. Generally, they considered that exemptions should be limited to the absolute minimum. German industrial customers pointed out that German law provides for an exemption from the cost-oriented calculation of network fees when there is potential competition in other pipelines ("Leitungswettbewerb"). They considered that this element of the German

EnWG is in contradiction to the Gas Directive as under EU law the benchmark test should be applied only in a complementary way and not as an alternative to cost related tariffs.

(678) In addition, many respondents, including some incumbents, entrants, customers and regulators considered that **regional network cooperation** is an important step on the way to pan-European integration. The European Regulator's Group for Electricity and Gas (ERGEG) highlighted their regional initiatives programme which it sees as an intermediate step to EU market integration. They considered that key issues to be tackled are: identifying barriers to gas hub development, addressing gas quality issues, looking at the cross border 'regulatory gap', regulatory barriers to infrastructure investment in Member States, access to networks, information provision and more coordinated procedures between TSOs and national authorities to enhance cross border flows. They also noted the possible issues of removing the current pan-caking of network access tariffs and the longer term possibility of a single EU TSO. This initiative was also welcomed by other respondents.

(679) In addition to issues related to transit management, there were various proposals to promote harmonisation including:

- requesting network operators to establish standard mechanisms for switching customers;
- requiring network operators to offer shippers the possibility of converting gas qualities under fair terms and conditions;
- aligning balancing rules across markets and concluding Operational Balancing Agreements (OBAs) between neighbouring TSOs;
- harmonising rules for accessing existing storage facilities throughout Europe, even beyond the status of the voluntary GGPSO guidelines;
- publication by network operators on capacity and tariffs in a harmonised and comparable form.

Transparency

(680) The majority of respondents acknowledged that transparency is an important issue. It was pointed out that greater transparency will increase confidence in price signals, which is important for trading and investment decisions. It would also increase effective utilisation of energy infrastructure and market liquidity. Traders, entrants and customers detailed the problems they face due to the lack of transparency which supports the analysis in the Preliminary Report. They strongly recommended more transparency to encourage entry and support the development of wholesale markets. In contrast, incumbents tended to express concerns related to increased transparency mainly due to fears related to confidentiality.

(681) Entrants, customers and traders consistently expressed ***concerns over the lack of transparency*** they have experienced in the market to date. More transparency regarding information on the capacities of pipelines and storage facilities was repeatedly requested. They contended that the lack of transparency added to the badly functioning use-it-or-lose-it mechanisms and worsens the network congestion problem. One customer pointed out that when information is published it is often too late and so does not enable consumers to consider it in decision making. Respondents also highlighted their concern

that lack of transparency surrounding the operations of TSOs tends to benefit the incumbent gas supplier.

(682) Network users generally called for greater transparency in all Member States and more accurate, comprehensive information published on a daily basis regarding transit and transportation capacity, network maintenance, storage, LNG and access to networks. This was highlighted as an essential feature to ensure non-discriminatory access to infrastructure, allowing all actors to have the same level of information. Many alleged anti-trust and regulatory issues related to access to gas infrastructure in continental European markets were seen as related to a lack of transparency.

(683) Regulators also took the view that there is a need for more transparency on key market information as well as a process for TSOs to manage confidential data. Although some respondents expressed views on whether more transparency would increase the likelihood of collusion, regulators consider that fears of collusion should not cause too much concern at this stage since more transparency would help regulators detect collusion. Others concurred arguing that collusion would be more difficult to detect without additional transparency measures.

(684) As an example, respondents commenting on problems in the North-West Europe region during winter 2005/06, especially between the National Balancing Point (NBP) in the UK and the Zeebrugge hub in Belgium argued that it is striking to what extent the lack of transparency has even prevented precise identification of physical bottlenecks or unexpected market behaviour.

(685) Some incumbent operators also argued that the criticism regarding transparency would be obsolete once the capacity for the supply of final customers is guaranteed (e.g. through application of the rucksack principle).

Suggested remedies

(686) In the view of entrants, customers and traders ***publishing more information is essential.*** It was frequently considered that more information could be released under existing legislation and that this would bring significant and rapid improvement. But many respondents considered that further transparency obligations will be necessary to ensure a level playing field.

(687) Entrants, customers and traders advocated the removal of the three or more rule in the Gas Regulation whereby information may be restricted in the event that only one or two shippers are using capacity at a particular point in the network. Incumbent gas companies disagreed with this and expressed their concerns over confidentiality of business information and are in favour of the ***'three shipper rule'***. Some respondents were in favour of publishing ex ante figures only in aggregated form or only indicating a range in order to help to protect commercially sensitive data of specific companies.

(688) Infrastructure operators proposed a Code of Conduct for transmission, which they believed should be sufficient to provide necessary transparency. Some argued the case for getting more experience with the existing rules on transparency before changing the regulatory framework.

(689) Respondents called on the Commission to actively implement and ***enforce transparency and anti-hoarding measures***.

(690) One customer group would like to see the establishment of a statistical bureau such as the AEI (Agency for Energy Information) in the USA to supply transit, storage and turnover-per-hub information.

(691) Regulators highlighted that ***transparency and information handling will be a key theme in the Regional Initiatives***. They state that the next steps may be to strengthen the transparency requirements in the Gas Regulation. In the second half of 2006 regulators will start work assessing the effectiveness of the new Gas Regulation.

Prices

(692) Comments on prices concerning the gas-oil price link and regulated tariffs were set out in detail. There were also various other comments regarding pricing including reasons for parties selling gas from the same field using the same price formula.

Gas-oil price link

(693) Respondents expressed starkly contrasting views regarding the role of the oil-gas price link, which the Sector Inquiry has confirmed is used in most European long-term gas contracts. Generally speaking the views fall into three group: incumbents and producers argued insistently for the link; there are a group of regulators, entrants and traders who considered the link as a symptom of the lack of competition rather than a problem to be addressed in isolation; and finally there is a group of entrants, customers and government agencies who argued strongly against the link.

(694) ***Incumbent gas companies and gas producers argued more insistently for the link.*** They see the benefits of the oil price link in its transparency, stability, reliability and its ability to enable investment. They contended that the link is a logical solution to low levels of liquidity on gas spot markets. They considered that the link helps to avoid high volatility on spot markets which would be detrimental to suppliers and consumers arguing that this is particularly important in avoiding shocks such as the situation in Ukraine in winter 2005/06. They suggested that the resulting relative price stability is, from a financial point of view, a merit in any business. Some respondents in this group also argued that the UK NBP, in any case, follows a similar long-term trend to oil prices and that therefore oil price indexation does not lead to higher prices than otherwise. A further argument made by incumbents is that more volatile gas prices in the UK have not provided pertinent investment signals notably for storage infrastructure. However, one incumbent acknowledged that there is volatility in the oil market too and that prices linked to oil are not necessarily more stable.

(695) Incumbents and producers tended to argue that a long-term correlation between oil and gas is inevitable since the products are long-term substitutes. One producer took a more nuanced view arguing that the regional supply-demand characteristics of gas resulting from investment decisions mean there will always be specific relevant pricing factors to the gas market in addition to the geopolitical and other factors driving the oil market. It concluded that the oil link will continue to have a role for base-load deliveries between producers and large customers even if liquid gas markets are established, but implied that

there are other factors to be incorporated into gas prices as well. In its view the gas specific factors could add uncertainty which would result in higher price volatility. A higher level of risk could, however, lead to increased cost of capital with higher prices as the ultimate outcome.

(696) In support of these arguments another producer argued that oversupply of gas is unlikely to occur, and that Europe is on its way to becoming a sellers' market. Given this, it argued that a consumer would not want to risk the contract price being unduly influenced by the seller, for example on a local hub and so it may prefer an oil price link.

(697) Still another producer argued that oil indexed contracts factor in the price of flexibility since most annual oil indexed gas prices will include an element of seasonality. Prices will not fluctuate in summer/winter in the same way as hub prices but over the year these differences in fluctuations will average out.

(698) ***Many other respondents, including regulators, traders and entrants were of the view that the oil-gas link is a symptom of the lack of effective competition rather than a problem to be addressed in isolation.*** These respondents argued that with effective gas-on-gas competition on liquid wholesale markets oil indexation would disappear or be less prominent. Some respondents were of the view that regulators and the Commission should not focus on contract prices and on the indexation of gas prices but on ensuring that the conditions for competition are in place so that gas prices reflect gas market fundamentals. Some of these respondents argued that until there is more liquidity on gas markets it is important not to stifle innovation on pricing by excluding or limiting any particular types of price indexation. One customer group agreed that buyers should have the freedom to negotiate contracts, but they also argued that if there was adequate cost transparency then there would be no need for the oil link.

(699) Some UK respondents cited how competition has developed there. They noted that before liberalisation in UK most contracts were linked to oil. However as a result of market reforms, they argued that the UK gas forward market has become a functional trading market with efficient price-formation independent of the oil price.

(700) Customer groups argued that gas operators tend to refer to the so-called 'market price' (from publications) which is not connected to oil products, whilst most contracts with producers are, however, linked to oil prices. They contended that this situation makes it very difficult to know the underlying market fundamentals. They called for all price indices to be published where these are relative to real concluded transactions and for prices to be regularly checked to ensure they are not used by dominant market players to fix future prices. Also a trader called for the Commission to further investigate the gas oil price link.

(701) Finally there are the ***views of respondents who are completely against the oil price link.*** This group includes regulators, customers, traders and government agencies. This group of respondents tended to argue that the currently existing price setting mechanism should be replaced by a system in which an effective interaction of supply and demand fundamentals will be possible. They argued that this would enable long-term contracts based on true negotiations between producers and buyers. They called for transparency in price setting mechanisms.

(702) One regulator argued that oil and gas can be regarded as long-term substitutes, but that short run substitutability is limited to some uses such as dual fired power plants. They considered that the UK use of prices from a liquid hub more accurately reflects the supply-demand conditions and gives better investment signals. In their view the Sector Inquiry indicates that non-liquid hubs and the built-in flexibility in long-term gas import contracts appear to perpetuate the oil-price link. They considered that as long as incumbents do not have enough incentive to trade on existing hubs the price formation of gas will still reflect the currently low levels of liquidity, compromising the move from oil indexed price to gas prices. They contended that even with greater hub liquidity hub prices would, for the time being, tend to reflect oil indexation in import contracts. In general, they considered that the main issue is the contractual relations with gas producers and that oil indexation favours producers, if in the long run oil markets tend to be tighter than gas markets. They also acknowledged that for producers to accept hub gas prices there needs to be more hub liquidity.

(703) Another respondent estimated that the annual cost to the EU of gas prices remaining linked to the price of oil could, under certain assumptions, be extremely high (a value of around 50 billion Euros was mentioned). It considered that this indicates that the price benefits to EU consumers of introducing gas-to-gas competition are likely to be significant.

Regulated tariffs

(704) Many respondents commented on the role of regulated supply tariffs in EU gas markets. A ***key concern*** was ***that prices*** might be ***set below the wholesale price benchmark*** and that this would lead to new suppliers not entering or being squeezed out of the market. Concerns were expressed in particular in relation to tariffs in France, Spain and new Member States.

(705) The Council of European Energy Regulators (CEER) expressed the view that domestic prices should not be set by government but independent regulators.

(706) In Spain entrants were concerned that government-set tariffs bear little relevance to the real cost. However, it was pointed out that these regulated prices should disappear by 2008. Entrants were particularly concerned about Spanish regulations which determine that supply of the regulated market is made preferentially from pipeline gas purchased from Algeria. The entrants pointed out that the incumbent faces no risks with this contract -if it overshoots the required quantity it gets to keep the excess and sell it on the market at inflated profit; if it undershoots it gets to buy more on the spot market for which it is compensated (the regulated price includes an element of spot price in the calculation).

(707) Entrants to the French market and the national regulator also expressed concerns that the government-administered tariffs are below cost. In particular one entrant commented that supply tariffs applying to eligible business customers connected to the distribution networks create a significant barrier to competitive entry in this market. The entrant called on the Commission to address the general issue of protection of incumbent positions through low tariffs that are disconnected from underlying economic inputs.

(708) Concerns were expressed by regulators and entrants that although the principles underlying French tariffs do allow the possibility to have competitive tariffs, the last price control by the Ministry of Economy set the tariffs at a lower value than would permit it to cover the increase in the incumbent's costs. The respondents considered this a serious impediment to effective competition. Even the French incumbent gas supplier expressed concern that the maintenance of regulated tariffs could have negative effects on competition and considers that ***regulated prices should reflect costs***.

(709) Another respondent was concerned about tariff regulations in new Member States, which it alleges leads to cross-subsidies from industry to residential customers and prevents the reflection of real costs in gas prices.

Other comments on prices

(710) Two respondents defended reasons for different companies, selling gas from the same field while using the same or very similar price conditions. They noted that price and conditions tend to be more or less similar if the quality, production profile and entry point are the same. They argued that customers are likely to demand similar terms from other parties involved in the same field.

II. Electricity

(711) The electricity part of the Preliminary Report received comments from 45 respondents, including undertakings operating in the sector, their associations, national authorities and other European stake holders. Geographical coverage can be considered as representative since the respondents from 13 Member States, and one non-member state, comment not only on their respective national markets but also on the broader EU issues. Moreover, a number of comments come from the sector associations which group market players from all over the Europe.

(712) By and large comments on the electricity part of the Preliminary Report are positive in tone and supportive to the Commission's findings. The respondents welcomed the Commission's open approach which has provided them with a chance to express views on the issues raised in the Preliminary Report. In general, the respondents shared the Commission's concerns related to current market developments arguing that there is insufficient progress in the implementation of the liberalisation package and generally restricted prospects for future market development. Comments include numerous proposals for steps which should be undertaken, at European and national level, in order to promote competition and to encourage investments in the sector.

(713) A limited number of respondents also took a more critical stand towards certain parts of the Commission's analysis and their specific implications for the sector, for instance as regards the need for further unbundling. This is, however, understandable if one takes into account the interests defended by the respondents in question, in particular those speaking on behalf of the incumbents.

(714) Most of the comments the Commission has received can be directly linked to the particular issues discussed in the Preliminary Report. Therefore, the structure of the present summary will reflect, in a natural way, the order of topics from the Preliminary Report. This summary therefore begins with the outline of comments relating to the Preliminary Report's introductory issues concerning the regulatory framework and functioning of wholesale markets and continues with comments on the five main issues analysed in the Preliminary Report, i.e. market concentration, vertical foreclosure, lack of market integration, lack of transparency and prices. Finally, an abstract of comments on the potential remedies sketched in the Way Forward chapter of the Preliminary Report will constitute a closing part of this summary.

Introduction issues

Regulatory framework

(715) The general perception is that the expected results of the liberalisation process have not yet been achieved. However, the respondents are divided when it comes to pointing out specific reasons of this failure. A group of the respondents whose interests can be identified with the incumbent operators considered that the current regulatory framework will prove to be sufficient once fully implemented. In the opinion of this group, any further regulatory intervention, before the existing framework is truly in place, would be premature.

(716) The remaining respondents, who commented on the issue, were more critical of the current regulatory framework. Besides stressing the importance of effective implementation of the current framework, they advocate supplementary legislative steps to address among other things: the lack of market transparency and the need for a more coherent approach by the national regulators and TSOs to create a truly European market. In the view of many respondents, current regulatory policy lacks coordination which obviously hampers market development. This coordination gap, in the opinion of two respondents, could be closed by establishing a pan-European grid and/or a European regulator.

(717) Comments on the current regulatory framework also related to the existing unbundling provisions, which are briefly summarised in the part on structural remedies below. The imperfections resulting from the present Emission Trading Scheme (ETS) were also identified by many participants.

Functioning of wholesale market

(718) A similar division of views can also be noticed in comments relating to the functioning of wholesale markets. The respondents linked to vertically integrated undertakings showed much more confidence in the wholesale markets, whereas other respondents were less confident.

(719) A number of shortcomings were identified in the way that the wholesale markets are currently operating. They were concerned with: (a) supply-side market concentration, (b) structural problems in transmission (e.g. with a view to allowing cross border trade), (c) "parallel bidding" on the neighbouring markets for CO2 emissions and for natural gas and the impact of such parallel biding on the electricity market, (d) short and long-term withdrawals of generation capacity by market operators in control of several plants representing a cross-section of different technologies, (e) suspicious pricing strategies by certain large market operators, (f) excessively large bidding steps in terms of volume on some power exchanges (Powernext), (g) opacity of OTC markets and (h) absence of a forward market (Italy).

(720) At the same time, however, a few respondents mentioned considerable progress as regards market liquidity both in terms of increasing number of market participants and increasing trading volumes over the last years.

Concentration and market power

Concentration in generation

(721) The most common opinion among respondent on the concentration in generation was that prevailing high level of concentration constitutes an important obstacle for the development of competitive electricity market. It was noted that the current situation is a consequence of the pre-liberalisation market structure and might be further aggravated by recent consolidations. Many of the respondents pointed to cross-border market integration as the means to achieve a more balanced market configuration. In this context, the CEER/ERGEG Regional Initiatives were mentioned as one of the means to push forward further market integration. The Commission was also urged to scrutinise meticulously future mergers and be vigilant in its control of state aid. Other suggestions ranged from a recommendation to introduce a positive discrimination of newcomers and

revamped VPP programmes to a call for the co-operation between competition and regulatory authorities in order to develop more systematic and wider market surveillance mechanisms.

Concentration in trade

(722) As in the case of concentration in generation, many respondents considered cross-border market integration and VPP programmes as ways to counterbalance market concentration in trade. One commentator, for example, proposed establishing thresholds that would oblige the incumbents to trade certain minimum volumes on the wholesale market.

(723) The respondents, even if not always explicitly, made a link between concentration in generation and in trade. One respondent argued that, in the assessment of market power, concentration in trade is much less critical than concentration in generation. This is because the spot prices usually hinge on the offers made by the sellers controlling generation capacity. According to the same respondent, the spot market outcome is decisive for setting forward prices, which in turn means that concentration in generation has spill-over effects not only for spot prices but also for forward trading and that market power may remain an issue of concern regardless how favourable the concentration ratio in trade seems to be at the first sight. Another respondent added that the presence of traders on a given market does not necessarily reflect the true confidence of other participants in that market. Traders might be attracted by the arbitrage possibilities generated by price volatility.

Price setting

(724) Views on the price setting mechanism are divided. Customers as well as some other respondents lack confidence in the current wholesale market prices. One respondent gave an example of one particular company for whom a comparison of costs against day-ahead prices has revealed, for particular hours, a suspiciously high number of negative margins. According to the respondent, such an observation may indicate an abusive conduct by the market player whose interests lie in deterring new entry by reducing prices for certain hours in combination with cross-subsiding from other periods where entry is less likely.

(725) On the other hand, there are, as well, respondents who doubted whether market players have such an ability to distort prices over a sustained period of time.

(726) Several respondents pointed to the ETS scheme as to a likely source of price distortions. Stranded costs payments schemes on the Iberian peninsula were also believed to distort competition.

Withdrawals of capacity

(727) As already mentioned above, there were several respondents who suspect that short and long-term withdrawals of generation capacity take place and that operators in control of several plants representing a cross-section of different technologies may have incentives to engage in this type of conduct.

(728) It is in this context that one respondent pointed out that there are certain markets on which every big supplier is in fact, at present, indispensable to meet residual demand. The fact of being indispensable may give such a supplier scope for strategic behaviour in

the way it operates its generation capacity. However, the opposite view was articulated by one of the power exchange operators.

Other comments relating to concentration

(729) A limited number of respondents also made general remarks on the specificities of market analysis in the electricity sector. They advocated a narrow definition of the relevant electricity market, for example on the basis of each hourly resolution as a separate product market. In this context, it was noted that the traditional tools of market analysis like concentration indices might not be straightforwardly applicable to the markets characterised by very specific technical conditions. One of the respondents suggested that the analysis should be restricted to individual technologies, for instance gas-fired plants. In other words, the analysis should focus on a group of the plants operating in the technology or technologies with marginal costs close to the system price at any particular time period. Another respondent would prefer that the price analysis took into account not only of price levels but also the average annual prices and profits. In their opinion, the analysis of certain hours in isolation may provide biased results because it ignores a substantial number of hours when prices would be expected to be low due to the must-run production.

Vertical foreclosure and vertical integration

Vertical integration between generation and retail activities

(730) The respondents representing the electricity industry considered vertical integration to be a consequence rather than a cause of insufficient liquidity. Taking into account the current market conditions, their view was that vertical integration should be regarded as a legitimate business model. However, it was also argued by one respondent that vertical integration provides scope for negative retail margins. Such a cross-subsidisation of retail activities with the profits generated further upstream may allow for the limitation of new entrants' ability to compete effectively for final customers.

(731) Several respondents called for liquidity to be increased via an increase of the quantities being currently released under the Virtual Power Plant (VPP) programmes. One of the respondents draws attention to a number of constraints that reduce usefulness of current VPPs. The effectiveness of VPP is believed to hinge on its internal design, including its pricing and other terms, as well as on external conditions, including concentration of the market on which a VPP's purchaser is supposed to sell the purchased power and/or ability to acquire cross-border capacity that would correspond with the size of VPP. The latter option is needed to provide protection against the risk of adverse price movements. A number of respondents also agreed that power purchase agreements (PPAs) between generators and suppliers also can add to the drying-up of liquidity.

Vertical integration between supply and network activities

(732) The respondents seemed to agree on the fundamental premise of network unbundling: that is on the importance of transparent and non-discriminatory access to the network. Nevertheless, the views departed sharply over the provisions required to ensure efficient unbundling. Those respondents related to vertically integrated groups contended that as long as the current unbundling regime is not fully implemented it is difficult to assess the

real benefits of further initiatives and that it is too early to discuss any further actions aiming at improvements of the current regime.

(733) Other respondents, who represent more diverse interests, including customers, independent traders and suppliers with no transmission affiliates, considered that further unbundling of network activities is required to solve the existing problems. The respondents underlined that a lack of effective unbundling severely distorts market as vertically integrated incumbents have little or no incentive to provide adequate access to transportation/distribution infrastructure. Moreover, it was further argued that TSOs in common ownership with dominant incumbents often lack the necessary incentives to invest in additional cross-border capacity where this would facilitate competitive access. These respondents also linked insufficient unbundling with such practices as cross-subsidising of electricity prices and discriminatory use of data relating to customers.[323]

(734) Apart from the general criticism spelled out by many respondents arguing that unbundling is not proving to function well on most of the European markets, a few comments were more specific. For example, one respondent expressed his disbelief in the effectiveness of the Chinese walls introduced by the integrated businesses and pointed to gains from an exclusive access to information within integrated entities. Another respondent noted that the grid owners have an additional advantage since they can use their network assets as a collateral to acquire better conditions for financing the development of their supply activities.

Market integration

Current institutional framework and investments in new cross border infrastructure

(735) A majority of respondents criticised the current institutional framework for the operation of cross-border networks and complained, in particular, about insufficient capacity in cross-border links. In their opinion, the present situation is due to inefficient allocation mechanisms and incompatible market rules. In addition, the issues concerning cross-border infrastructure were thought to be left in a regulatory vacuum where the current regulatory framework fails to create the right incentives for TSOs to expand their networks, in particular since the use of congestion revenues is not prioritised to the expansion of cross border capacity. Comments were also made on the need for an increased focus on coordination between TSOs. It was also claimed that, in the absence of regulatory incentives, that TSOs may find it profitable not to increase but actually to reduce available capacity. One of the respondents called for a review of how TSOs arrive at capacity values. Another respondent suggested that current problems with the unsatisfactory level of investments are due to insufficient unbundling.

(736) A number of the respondents referred to the 10% target of interconnection between national grids discussed between Heads of State at the Barcelona summit in 2002. they suggested that such arbitrary targets may no longer be useful reference point for cross-border capacities. Instead they argued that investments should be undertaken where they are justified by cost-benefit analysis on a case by case basis. Furthermore, several respondents noted that in order to enhance capacity in cross-border links, investments should also take place in the internal national networks because internal congestion can

[323] A number of market participants preferred to comment outside the public consultation. They expressed concerns, in particular with respect to the connection of new power plants to the grid of vertically integrated electricity companies.

often have a negative effect on capacity available in the interconnectors. The respondents also pointed out the difficulties in acquiring necessary permissions from national and local administrative authorities which TSOs face before any investment can actually start.

Allocation of existing cross-border capacity

(737) All the respondents agreed on the need to implement non-discriminatory market-based methods for the allocation of cross-border capacity in line with Regulation 1228/03. However, the respondents' views departed over the specific methods that should be adopted. The respondents can be split into three main groups. The first group argued that implicit auctions are more efficient than explicit ones. For example, the power exchanges contended that 'market coupling' will result in improved utilisation of interconnector capacity and in more capacity available for trading thanks to netting of electricity flows. Those respondents with experience from the Nordpool market(s) also advocated a shift to implicit auctions as the main allocation mechanism for cross-border capacity. However, it was noted that the allocation mechanism can only be changed from explicit to implicit if spot markets are in place and are sufficiently liquid.

(738) The second group was against implicit auctions and 'market coupling' as they argue that such mechanisms are more opaque and complex than explicit auctions. Moreover, implicit auctions were claimed to give unnecessary influence over the wholesale market to power exchanges and imply a restriction over the way electricity is traded. In particular, the logic of implicit auctions, according to which cross-border energy flows depend on the bidding results and clearing prices on respective power exchanges, was considered to be difficult to reconcile with the bilateral model of OTC trade which are not necessarily cleared on a power exchange platform.

(739) Finally, the third group favoured a combination of the explicit auctioning of forward transmission capacity and day-ahead market coupling. Such a mix was believed to guarantee efficient cross-border competition and the maximisation of the usage of existing capacity.

(740) A few respondents argued that many of the present inefficiencies in the current explicit auctions are not a consequence of explicit auctions *per se* but of the time gap between the nominations of physical capacity usage and the clearing bids and offers into power exchanges. Therefore, the key to improve the efficiency of explicit auctions is to work on better cooperation between TSOs and on the harmonization of clearing times at power exchanges.

(741) Several respondents were concerned by existing capacity reservations under long-term pre-liberalisation contracts. It was argued that this leads to a situation in which allocations on a number of the critical borders are not made on the basis of a market-based mechanism. One respondent also calls for the strict application of the use-it-or-lose-it principle.

Transparency

(742) With very few exceptions, respondents all asked for more transparency arguing that this is necessary to ensure a robust mechanism of price setting and to reduce price volatility, which in turn reduces barriers for new entrants. The respondents would welcome the creation of an European-wide level playing field in terms of the availability of standard

information on the functioning of energy markets. This calls for an effort of harmonizing transparency requirements across the European Union. The levels of transparency achieved on the Nordic markets and in the UK were most often cited as benchmarks against which progress on other markets should be measured.

(743) As regards the data considered to be indispensable for effective decision-making, the respondents mentioned among others: (a) data concerning system bottlenecks, (b) information on system load, (c) real-time information on generation, (d) detailed maintenance schedules, (e) information on unplanned outages and (f) progress against CO2 emission targets by Member States. In a few instances, the respondents' suggestions differed with each other in the degree of data disaggregation that is required for market transparency. While some respondents regarded aggregated production data as sufficient, others believed that the aggregation must be at the lowest level consistent with protecting commercial confidentiality.

(744) Several respondents mentioned different initiatives to induce a more harmonized approach to the issue, for example the Euroelectric Roadmap for Transparency, the ERGEG/CEER initiatives like the Guidelines for Good Practice (GGP) on Information Management and Transparency in Electricity Markets and the GGP for Electricity Balancing Markets.

(745) In the context of the discussion on transparency, one respondent made the remark that independent TSOs tend to release more information than those that are not unbundled.

Price issues

External factors possibly explaining price increases

(746) The impact of the ETS scheme on electricity prices continues to cause serious concerns among industrial customers. They considered that the ETS scheme now has a decisive role in setting electricity prices at unfairly elevated levels providing the producers with windfall profits. The industrial customers called for urgent relief, for example that electricity producers should not be allowed to feed the CO2 prices into wholesale market prices. In addition, windfall profits resulting from the process were considered to disturb competition by strengthening unduly the incumbents.

(747) Others maintained that the CO2 prices are now a part of the cost function of generators and, for that reason, have to be priced in to wholesale market prices. In the opinion of one respondent, the problem is in fact more related to the currently observed mispricing of CO2 caused by the imperfections of the CO2 market and the lack of information on actual electricity generation disaggregated by fuel type.

(748) Another respondent contended that the higher prices reflect not only the increases in the CO2 and fuel prices but also the tighter supply-demand balance. They considered that this should be considered as a natural price signal necessary to trigger future investments in generation capacity. Finally, one respondent argued in favour of long-term contracts between suppliers and final customers believing that such contracts protect a purchaser from the changes in short-term electricity prices that can be disproportionately inflated by the prices of CO2 emissions.

Regulated supply tariffs and special support schemes

(749) In general, the respondents expressed a high level of discontent with the existence of regulated tariffs which are believed to have severe anti-competitive and protectionist effects. In the view of many, the termination of supply price regulation is a precondition for market functioning. Several respondents substantiated their comments with examples on how the French and the Spanish regime create serious market distortions and substantially reduce the room for new entry.

(750) A few respondents considered the need for some possibility of price intervention to be retained for the protection of vulnerable customers. However, the view was also expressed that price caps and competition can co-exist provided that the regulators ensure the caps are not set below the economic cost of supply.

(751) As regards special support schemes for energy intensive users, the Commission was urged to scrutinise them in detail.

Way forward

Competition law remedies

(752) A number of the respondents expressed support for the Commission actions to tackle the most serious problem areas where competition law infringements are identified. One of the comments most often made relates to the need for tough merger scrutiny. In the context of possible remedies, it was suggested to more frequently use release programmes (e.g. VPPs, sites release for new electricity generation, capacity on interconnections) which could ease effects of concentration. Only one respondent clearly doubted the usefulness of existing competition law tools and argues that the electricity sector merits a separate status.

Regulatory remedies

(753) With respect to the regulatory remedies, the respondents most often called for the harmonization of legal and regulatory frameworks across Europe and for a more integrated, coherent regulatory effort. To this end, two respondents advocated setting up a pan-European grid and/or a European regulator.

(754) Many of the respondents urged the Commission to strengthen the transparency requirements by means of binding European legislation, arguing that a level playing field needs to be created quickly. They welcomed the ongoing initiatives of the Commission and the regulators and called for completion of the process.

(755) Some incumbents, on the other hand, emphasised the need for a stable regulatory framework and ask in the first place for complete implementation of the current framework. In this context, one of the power exchanges argued that any further regulatory burden placed on its operations will increase the costs of trading and thus instead of boosting trade it may lead to the drying-up of the observable market.

(756) As regards the broader regulatory context, a few respondents proposed changes in the EU ETS scheme. Depending on the particular perspective, the respondents wished to see the resolution of the so-called windfall profit problem and for building a stable and consistent

EU ETS scheme beyond 2012 and therefore allowing the industry to take on long-term investments in the correct generation technologies.

Structural remedies

(757) The key issue is whether the respondents regarded full ownership unbundling as necessary to ensure a true level playing field. Unsurprisingly the respondents' opinions were split in accordance with their market positions. The vertically integrated groups defended the position that the most critical issue lies in the incomplete implementation of the existing unbundling provisions and that ownership unbundling would be both extremely cumbersome and legally difficult, as it could border on expropriation.

(758) The others favoured full structural unbundling, especially if the implementation of the current provisions fails. Consumers considered the independence and full unbundling of TSOs as the key issues, ensuring a level playing field and creating an incentive structure to develop the network, which is undistorted by supply interests of associated supply branches. Their position in this respect was supported by the respondents trying to expand on new markets and by a number of the authorities with responsibilities in overseeing operations on the market.

Other comments

(759) For the sake of completeness, it should be mentioned that several respondents, in their replies, updated the Commission on the latest market developments and/or made certain technical comments on the analytical tools adopted by the Commission.

Conclusions on the public consultation for gas and electricity

To a large degree, the findings of the Preliminary Report have been confirmed in the public consultation. In general the Commission's analysis is shared by the respondents, in particular those not related to the interests represented by the incumbent players. Nevertheless, even the incumbents agree with many points in the analysis of the sector presented in the Preliminary Report. The main issue on which the views diverge is the success of the existing unbundling provisions. The results of the public consultation are reassuring as regards the general orientation of the Preliminary Report and suggest that the current orientation favouring further market opening and integration should be maintained.

b. GAS

I. Competition on downstream markets

Introduction

(760) Achieving competitive and integrated EU gas markets will ultimately benefit consumers through lower prices, more choice and differentiated services. Therefore it is important to consider customer experiences when assessing the effectiveness of competition in EU gas markets. The ability for customers to switch is a driver of competition all along the supply chain. The threat of losing customers encourages gas companies to obtain the best offers on their purchase of gas, as well as transportation and ancillary services.

(761) This chapter therefore looks at gas customers' experiences. It firstly gives an overview of the market briefly discussing prices and switching levels. It then sets out the theory of downstream foreclosure and analyses relevant data collected in the context of the Sector Inquiry in relation to customer contracts. Finally it considers factors which restrict how customers may dispose of their gas and how these may inhibit upstream competition as well.

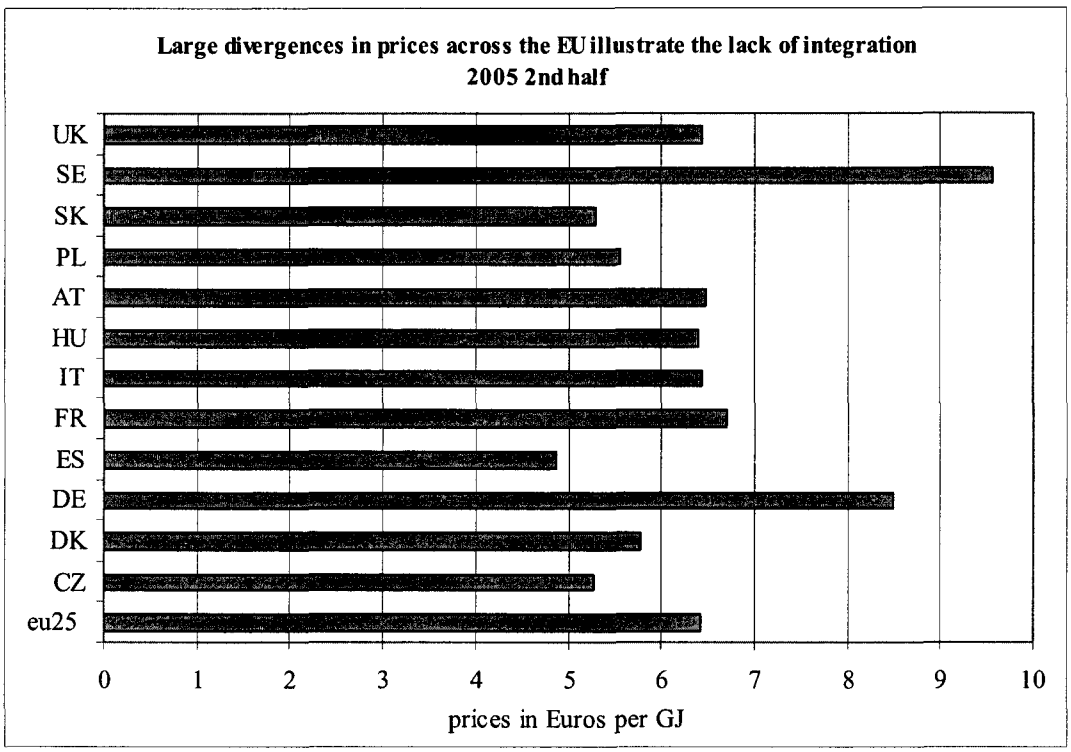
Overview of market

(762) Currently not all Member States have fully implemented the Second Gas Directive so some customers are not yet able to switch. Many Member States introduced competition in downstream markets in a phased process initially starting with the largest consumers such as industrial customers, power plants, distribution and supply companies. However, by 1st July 2007 all customers, including household customers, should have the ability to switch, except in countries which still benefit from a derogation under the Second Gas Directive.

(763) The charts overleaf compare prices in different Member States for industrial customers in 2005 and 2006. These show that prices vary considerably across Member States illustrating the effects of a lack of integration. Indicative of the fact that the single market is not yet a reality, Member States with the most expensive gas experience prices almost twice as high as the cheapest Member States.[324] It should also be noted that some countries, where the liberalisation process is less advanced, have retail price controls. Price divergence between Member States may also be indicative of a lack of investment in networks and a lack of gas to gas competition. Problems related to regulated tariffs, such as the danger of stifling competition through excessively low price caps, are discussed in more detail in the section on prices and in the section regarding responses from the public consultation.

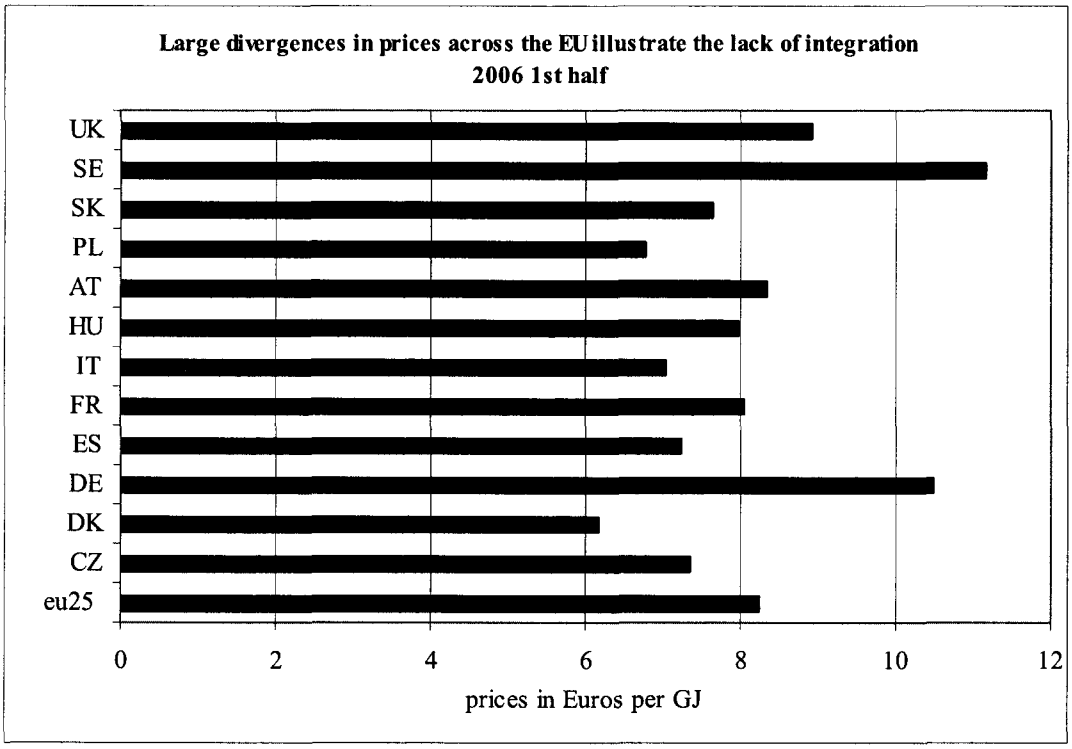
[324] This does not consider Member States whose network is not connected inside the EU to the main interconnected European grid such as the Baltic countries and Finland.

Figure 69



Source: Eurostat Industrial Prices 2005 (including network tariffs but excluding taxes) for Standard consumer 13-1, annual consumption of 41.86TJ (11.63GWh)

Figure 70



Source: Eurostat Industrial Prices 2006 (including network tariffs but excluding taxes) for Standard consumer 13-1, annual consumption of 41.86TJ (11.63GWh)

(764) Price differences and the lack of pan-European offers are lamented by customers. For example, one industrial customer replied, *"We would like to be able to conclude a pan European gas contract where our small sites are consolidated into a corporate contract in order to benefit from bulk purchasing of gas by the group. It is not possible to do this across the EU at present. The inability to set up multi-site contracts negotiated centrally means that we cannot buy gas or electricity at the best possible price."*

(765) Switching data also illustrates the ability of customers to benefit from competition. As with prices, switching levels vary considerably across Member States. They range from up to 90% of industrial customers switching in the UK (where contracts are generally renewed on a yearly basis) to no switching activity at all in most New Member States[325]. Customers across the EU, who responded to the Sector Inquiry, indicate that they have a very limited choice of suppliers and that it is very difficult to get competitive offers from non-incumbent gas suppliers. e.g. one industrial customer commented: "*Today national markets remain largely dominated by historic suppliers and it is very difficult to obtain competitive offers from more than one supplier."*

(766) 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 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. The Second Gas Directive requires DSOs to 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). However, 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). Therefore the supply and distribution functions are not effectively unbundled in most Member States.

(767) The analysis in this chapter focuses on large gas consumers including industrial customers, power stations and local distribution and supply companies. Together these customers consume the majority of the gas, giving good market coverage. Because of their size they are also some of the most attractive customers. Finally, in most Member States competition has been established for these customers for longer than smaller companies or domestic household customers.

(768) Given the high degree of vertical integration in the gas industry and foreclosure on up-stream markets (discussed elsewhere in this report) we would expect to see similar foreclosure problems on the downstream markets. Importers with long-term gas purchase contracts containing use restrictions, tacit renewal clauses and long notice periods, will tend to seek to secure their downstream market shares through the same tools. This is confirmed by the analysis in this chapter. Further, highly concentrated gas wholesale markets and difficulties getting access to gas transportation and distribution also restrict new entry at the downstream level.

---

325 See Communication from the Commission to the Council and the European Parliament: Report on progress in creating the internal gas and electricity market, COM(2005) 568, {SEC(2005) 1448}, Technical Annex section 3. Figures are on a cumulative basis.

(769) The analysis in this chapter uses Sector Inquiry data collected from both customers and suppliers. Suppliers selling natural gas to downstream customers were asked for information on the contracts offered to eligible end-consumers. Each supplier contacted was asked to provide information on its 30 biggest industrial customers, local distribution and supply company customers and power generator customers. This provides a large data set of about 1000 contracts covering about 200bcm of gas across five Member States. The total consumption represented in these contracts covers 76% of the total consumption in those Member States.[326] In addition, the replies of a smaller sample of industrial customers were analysed and used to check the responses of suppliers.

Foreclosure on downstream markets

(770) The concept of downstream foreclosure refers to the anti-competitive effects that may arise from a series of parallel long-term agreements between final consumers and their suppliers – be it a dominant supplier or a network of suppliers engaging in the same type of practice[327]. A network of parallel contracts can adversely affect the market as the contracts prevent entrant suppliers from finding suitable outlets for their products, since the customers have met their entire demand – or a large part of it – on the basis of long-term contracts with incumbent suppliers and are thus no longer present on the market. Since future gas demand is not expected to grow significantly (less than 2% per year between 2003 and 2030[328]) its impact on new market entry will be small.

(771) When assessing long-term exclusive supply relationships at least the following four elements will normally be taken into account[329]:

- the volumes tied under the individual contracts (exclusivity)
- duration of the contracts
- cumulative market coverage of the contracts, and
- efficiencies claimed by the parties (e.g. recuperation of sunk investments).[330]

Whereas efficiencies are to be considered on a case by case basis, the other three criteria (exclusivity, duration, and cumulative market coverage) will be examined in turn in order to obtain a first indication on whether downstream contracts raise barriers to entry. In the present context the intention is not to spell out in which circumstances such contracts may be incompatible with Articles 81 and 82, but to ascertain whether from a factual point of view new entry and expansion by other market players is made more difficult.

---

326 The data contains some double counting as local distribution and supply companies also supply gas to industrial customers.

327 Suppliers with a market share not exceeding 5% are in general not considered to contribute significantly to a cumulative foreclosure effect (De-minimis Notice, OJ of 22.12.2001, C368, p. 13).

328 European Commission, Energy and Transport Trends 2030, Update 2005, page 74.

329 See DG Competition discussion paper on the application of article 82 of the Treaty to exclusionary abuses page 42f. Other issues that can be taken into account include: other entry barriers, the nature of the customer (key customer justifying a market entry in its own right) and countervailing buyer power.

330 See paragraph 44 of the Commission Guidelines on the application of Article 81(3) of the Treaty [2004] OJ C101/97. The present chapter aims at describing markets, and so deals with the first three elements. However, in the application of Articles 81 and 82 to individual cases all four elements are taken into account.

Exclusivity

(772) From the market foreclosure perspective, contractual exclusivity provisions are the most common tools to ring-fence the customers from potential competitors throughout the entire contractual period. These provisions may take the form of either *de jure* or *de facto* obligations to meet the entire or most of the demand from a given gas provider.

(773) *De jure* obligations oblige the customer to meet its entire demand or a very high (fixed) percentage thereof with the current supplier. *De facto* obligations can take a variety of forms. They may be created through fixing past consumption levels as minimum off-take or they may give customers an incentive (e.g. through rebates) to meet its (entire) demand with the incumbent supplier.

(774) The analysis of Sector Inquiry replies from suppliers suggests that a substantial number of their downstream contracts contain provisions which incite buyers to purchase (*de facto*) exclusively from one supplier throughout the entire duration of the contracts. One indication of such de facto exclusivity is the number of contracts with rebate clauses. A rebate clause is defined as a contract clause providing for a lower price where certain targets, such as volume thresholds, either in percentage of overall requirements of the customer or in absolute figures have been met.[331] The following table shows that the percentage across Member States varies, between 13% in Germany and 29% in Italy.

Table 35

Contracts containing rebate clauses				
	France	Germany	Italy	Netherlands
Rebates	23%	13%	29%	28%

Source: Energy Sector Inquiry 2005/2006
Note: Only yes/no replies were considered.

(775) However, de facto overall exclusivity of suppliers is likely to be much higher than suggested by the table. As well as those resulting from rebate clauses a *de facto* exclusive off-take obligation can also result from a take-or-pay clause which is close to the customer's foreseeable total demand. In addition, there are often technical obstacles or obstacles in the network codes which prevent dual-supplier arrangements (for example two metering stations may be required for a particular site). Taking the data from customers and suppliers together, the Sector Inquiry has found that dual supplier relationships at the final customer level are certainly not the norm and very rare in some Member States.[332] Even most local distribution and supply companies, which consume very large volumes of gas, generally appear to have a single wholesale supplier. Contracts which, in one way or another, oblige or incentive the customer to source a certain share of its requirements from a single supplier will quickly lead to *de facto* exclusivity.

---

331 Whereas the question posed to suppliers aimed at rebate clauses which contain an element of exclusivity incentive (i.e. excluding rebates which are entirely linear), some respondents may have misinterpreted it. It is noted that rebates can be relevant in possible abuse cases under Art. 82 EC.

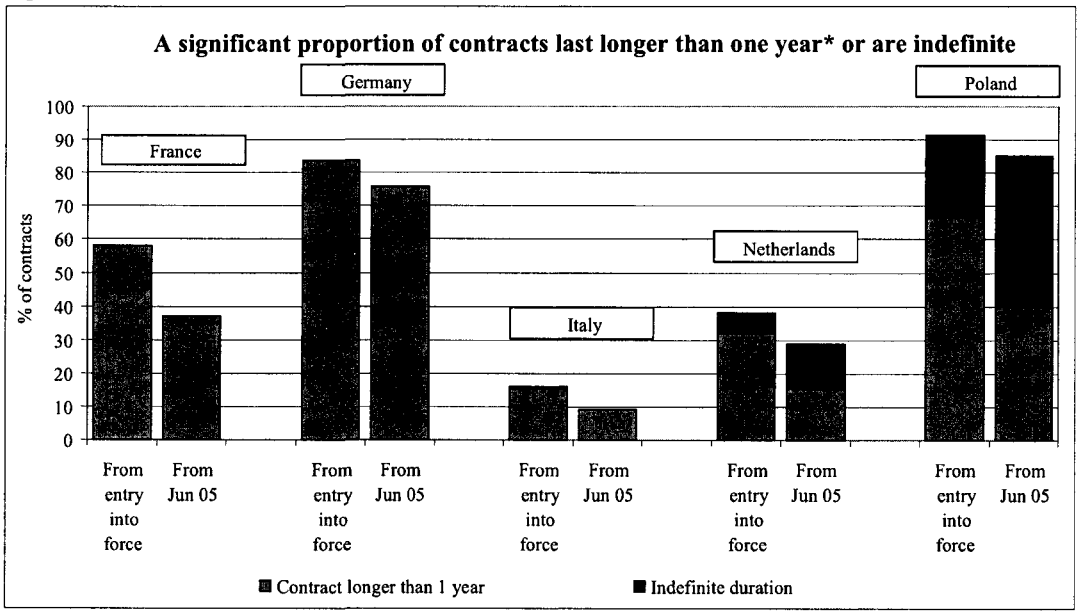
332 This is of course with the exception of multi-site customers who have the possibility to choose different suppliers for each of their sites.

Duration of contracts

(776) The second important element to be considered when assessing downstream foreclosure is the duration of contracts.[333] As explained above, long-term contracts curb customer choice and prevent the customers from choosing the best offer available on the market at a given moment in time. On the other hand, depending on the structure of the individual contract, in particular on the pricing formula, locking into long-term contracts may allow the customers to better manage the risks related to adverse price movements. However, the benefits of price security, which for certain customers may represent real value, may not outweigh the negative foreclosure effects of long-term retail contracts on competition and overall consumer welfare.

(777) Figure 71 shows the percentage of contracts which have been entered into for longer than one year or for an indefinite period in a selection of Member States. The data is split so that the first column for each country shows the length of the contract from the time it entered into force and the second column shows the length of the contract from 1st June 2005.[334]

Figure 71



Source: Energy Sector Inquiry 2005/2006
*Note: * Contracts for longer than one year do not include contracts for exactly one year.*

(778) The chart illustrates that there are a large number of long contracts. However, there are contrasts between Member States. Poland and Germany appear to have many long-term contracts. In Germany, only around a quarter of contracts in June 2005 were due to expire over the next year. The rate for Poland was even less (lower than 20%). In France and the

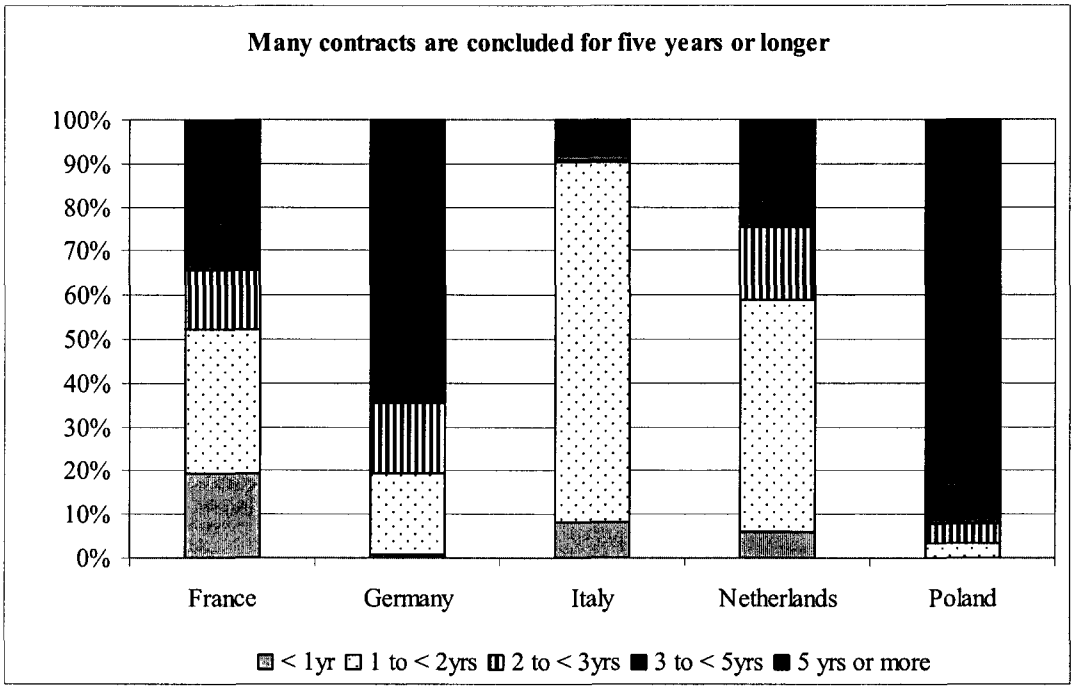
333 The Bundeskartellamt recently adopted a decision against long-term supply contracts in the proceedings against E.ON Ruhrgas AG (Bundeskartellamt, 8. Beschlussabteilung, B8 -113/03 -1, 13 January 2006). The immediate enforceability of the Bundeskartellamt decision was confirmed by the Düsseldorf Higher Regional Court (VI-2 Kart 1/06 (V), 20 June 2006).

334 For example in a purely hypothetical situation in which there are three 6 year contracts which are concluded, and renewed, at 2 year intervals, the average contract duration one day before the expiry of one of these contracts will be 2 years (contract 1 runs for 4 more years, contract 2 for 2 more years and contract 3, 1 day before expiry and renewal for 0 more years).

Netherlands about 60-70% of contracts were to expire within one year. For Germany, it can be expected that the situation will improve for the customer group with the highest percentage of long-term contracts, namely local distribution and supply companies, following the Bundeskartellamt's decision regarding long-term contracts in Germany for supplies to regional and local distributors.[335]

(779) Figure 72 illustrates the percentages of contracts which will last for: less than one year, one to two years, two to three years, three to five years and longer than five years.[336] It illustrates that there are very few contracts of less than one year and many contracts of five years or longer.

Figure 72



Source: Energy Sector Inquiry 2005/2006

(780) Figure 72 mirrors the trends illustrated in the other charts on duration where Poland and Germany seem to have the most long-term contracts (for both Member States over 50% of contracts last for five years or longer), and Italy significantly fewer (less than 10% of contracts last for five years or longer). However, Figure 72 also illustrates that about 20% of the French and Dutch contracts in our sample were concluded for five years or longer.

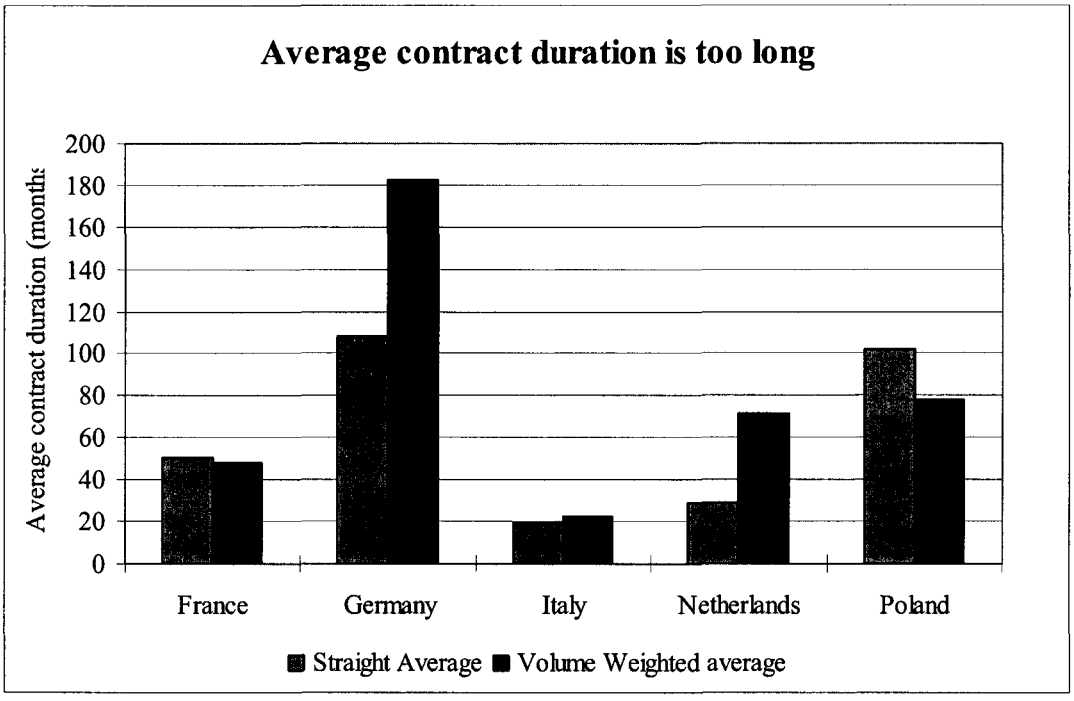
(781) In Italy the majority of contracts for five years or longer are with power generators. In the other Member States represented, power generators do not dominate this set of contracts; there are also many industrial customers and local distribution and supply companies with contracts of five years or longer.

335 Decision of 13.01.2006 "Langfristige Lieferverträge" (Case B8-113/03).

336 Precisely the groups are as follows: less than but not equal to one year; one year to less than but not equal to two years; two years to less than but not equal to three years; three years to less than but not equal to five years; and five years or more.

(782) Figure 73 sets out average contract durations. As the sample does not include contracts with indefinite duration, results will tend to underestimate the effect of long-term contracts for Poland and the Netherlands.

Figure 73



Source: Energy Sector Inquiry 2005/2006

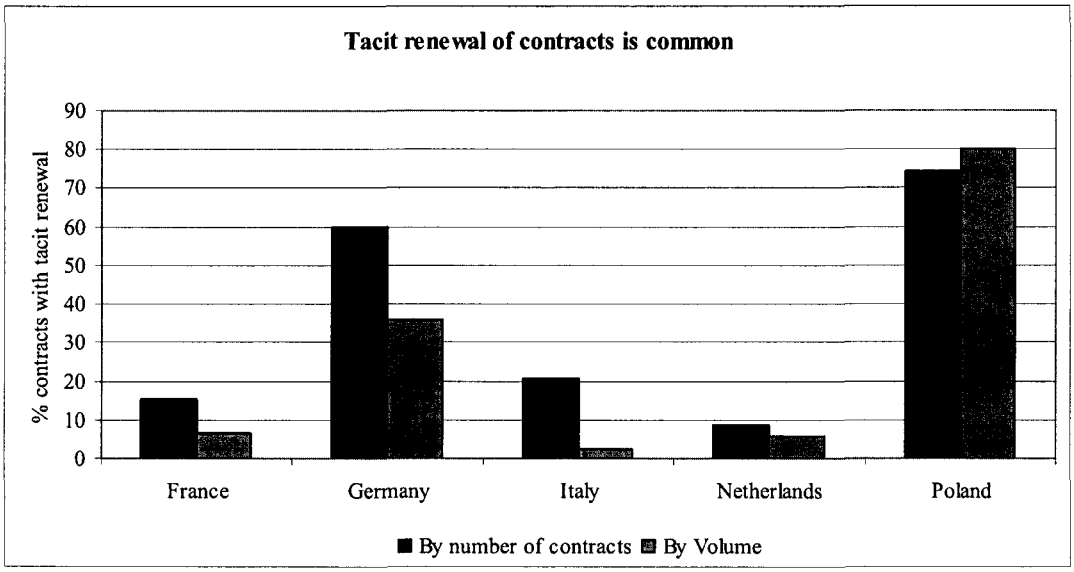
(783) Figure 73 shows that for all Member States (except Italy) the volume weighted average contract duration is over $3^1/_2$ years. Contract duration is highest in Germany (9 years by straight average and 15 years by volume weighted average).

(784) However, the available data also shows that average contract durations have declined since 1998, indicating an effect of the liberalisation of gas markets. For example, in Germany the average contract duration for contracts concluded after 1998 decreased to around 6 years for power generators and LDCs (which is nevertheless still a very high value), and to around 3 years for industrial customers (by straight average).

(785) Tacit renewal clauses may have a similar effect to indefinite contract periods as the possibility of tacit renewal seems to have a chilling effect on customers' switching behaviour. It is important to consider that any foreclosure effect linked to tacit renewal clauses comes on top of the foreclosure effect stemming from the contract durations themselves.[337]

[337] Of course, this effect will be stronger with unsophisticated buyers than with sophisticated.

Figure 74



Source: Energy Sector Inquiry 2005/2006

(786) The data from suppliers suggests that the majority of contracts have provisions for tacit renewal. Figure 74 shows that tacit renewal is more common in Member States that in general have long-term contracts such as Germany and Poland. Whilst in France and Italy the proportion of contracts with tacit renewal varies considerably depending on which measure is used (number of contracts or volume of gas covered by contracts).

(787) A notice period is another time-related element which has to be considered when assessing the duration of contracts. The possibility to terminate a contract would seem to allow a customer, at least in principle, to look for alternative suppliers. However, other elements need to be taken in account in order to get a full picture. For example, some contracts may include incentives not to make use of early termination opportunities or contracts may include obstacles to effectively exercising the possibility to terminate the contract. A long notice period significantly increases the obstacles to switching, as any potential benefits will only be realised at a much later date. This creates uncertainty for the buyer and a potential new supplier. This uncertainty will have a price-wedge effect creating risk premiums both on the demand and supply side. Therefore, a lengthy notice period lowers the likelihood of successful switching.[338]

[338] Again, this effect will be stronger with unsophisticated buyers.

Table 36

Notice periods are often long					
Notice periods in percentage:	France	Germany	Italy	Netherlands	Poland
No option for early termination	67%	2%	33%	78%	0%
1 month or less	29%	3%	12%	0%	0%
More than 1 month but less than 3 months	4%	23%	51%	10%	6%
More than 3 months but less than 12 months	0%	56%	5%	12%	28%
More than 12 months	0%	16%	0%	0%	67%
Sample size (number of contracts)	144	218	248	91	69

Source: Energy Sector Inquiry 2005/2006

(788) Notice periods give an indication of the extent to which customers are able to switch gas supplier[339]. In Germany 16% of contract have notice periods of above one year and almost 60% of contracts have notice periods of between three months and one year. Whilst in Italy 50% of contracts have notice periods of between one and three months allowing customers to switch more easily. Poland has particularly long notice periods with an average of 25 months.

Cumulative effect

(789) The final element to be considered in the foreclosure analysis is the cumulative market coverage of the bundle of contracts. The gas market is characterised by a high level of maturity, which manifests itself in a relatively low number of new connections to the network as compared to the total number of customers. Therefore, the bulk of new clients can only be recruited among the already existing customers by means of offering lower prices and/or better terms and conditions of sales. However, in order to profit from a competitive offer, the existing customers must be first free to switch suppliers.

(790) If a large part of demand or the commercially most attractive key customers are tied by long-term contracts, this leads to the situation in which the new entrant suppliers are effectively foreclosed from the market. The prevalence of *de facto* exclusivity of suppliers and the cumulative effect of long-term contracts, indefinite duration contracts and tacit renewal clauses in contracts combined with a long termination period give rise to concerns in many Member States analysed. These factors mean that customers do not return to the market for years in some Member States, which makes it very difficult for entrants to pick up new customers. The exception to the rule is Italy where the notice periods are generally very short due to regulation. Concerns are low to medium in the Netherlands and in France. However, for Germany and Poland the available data leads to very high foreclosure concerns.

Restrictions on how customers dispose of their gas can limit competition

(791) Market performance is generally improved when customers are free to dispose of their gas in the most efficient manner. Industrial customers and power plants may wish to manage a gas portfolio covering several plants and/or be free to trade their gas (simply to dispose of excess gas or as part of a more sophisticated gas management strategy). Local

339 A short notice period may be necessary for technical reasons such as metering or communication purposes.

distribution and supply companies may wish to sell their gas both within and outside their normal business area.

(792) The freedom to dispose of the gas can be limited by contractual restrictions, such as use restrictions or destination clauses. A use restriction prevents or restricts the buyer from using or reselling the gas purchased for anything other than the specified purpose. The clause may take a variety of forms: exclusively restrict the use of gas to one purpose or to one site; prohibit resale of gas; allow resale only back to the original supplier or against a fee; or allow resale only upon written permission. Destination clauses, similarly, prevent or restrict the customer from freely reselling the gas purchased from the supplier, e.g. outside a certain area.

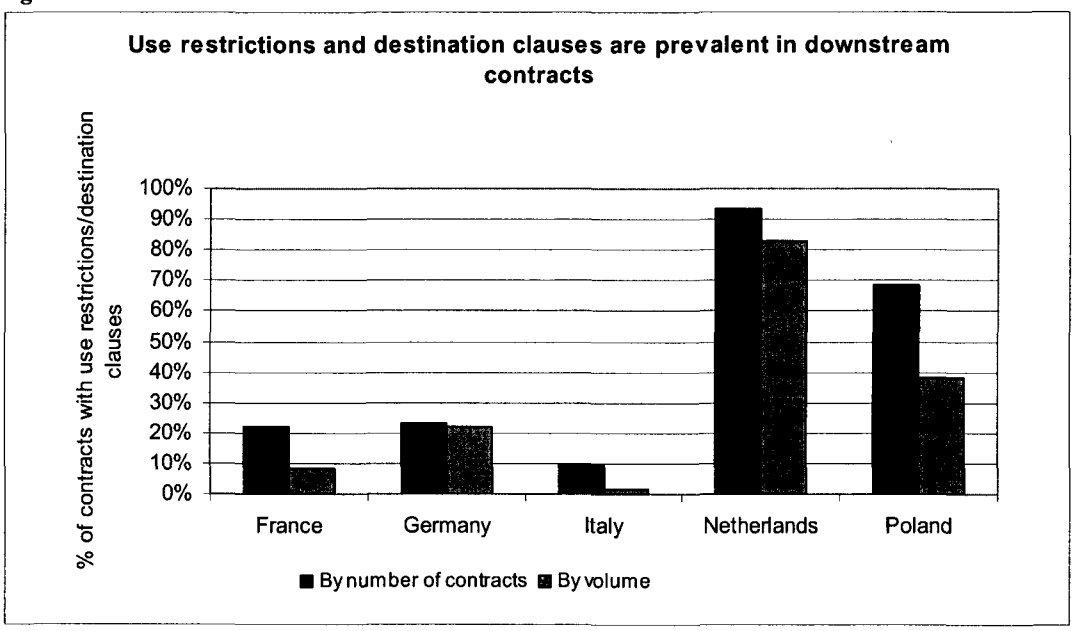
(793) The freedom to dispose of the gas can also be hampered by certain delivery practices. A customer should theoretically be able to take delivery of the gas at a variety of different points, which could include, for example, at its consumption site, at the connection to the TSO's network, on a gas hub (physical or virtual), or on other important nodes on transmission networks. This choice leaves the customer with the possibility of choosing where the gas will subsequently flow. When a customer is limited in its choice of delivery point, this can lead to practical problems to resell the gas, to buy gas from other suppliers or to otherwise manage its gas supply portfolio. While this additional flexibility may, in some cases, involve additional costs for the supplier, there are no general functional constraints on the supplier not to comply with such a wish by its customer[340].

(794) All these kinds of contractual restrictions and limitations hinder arbitrage and will, therefore, enable a given supplier to price discriminate between its individual customers. Since power generators, distribution networks and large industrial customers receive large quantities of gas, their ability to trade that gas, if they so choose, would contribute to hub liquidity and potentially bring more gas to the wholesale market.

(795) The Sector Inquiry has identified use restrictions/destination clauses in a significant number of contracts spread across the EU. The data presented below for a selection of Member States is based on data provided by suppliers. The values for the Netherlands and Poland are particularly high while, judging from a more limited sample of industrial customers responses, these figures appear somewhat on the low side for Italy, France and Germany.

[340] Different Member States have different regulatory structures, there may be a need to re-configure grid rules in order for re-delivery to be possible. See COMP/M.3868-DONG/Elsam/Energi E2, paragraph 360.

Figure 75



Source: Energy Sector Inquiry 2005/2006

(796) The Sector Inquiry has looked at the delivery practices mainly in relation to industrial customers. For customers with several consumption sites it can be of particular interest to be able to divert gas between plants, but also other customers may wish to increase their flexibility by reselling the gas under their main contract and/or purchasing additional short-term gas. Naturally, it will mostly be larger customers that have an interest and an ability to arrange their own transport and/or trade in gas.

(797) In order for a customer to have a real freedom when it comes to diverting or reselling gas, it is not sufficient that there is a choice as regards the delivery point. As discussed above, there must also be no contractual restrictions (use restrictions/destination clauses) preventing the customer from managing its gas. Moreover, the regulatory burdens must not be so heavy that the customer is de facto unable to trade on the market (when the volumes are limited and traded only occasionally, the administration will easily become dissuasive). Furthermore, transport services must be separately and transparently available.

(798) Whereas a majority of customers will clearly find it practical to have deliveries made to their site of consumption, at a competitive "all-inclusive" price, it is essential that the system is designed in a manner that can also encourage efficiencies for those customers who are interested in more actively managing their gas supplies.

(799) It appears from the Sector Inquiry that an overwhelming majority of industrial customers take delivery at their site of consumption (in many cases corresponding also to the connection to the TSO network). However, it also appears that a number of big industrial customers are interested in the possibility of alternative delivery points. Several of these customers also consider that there is an active supplier policy in limiting their choice of delivery point, as well as practical obstacles hindering them from managing their gas. Such a pattern emerges most clearly in the Netherlands and Germany, whereas the

statistical sample assessed in relation to other countries makes it more difficult to draw clear conclusions.

(800) In the Netherlands, a majority of industrial customers responding to the Sector Inquiry point to problems relating to delivery points. Several of these customers indicate a supplier policy of limiting the choice of delivery points and, in particular, an unwillingness to deliver gas on the hub (TTF). The customers point out that this is reinforced by an entry/exit system on the network that leads to double entry/exit charges and transport costs, which make it economically not viable to resell or divert the gas. The rules regarding exit capacity (the need to contract long-term or arrange a transfer of exit capacity), as well as a heavy shipper regime (including the risk of imbalance payments), are also indicated as reasons why the customers are unable to manage their gas as they would wish. When combined with the widespread use of contractual use restrictions/destination clauses that are imposed on many customers, a picture emerges of customers without any real choice when it comes to diverting or reselling gas.

(801) In Germany, there are also many large industrial customers that point to problems relating to the delivery point. Whereas some customers point to a practice of explicitly limited delivery points, many others comment on the practical impossibility of making use of the network system. All-inclusive contracts for delivery at the consumption site are the norm, and transport costs are not usually specified separately on the bills when purchasing gas. Many customers point to the difficulties in organising their own transport, which is considered very complex, non-transparent and with a chronic lack of capacity. The costs of separate gas and network usage also risk being higher than the "all-inclusive" price. The contractual use restrictions/destination clauses that are imposed on many customers, further limit the choice of customers to divert or resell gas.

(802) Industrial customers in several other Member States also point to explicit policies of limited delivery points. Considering the widespread practice of delivering gas at "the factory gate", the many critical responses in relation to lack of transport capacity and transparency, the still quite common use of "all-inclusive" pricing and the fairly common practice of contractual use restrictions/destination clauses, it is clear that the customers' freedom to dispose of their gas is generally limited.

Conclusions

The degree to which customers are tied to incumbent suppliers on a long term basis differs significantly between Member States. In some countries, the duration of retail contracts with industrial customers and of contracts to local distribution and supply companies may have a significant impact on the possibility 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.

Restrictions on how customers can dispose of their gas, in combination with restrictive practices by suppliers regarding delivery points, limit competition and prevent efficiency gains by these customers.

Customers demand more competitive offers by non-incumbent suppliers and regret the absence of pan-European supply offers.

II. Balancing in gas market

Preliminary remarks

(803) Balancing requirements and the mechanisms for determining the price and availability of balancing services constitute an essential element of EU gas markets. The Preliminary Report of the Energy Sector Inquiry, while containing remarks on related issues such as storage, did not analyse balancing markets. However, answers received to the Sector Inquiry questionnaire emphasise that balancing and nomination rules were perceived to result in discrimination by suppliers, to the advantage of the incumbent.

(804) This chapter will analyse gas balancing in greater detail. It reflects the answers to DG COMP's Energy Sector Inquiry questionnaire and is limited to 9 Member States, including both "old" Member States (Austria, Belgium, France, Germany, the Netherlands) and "new" Member States (Czech Republic, Hungary, Poland and Slovakia). Obviously, changes have occurred since the answers were received, in 2005. Whenever possible, such modifications have been taken into account.

(805) In all MS network access rules are established to encourage users to balance the amount of gas being injected into the network with the amount being withdrawn by their clients. If this is not the case, the network user is said to be "out of balance" and will be required either to buy gas from, or sell gas to, the TSO. The balancing mechanism therefore constitutes an ultimate default "market" where shippers can buy and sell gas. The operation of the balancing mechanism will therefore affect all other parts of the wholesale market.

(806) Often the calculation of the imbalances will be done on the basis of individual "balancing zones" which are smaller than the TSO's area. Balancing zones exist for a variety of reasons: technical necessities of pressure and congestion management[341], differences in gas quality[342], administrative reasons (operational and ownership 'reach' of a TSO) and applicable regulatory rules[343]. Balancing zones can be composed of a single pipeline or of a complex network/grid/system of pipelines.

(807) In each zone, every shipper is encouraged to balance the gas injected into the network and the gas withdrawn from it. The balance of a shipper's injections and withdrawals is controlled for quantities of gas measured hourly (hourly balancing) or daily (daily balancing)[344]. In many cases there is a tolerance range for imbalances for which shippers are not required to make payment to the TSO for additional gas. However beyond this zone an implicit penalty is charged. This is because the price charged by TSOs for

341 Saturation of a gas pipe prevents it from transporting as much gas as required from one part of the network to another. The necessity to observe a minimum pressure in pipelines leads to a tendency to take such points as border points of a balancing zone.

342 There are two main gas qualities H gas and L gas but the existence of distinct balancing zones might also result from narrower tolerances for PCS or Wobbe index in different areas. For instance, for RWE, in Germany, gas quality specifications differ almost in all the balancing zones.

343 Each TSO controls the balancing on its network, whatever its size, in terms of technical controls but also in terms of administrative/accounting controls of the supply/off-take balance of each market participant. Historically, TSOs have operated in no more than one country. Cross border integration of TSOs has also been impeded by different regulatory set-ups in neighbouring countries.

344 The quantity can also be controlled continuously for hourly quantities cumulated from the beginning of the contractual day with a prohibition on exceeding a certain level of imbalance , and penalties attached in case of cumulative excess imbalance (cumulative hourly imbalances).

"selling" gas to shippers who are out of balance (due to having put less gas on the system than has been taken out by them or their customers) is higher than the reference market (e.g. 150% of that reference price). Whereas the price paid by the TSO in the case of too much gas being injected by a shipper is lower than the reference market price (e.g. 50% of that reference price).

(808) Pursuant to Directive 2003/55/EC of 26 June 2003, terms and conditions for the provision of balancing services should be non-discriminatory and cost reflective and approved by the regulatory authorities[345].

II.1. Balancing zones are too small and too numerous: this hinders competition and the creation of a single market

(809) The following table indicates the number of balancing zones for the TSOs operating in the 9 countries.

Table 37

Number of balancing zones in 2005			
Country	TSO	Number of zones	
		H	L
Austria (1)	OMV	1	
Belgium	Fluxys	3	1
Czech Republic	Transgas	8	
France	GRTgaz *	4	(1)
	TIGF	1	
Germany	BEB **	1	1
	RWE	4	5
	E.ON Ruhrgas	3	1
	Wingas	4	
Hungary	MOL	1	
Netherlands	GTS *	(1)	1
Poland	Europol	1	
Slovakia	SPP	1	

Source: Energy Sector Inquiry 2005/2006

Notes: (1) Excludes transit pipelines and two very small zones in the west of Austria, isolated from the OMV zone (but connected to German zones).

** For GRTgaz and GTS, high calorific H gas and low calorific L gas have to be balanced separately, which is equivalent to having two balancing zones.*

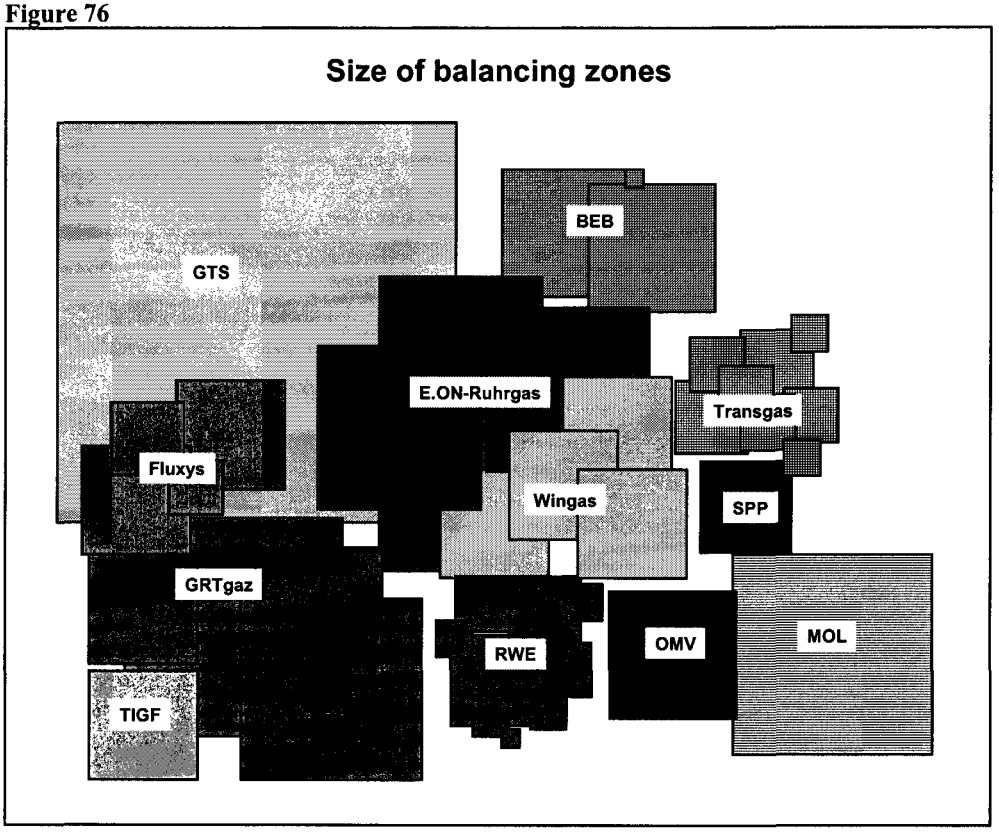
*** BEB also has an "LL" (very low calorific) balancing zone, very limited in size, for gas with calorific value lower that L gas calorific value.*

345 Article 8(2) *"Rules adopted by transmission system operators for balancing the gas transmission system shall be objective, transparent and non-discriminatory, including rules for the charging of system users of their networks for energy imbalances. Terms and conditions, including rules and tariffs, for the provision of such services by transmission system operators shall be established pursuant to a methodology compatible with Article 25(2) in a non-discriminatory and cost-reflective way and shall be published."*

Article 25(2) *"the regulatory authorities shall be responsible for fixing or approving prior to their entry into force, at least the methodologies used to calculate or establish the terms and conditions for [...] (b) the provision of balancing services."*

(810) In Figure 76, each square represents a zone and its surface is proportional to the maximum daily flow recorded for the period 2004-2005, which is an indication of the importance of the consumption in the zone. The hugely differing sizes of the squares indicate the vast differences in sizes of balancing zones.

Figure 76



Source: Energy Sector Inquiry 2005/2006
Note: For E.ON –Ruhrgas and for Wingas it is assumed that the different zones are of equal size, as the corresponding data were not available.

(811) It appears that the ratio between the smallest zone and the biggest is 1 to 278. If correction is made for the smallest zone, corresponding to a specific "LL" gas situation, and the largest zone, for which the part of transit gas is important, the ratio is still around 1 to 40.

Small balancing zones are a significant barrier to competition

(812) In the answers to the Sector Inquiry, the size of the balancing zones is a major complaint of the network users. Small balancing zones correspond to smaller portfolios in these zones resulting in higher risks of imbalance and onerous penalties.

- The existence of different zones implies the presence of barriers to operate across zones; fragmentation of zones multiplies such barriers

(813) Balancing zones in themselves increase the complexity of shipping gas from one point to another in Europe resulting in higher costs. Imbalances, if they exceed a certain tolerance level, are sanctioned by penalty payments collected by the TSOs. Along a certain path,

the addition of such payment risks due to the existence of several balancing zones increases overall costs and risks for shippers.

(814) Even in the absence of any imbalances, administrative and transaction costs are increased by the number of usually highly complex and divergent rules along the path which a shipper has to absorb. Barriers are also created by the obligation to reserve capacity at each border point when gas enters or leaves a balancing zone. At theses points shippers are subject to the constraints of capacity allocation mechanisms. This effect is obviously larger when the number of different balancing zones and balancing regimes which exist along a certain path are higher. It is important for a new supplier, operating only on distribution networks, to be able to avoid balancing costs. This might be achieved by, for example, purchasing its gas at the transmission network exit point.

(815) Unequal costs for balancing between incumbents and newcomers, and the resulting distortions of competition, have also been pointed out as a substantial impediment to new entry within certain zones. In addition, several shippers have stated that significant differences in the rules between zones, including the time element of balancing rules, are a material deterrence to transporting gas along certain routes. Overall, if such differences are not objectively justified the resulting deterrence will unnecessarily weaken the overall responsiveness of the European gas network to short term cross border shifts in demand and supply. This will result in an inefficient use of the overall European infrastructure.

- *These barriers are higher for newcomers and for small companies*

(816) Imbalances are mainly due to uncertainties in forecasts. Most network users state in their replies that the risk of imbalances is greater when the portfolio of clients is smaller. This is because risks are partly neutralised between clients and the diversification of clients smoothens the global profile of consumption, making it less sensitive to forecasting errors due to climate or other consumption uncertainties. The division of a network in balancing zones results in a decrease of the size of the portfolios and increases problems for new suppliers whilst favouring incumbents. This is a major barrier for newcomers.

(817) In addition, administrative and transaction costs are fixed costs and are therefore greater when they have to be spread over small quantities of gas. Multiple zones therefore increase the cost of entering the market.

- *Partial remedies are insufficiently effective*

(818) A shipper transporting gas in different balancing zones, operated by the same TSO, is not always subject to the same constraints. In some cases, it is possible to balance between balancing zones of the same TSO. This may be possible under certain conditions such as if cross-zonal capacity is available and by paying cross-zonal entry and exit fees (GRTgaz in France, Fluxys in Belgium, E.ON Ruhrgas in Germany). Such possibilities reduce the risk of a penalty for being out of balance, but the management cost of balancing and the cost of crossing zones must still be paid.

(819) Differences in gas quality are in effect barriers to exchanges between zones. To alleviate the constraints, conversion facilities can be used, either virtual (through swaps) or physical ones. However, such partial remedies are currently insufficiently developed. Vertically integrated TSOs have limited interest in facilitating entry into their supplier's

incumbency area. Barriers also remain high if the conversion facilities exist but are either too costly or managed in an inflexible, cumbersome way.

II.1.1. Differences in balancing rules – hourly balancing is a barrier to entry

(820) Shippers have to 'nominate' the quantities they expect to sell (i.e. their network off-take) and the quantities they will make available to balance these sales (i.e. their network input). These nomination procedures will be discussed below (see below, section 4 of this Chapter).

(821) Subsequent to nomination, various circumstances, such as a difference between the forecasted and the real temperature, will create discrepancies between the nominated quantities and the actual ones, creating imbalances.

(822) The network operator has an obligation to balance the sum of all such deviations in order to guarantee network stability. Technically the pressure in a network should not drop below a certain point and the entry capacity of the network is limited by the maximum pressure. The network operator thereby encounters certain balancing costs (see below section C.b.II.3).

(823) These costs ultimately need to be borne by those causing them, i.e. the shippers whose network input and off-take is in imbalance. However, shippers do not only have to bear the mere costs of this balancing service performed by the TSO for them. Imbalances larger than the tolerance band also usually include a penalty element to deter the shippers from taking actions detrimental to the network.

(824) Before discussing the level of these balancing charges (see below section 3), two important criteria for measuring the charges need to be discussed. These are (i) the time-period against which any such imbalance is measured and (ii) the level from which a deviation is considered to be detrimental and therefore justifying a penalty (tolerance level).

Time period: *Hourly balancing is a barrier to entry of new suppliers*

(825) The time period relevant for measuring imbalances varies across TSOs. The imbalance may be measured at the end of the hour or at the end of the day, or both (or, rarely, even at the end of a longer period). Imbalances can also be measured during certain periods, e.g. instead of measuring the imbalance (only) *at the end* of the hour and *at the end* of the day (each imbalance for each hour and each day triggering penalty payments) there can also be, additionally or alternatively, a control of the cumulated hourly imbalances during a day. Under this system, the cumulated hourly imbalance intra-day must not exceed a certain tolerance level any time during the day.

(826) The Sector Inquiry has shown that the practices of TSOs are far from uniform and that this is felt to be an obstacle to entry by shippers, in particular when hourly balancing is required.

Table 38

Balancing practices			
	Hourly imbalances	Daily imbalances	Monthly imbalances
Not cumulated	OMV Fluxys BEB RWE E.ON Ruhrgas Wingas GTS	Fluxys Transgas GRTgaz TIGF MOL Europol SPP	Transgas
Cumulated	Fluxys BEB	GRTgaz TIGF	

Source: Energy Sector Inquiry 2005/2006
Note: Most TSOs combine hourly (or daily) imbalances with hourly (daily) cumulative imbalances, which means that multiple penalty payments are possible. e.g. Fluxys cumulate three levels of imbalances.

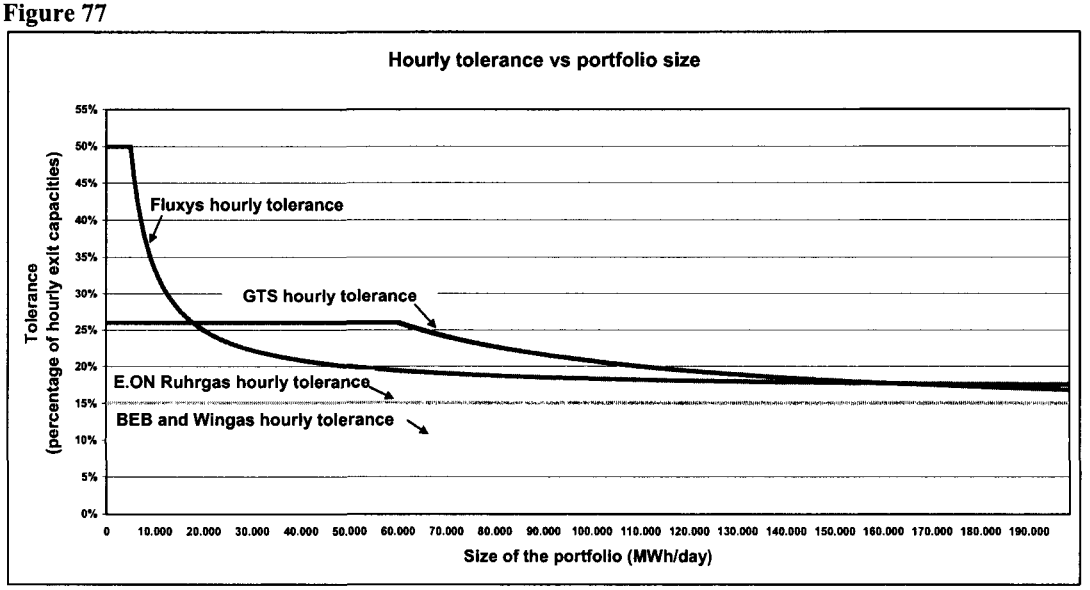
(827) The problems related to the spatial division of balancing zones also apply to the time division of the balancing mechanism: the smaller the division, the smaller the quantities involved and the higher the risk of imbalance. Several suppliers stated in their replies that they had been deterred from entering certain markets because of their hourly balancing requirements. Hourly balancing in itself is felt to be a barrier to new entry of newcomers as it requires a very accurate follow up of the flows[346]. For a newcomer with a small portfolio the necessary management and organisation is very significant. It requires very accurate forecasts which are particularly difficult for clients whose consumption is strongly influenced by temperature. It also requires good information on the measured quantities consumed by clients to be fed back to shippers in a timely way. The risk of imbalances is especially high on the temperature-sensitive domestic consumer market, but the effects are not seen as limited to this market.

Tolerance provisions

(828) The level of tolerance, that is the limit of the non-penalized imbalance, is of crucial importance for a shipper's balancing costs. Values are given in the figure below and range from 0% of the hourly capacity (for OMV) to 50% for small portfolios in the Netherlands. Tolerances differ according to the size of the portfolio on the GTS, Fluxys, GRTgaz and TIGF networks. The fact that tolerances are more favourable for small portfolios responds to the needs of smaller suppliers, particularly if imbalance charges are punitive.

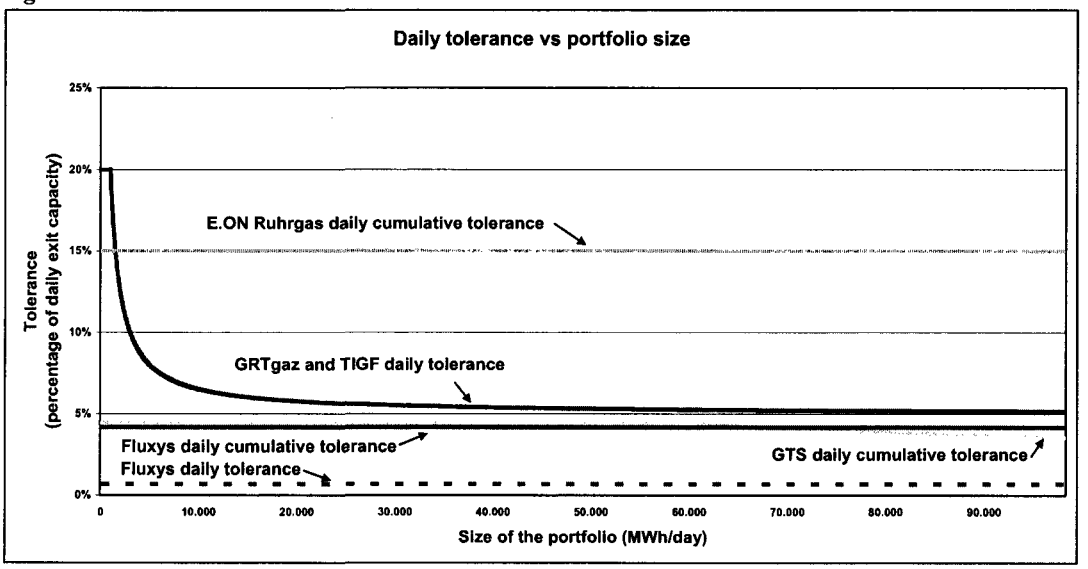
346 Including during the night.

Figure 77



Source: Energy Sector Inquiry 2005/2006

Figure 78



Source: Energy Sector Inquiry 2005/2006
Note: Daily tolerance is the level that should not be exceeded at the end of the day; daily cumulative tolerance is the level not to be exceeded any time during the day; it is then more stringent than the daily tolerance.

II.2. Balancing charges are non-transparent and favour incumbents

(829) All the network users indicate that they could not say if balancing costs are cost reflective or not, which proves at least that these costs are not transparent. Some shippers add that the penalty level is calculated for the worst case scenario rather than actual costs and is too costly for normal situations.

(830) Balancing charges contain two components, namely:

- a clearing cost, for the TSO's buying or selling the gas necessary to rebalance the system when the shipper is out of balance, and
- penalties if the shipper exceeds the tolerance.

Of these, it is only the first component which can be cost reflective. It is usually linked to a published market price, without verification whether this choice is justified.

II.2.1. Clearing costs are not cost reflective; this leads to an increased risk of cross subsidisation

(831) As the imbalances are mainly due to uncertainties in forecasts, seen over a long period, the excess quantities and deficits should level out. The cost of balancing over a long period is therefore mainly a cost of flexibility, and not a cost of gas quantities. However, in the short term, a certain amount of gas is needed by the network operator in case the majority of shippers underestimate demand at the same time. Also, a certain amount of gas off-take capacity is needed in reserve in case the majority of shippers at a given date over-estimated demand.

(832) TSOs first react to imbalances with so-called 'line pack' (i.e. with varying the pressure level in the pipelines). They subsequently have to revert to the normal line pack pressure again or allow it to drop back to the normal operation pressure. TSOs may profit from the fact that, in practice, the deviation of one group of shippers is often neutralized by the opposite deviation of another group of shippers. The process could be largely simplified, and hence made less costly, if the network operator's balancing action was restricted to the residual deviation. However, in fact, on top of this role, it often acts as a trader: if shipper A and shipper B on a given day (or hour) level out, the TSO nevertheless buys gas from the shipper in excess and sells it to the shipper in deficit whereas A and B could have exchanged their imbalances (excesses and deficits) either directly or through an actual trader (e.g. via an internet trading platform).

(833) In any event, even if such direct exchanges between shippers are developed, at the end of the balancing period the gas supplied or received by the TSO (i.e. the gas in deficit or surplus on the network) will have to be traded, at a clearing cost that should:

1) reflect the cost for the TSO, to avoid subsidies from transmission activity to balancing service, or vice versa, or from balancing services to trading, supply or storage, and
2) reflect market conditions, to prevent the shippers from speculating on differences between the TSO tariff and the market price and in order to minimize the volumes traded by the TSO.

(834) The first way to achieve these two goals is that the TSO buys (or sells) its gas on the *spot market* when it needs it, on a day to day procurement basis. This solution ensures that every day the price reflects market conditions, which also contributes to developing market liquidity. However, as a minimum, this requires market organisation and liquidity to ensure the price is fair. If the market place is not sufficiently liquid then the vertically integrated company can, by exerting market power, increase its gas procurement costs. By contrast, if liquid reference markets exist only outside the TSO's grid, then transport costs to and from such liquid markets will arise. The TSO may profit from such costs by charging exit and entry capacity on its network.

(835) The second tool available to the TSO is *longer term gas procurement.* The TSO anyhow buys gas for its own needs, in particular for fuelling compressors or for creating line-pack in new pipes. The TSO also requires some flexibility, since the compressor needs are not constant over the year. This flexibility or an extra flexibility in the contract could be used for balancing. However, this leads to the problem, highlighted by respondents to the Sector Inquiry, that to date, these gas procurement contracts are usually signed with the incumbent supplier (often the affiliate of the TSO), in a non transparent way[347]. Obviously such intra-group procurement opens the door to risks of cross subsidisation.

(836) The third possible source of gas for balancing is underground *storage.* As imbalances result from uncertainties for all shippers, the total of these uncertainties over a year should be close to zero. The quantities of gas sold by the TSO should, over the year, be equivalent to the quantities of gas bought; the gas purchased could be stored and the gas sold extracted and the stock level at the end of the year would be the same as at the beginning. However, this entails a particular problem, linked to the working of gas storage facilities. In order to achieve the required withdrawal capacity from the storage facility, a certain amount of gas has to be injected since the withdrawal capacity increases with the amount of gas stored. While this perfectly corresponds to the cyclical seasonal modulation needs of suppliers it does not fit the TSO's short-term needs for flexibility[348]. In order to achieve its required withdrawal capacity the TSO would therefore need to store a large amount of gas which it would never use and which would freeze a disproportionate amount of the storage capacity. This is costly and uneconomic when underground storage capacities are scarce[349]. If the TSO and the storage operator belong to the same vertically integrated group, this also opens the door to issues of cross subsidization. As in the absence of any meaningful procurement procedure, there is no guarantee that the price of the gas and of the flexibility correspond to a market price.[350]

(837) Generally, the cost of balancing through contract flexibility and storage appear to be in the range of 2% of the transmission charges. In addition, the TSOs incur costs for staff and equipment necessary for balancing management and accounting. However, it should be possible to keep these costs sufficiently low so as not to act as a major barrier to the development of gas supply and transport/transit markets, unless the number of zones is inflated as discussed above. The main impact of balancing on competition and the opening of the gas market therefore appears to arise not from these pure and objective cost factors. Rather balancing tends to distort competition due to a bundle of factors. Most importantly incumbents' cross subsidisation. But also, so called "pancaking" costs for customers arising from geographical multiplication of zones and (hourly) fragmentation of balancing periods in addition to elevated penalty levels.

---

347 Although article 8(4) of the Gas Directive specifies "Transmission system operators shall procure the energy they use for the carrying out of their functions according to transparent, non-discriminatory and market based procedures." It should also be noted that TSOs are subject to Directive 2004/17/CE of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors.

348 This constraint is less important for salt cavern storages, but the delay for withdrawing all the gas stored is still of 2 to 3 weeks.

349 A solution to this problem might lie in the fact that some purchasers require less withdrawal and injection capacity than the amount of gas stored by them actually would permit. Such users could directly or indirectly "sell" their excess withdrawal and injection capacity to the TSO on the secondary market. However, it is likely that for extreme temperatures large imbalances are likely and no excess withdrawal capacity is available.

350 As a fourth source for balancing gas LNG storage (including peak shaving facilities) can be mentioned. The limitation of this tool is that it does not allow physical re-injection.

II.2.2. Penalty levels

(838) The existence of an imbalance at the end of the day (or of the hour in case of an hourly balancing) jeopardises the network operation by, for example, reducing or increasing network pressure beyond safe limits. The evaluation of the threshold over which a penalty is due is non-transparent. It has been suggested that transparency obligations require the TSOs to publish technical and/or economic justification for such thresholds above which they charge penalties.

(839) Where a penalty charge exists, this is usually designed not only to reflect costs, but also to deter shippers from taking positions that jeopardise network operation. Unfortunately, it is difficult to draw a line between what is deterring imbalance and what is deterring market entry.

(840) The total amount of penalty payments due to imbalances is relatively small as compared to the payments for reserving capacity on the network. Still, for a single shipper, such amounts can be very high. The ratio of total penalties for imbalance as compared to total network charges reached 14%, 18% and 23% on one particular network.[351] For another network, the same ratio is recorded as being for most shippers in the range 1% to 2%.

(841) The following tables show the ratios of imbalance penalties paid by shippers compared to the total network charges for two TSO networks. These ratios were calculated from data received in the context of the inquiry and the tables retain only the shippers who paid penalties and the incumbent on the corresponding networks.

Table 39

Total penalties for imbalances as compared to total network charges	
TSO "A"	
Shipper	Ratio
Shipper 1	23%
Shipper 2	18%
Shipper 3	14%
Shipper 4	9%
Shipper 5	9%
Shipper 6	5%
Shipper 7	5%
Shipper 8	2%
Shipper 9	2%
Incumbent	0%
All imbalanced shippers	2%

Source: Energy Sector Inquiry 2005/2006

[351] Many complaining remarks concerning this system were received in the Sector Inquiry. Subsequently the balancing system has been amended.

Table 40

Total penalties for imbalances as compared to total network charges	
TSO "B"	
Shipper	Ratio
Shipper 1	2%
Shipper 2	2%
Shipper 3	1%
Shipper 4	1%
Shipper 5	1%
Shipper 6	1%
Shipper 7	1%
Incumbent	0,01%
All imbalanced shippers	1%

Source: Energy Sector Inquiry 2005/2006

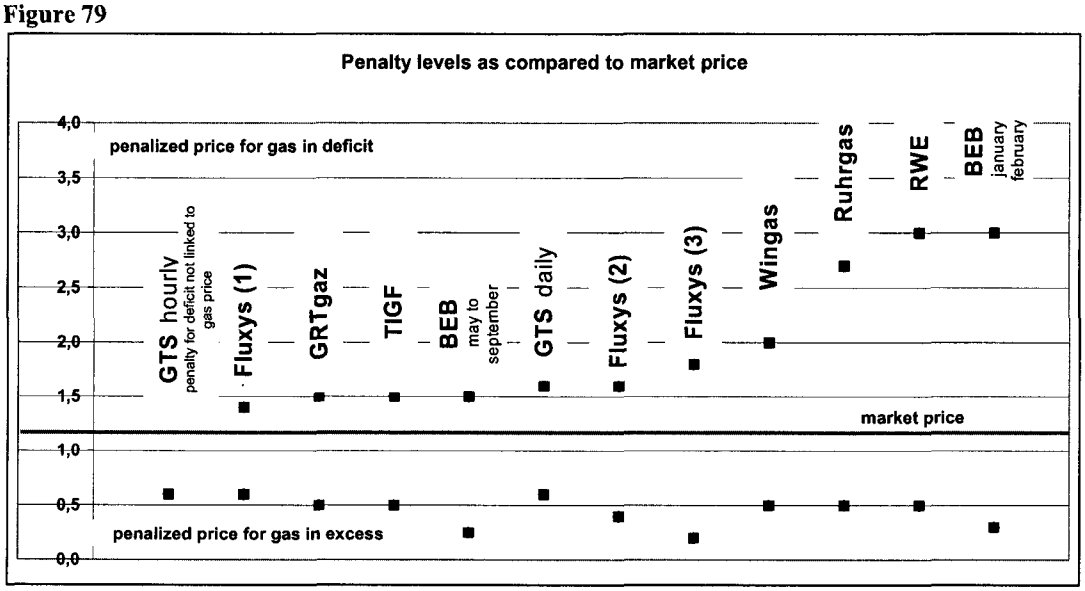
(842) For TSO A, even if the revenue from penalties is low as compared to the total revenue of the operator, it appears that these penalties are very high for some shippers. This is a strong deterrent from operating on the TSO A's network, all the more as their main competitor, the incumbent, is not affected by this additional cost.

(843) For TSO B, the level of penalty is lower for all shippers compared to TSO A. The difference between the new entrants and the incumbent mainly shows the advantage due to the size of the portfolio as regards balancing.

(844) The common denominator between situation A and B is therefore that in both scenarios the incumbent has a degree of competitive advantage.

In Figure 79 we have compared penalty levels between TSOs.

Figure 79



Source: Energy Sector Inquiry 2005/2006

Note: The penalty level is equal to the clearing price plus the penalty.
For Fluxys, the penalties are different if the imbalance is more than the tolerance (Fluxys (1)), more than twice the tolerance (Fluxys (2)) or more than three times the tolerance (Fluxys (3)).
For MOL the penalty is not proportional to the gas market price but is equal to 0,0004 €/MJ.

(845) Figure 79 shows that the differences between TSOs are considerable. Some TSOs charge up to 3 times the reference market price for gas in deficit while others only charge the market price plus 50%. The differences for excess gas appear less striking but indeed also vary considerably between 40% penalty (reimbursement at 60 % of market price) and 80 % penalty (reimbursement at 20 % of market price).

(846) While penalty levels are to deter shippers from taking positions that jeopardize the network operation, imbalance charges should not in general increase the TSOs' profits. Therefore, the level of the penalty is often deducted from the transmission tariff later on. However, considering the market shares, this means that it is mostly the incumbent who profits from this rebate. For TSO A and TSO B of paragraph (841) it was calculated that 90% of the penalties would benefit the incumbent suppliers, who pay no penalties or only very limited amount and pay most of the transmission charges. While a shipper with a (transmission) market share of e.g. 2% in certain area may pay e.g. 20% of the total penalties, it will only be "reimbursed" through a rebate on its transmission tariff for its 2% transmission market share (the rebate being derived from a financial surplus of the TSO on its balancing activities). By contrast a shipper with 90% market share who may pay next to no penalties will be reimbursed for much more out of the same title, namely 45 times more for its 90% (transmission) market share. Therefore the majority of the TSOs' balancing surpluses will go into the incumbent shipper's pocket (often belonging to the same vertically integrated groups).

II.2.3. Imbalance trading could significantly reduce balancing costs; the absence of access to short term liquidity aggravates the problem

(847) Respondents to the Commission's Sector Inquiry have underlined that in order to save costs for shippers (both clearance costs and penalty costs), priority should be given to direct balancing between the shippers. Of great benefit to reducing imbalance payments would be adapting the balancing rules to exchanges. Exchanges could allow easy access to short term gas liquidity (for both buying and selling gas) or to exchange mechanisms allowing a shipper to sell its surplus gas to another shipper. The widespread absence of such liquidity was highlighted by market participants as a major obstacle to overcoming the barriers associated with the balancing regimes. The functioning of such "imbalance avoidance system" is of course only possible if there is a liquid market place in the balancing zone in question. Clearly the smaller the balancing zone, the less liquid the market for trading away imbalances is likely to be.

II.3. Nomination rules are fairly uniform in the countries analysed; further harmonisation is possible and expected; the quality of information provided to shippers is crucial.

(848) For an efficient operation of the network, the TSOs need to know in advance the forecast quantities of gas that will be injected into the network or taken out of it. The shippers transmit their forecasts to the TSO for the next day following a nomination procedure.

(849) In some Member States, under certain conditions, shippers are not obliged to nominate. In theory, this applies to all the shippers. In fact, however, the conditions are met only by the incumbent and such measures are perceived by new entrants as discrimination in favour of the incumbent. Apart from this problem, in most of the network users' answers, nomination procedures were not considered as a major obstacle to access the network (in the countries concerned by this chapter). However, some network users regret the lack of harmonization of the rules[352]. In particular, the absence of standardised communication tools and standardised templates for electronic messages was deplored.

(i) The nomination and re-nomination process

(850) The first stage of nomination is nominating on day minus one (D-1) for day (D). For D day all the TSOs concerned have adopted a gas day from 6 am to 6 am, except OMV, whose gas day is from 8 am to 8 am.

The deadlines for nomination are the following:

Table 41

Nomination times					
12:00	13:00	14:00	14:30	15:00	16:00
MOL RWE	GTS Fluxys	Transgas TIGF BEB E.ON Ruhrgas Wingas	OMV	SPP	GRTgaz Europol

Source: Energy Sector Inquiry 2005/2006

The suppliers should then receive a confirmation of the quantities recorded by the TSO.

352 The existence of different systems of nomination was seen as an obstacle to the opening of the market by EASEE gas, a European association where gas industry participants can discuss the harmonisation and simplification of business processes. Most of the TSOs participate in EASEE gas and agreed on common business practices on nomination for implementation in 2005. Most of the TSOs quoted in this chapter comply strictly with them, some do better on some points. (EASEE-gas common business practice 2003-002/01 « Harmonisation of the Nomination and Matching Process").

(851) The deadline for the confirmation by the TSO is 15:00 for Transgas (i.e within 1 hour), 16:00 for GTS (within 3 hours), 18:00 for GRTgaz (within 2 hours), SPP (within 3 hours), TIGF, Wingas and E.ON Ruhrgas (within 4 hours).

(852) The second stage, for those TSOs with hourly balancing regimes, is the possibility to re-nominate all along the gas day to be able to get closer to a balanced situation over the day. This possibility exists for all the relevant TSOs, with a lead time of 2 hours, and one hour for OMV.

(853) Some specificities per TSO exist[353] but it is unclear whether they are burdensome. If they alleviate the incumbents' constraints disproportionately, they will have a discriminatory effect.

(ii) Re-nomination and the feedback information given to clients

(854) Re-nomination is a flexibility tool that permits a shipper to adjust day-ahead their estimate/nomination by an intra-day (re-) nomination.

(855) Obviously the feedback given to clients within the balancing period is important for allowing clients to correct original estimates and limit the fall-out of incorrect estimates. In this context, the quality and timing of information given to clients, for instance through better access to metering data in electronic format, is of key importance. When, during a day, a shipper realizes, through the information given by the TSO, that he is out of balance, or risks going out of balance, he can react by modifying his nominations and try to come back to a balanced situation. When penalties are based on hourly imbalances, it is still possible to improve nominations for the coming hours through information received. However, in a system of hourly balancing this has no mitigating effect on penalties already paid.[354]

(856) To conclude, it appears that nomination systems *per se* are not seen as particularly burdensome by network clients. However, there is clearly room for improvement, in particular regarding harmonized nomination tools. There is some scope for discrimination although this is not strongly perceived by market participants. The degree of competition that is achievable by newcomers for temperature-sensitive clients will depend, to a significant degree, on the existence of client friendly feedback systems and re-nomination rules.

II.4. Perspectives and remedies; conclusion

(857) Although some of the criticisms expressed in the inquiry have been taken into account in improvements to systems and procedures since mid 2005, much work remains to be done to transform an aggregation of small independent balancing zones into a single European network system. To achieve progress, what is most required is a de-fragmentation of the system and a harmonization of rules and tools. A more favourable, market-based and

---

353 E.g. for E.ON Ruhrgas *"The network operator shall be entitled to limit the maximum number of renominations per shipper and day"*. GTS can grant exemptions from the obligation to nominate for specific entry points or exit points in a number of cases and the obligation to nominate does not apply in case GTS and the customer have agreed so in writing.

354 At the time of the initial conduct of the inquiry, GTS was strongly criticized for this absence of timely information. In its last procedure some of this criticism was taken into account by GTS as the inputs of an hour are balanced with outputs two hours sooner.

cost-effective environment, and in particular more market liquidity, are also necessary prerequisites.

- *De-fragmentation of the system is required*

(858) The temporal and spatial fragmentation of balancing on the transportation system results in a fragmentation of the portfolios of the suppliers, which is a bigger problem when the portfolio is already small. This is a major obstacle for the new suppliers entering the market. An overwhelming majority of suppliers agree on this point.

(859) The priority therefore needs to be action to suppress the physical constraints that prevent (i) the dramatic reduction of the number of balancing zones in the European Union and (ii) removing hourly constraints in balancing.

(860) The benefits of de-fragmentation are obvious, as they suppress a major obstacle to the entry of newcomers. However, it is necessary to achieve this goal, which includes new investment requirements, in a cost-effective way. Targets should be set and, where needed, investment programs should be prepared, submitted to regulators and published. These programmes for balancing may be integrated in those broader aims necessary to face the growing demand for gas and to cope with gas coming from new sources. The key principles to such balancing improvement programmes appear to be: (1) Whenever the existence of different neighbouring balancing zones is due to congestion, the TSOs should make these reasons clear and explain how and within which timeframe they will solve the problem. (2) When the existence of distinct neighbouring balancing zones is due to the existence of different gas specifications, all available means should be used to overcome these barriers by widening, to the extent possible, permissible gas specifications in a certain zone thus paving the way to dismantling artificial separations of zones. (3) When the existence of different zones is due to different ownership of networks, the conditions for effective cooperation or concentration between these operators need to be created. (4) Cross-border mergers of balancing zones should be facilitated, *inter alia* by regulatory harmonisation. (5) There should be no hourly balancing except when hourly balancing is justified by a line-pack not sufficient to face a strong variation of the demand during more than an hour (this could happen particularly in case of strong load variations for gas turbines in power plants). If hourly balancing is justified due to the demands of a few clients only (e.g. power plants), then the costs should be attributed to the suppliers of those clients and not to all suppliers serving other categories of clients (household, commercial and industrial customers). For those other categories, no hourly balancing should apply.

- *Harmonization of rules and, to the extent possible, gas qualities will bring cost savings*

(861) The single European gas market will be all the more achievable when the rules for nomination and balancing, including the determination of imbalance prices, are the same everywhere.

(862) Harmonization of gas quality specifications would help to lower (and finally suppress) some barriers. This would facilitate exchanges and help balancing across different Member States. This standardisation effort between Member States should be accompanied by a suppression of the balancing zones corresponding, for the same Member State and the same TSO, to different specifications.

(863) When harmonization of gas quality is not possible (for instance between L gas and H gas), providing sufficient and cheap capacities for adapting gas qualities is a necessity.

(864) EASEE gas efforts for the harmonization of nomination rules should be encouraged.

- *Creating a more favourable environment*

(865) There is little incentive for a vertically integrated group to spend time and money on the network in order to favour competition as it would, as a result, cut its profits in its own supply activity. A condition for accelerating a free and non-discriminatory access to the European gas network is reinforcement of *TSO unbundling*.

(866) *Cooperation among both regulators and TSOs* needs to play an important role in the process. Convergence of rules and procedures regarding third party access can be a step towards the reduction of the number of balancing zones. Cooperation of network owners/operators will be beneficial if it aims at furthering best practices but the existence of opposing incentives should not be ignored. Close cooperation of regulators on both sides of the border, accompanied by appropriate powers, is likely to facilitate exchanges between zones. Further, the activity of regulators can also play an important role in reducing the number of balancing zones within a country. For example, the German regulator is playing a central role in planning the reduction of the number of balancing zones in its Member State. Since the answers to the questionnaire were received, BEB and Wingas have suppressed one balancing zone each.

(867) There is also a role for *remedies in competition cases*. The settlement of the *Marathon* competition case brought by the European Commission obliged Gaz de France to reduce its balancing zones, from 5 to 2, which will be fully effective from 2009. It also obliged Ruhrgas to reduce its tariff zones from 6 to 4 in 2006.

(868) *More liquidity* in the market would help the shippers to trade their imbalances and reduce the role of TSOs in this field. Therefore, all the efforts made to develop hubs will be beneficial to easier and less costly balancing, contributing to the encouragement of newcomers.

Conclusion

The (temporal and spatial) fragmentation of balancing on the transportation system results in a fragmentation of the portfolios of the suppliers, which is a bigger problem when the portfolio is already small. This is a major obstacle for the new suppliers to enter the market.

Harmonization of nomination and balancing rules and, to the extent possible, gas qualities will bring cost savings. Where harmonisation of gas qualities is not possible, cost-effective measures to overcome this obstacle need to be put in place.

Effective unbundling of TSOs from supply and trading activities is necessary.

More liquidity in the market would help the shippers to trade their imbalances and reduce costs.

Regulators, TSOs and competition authorities need to play their roles.

III. Gas Study - Liquefied Natural Gas

III.1. Introduction

(869) The previous sections of this report have discussed the difficulties for new entrants to source gas in a market context characterised by long-term contracts between producers and suppliers and by the lack of hub liquidity. In this context, LNG is often seen as an opportunity which could provide a possibility to new entrants to bypass these difficulties. Investment in LNG infrastructures is considered important also with regard to diversification of supply and market integration. Several new LNG import facilities have therefore benefited from exemption from third party access under Article 22 of the Gas Directive.[355]

(870) In view of the important role that LNG could potentially play in the EU energy markets, the Commission has sought to improve its understanding of the current state and likely development of demand and supply for LNG in the EU, and on issues relating to competition, regulation and other policy considerations which the development of LNG might raise at Community level.[356] This chapter, most importantly, includes information gathered in discussions and meetings with stakeholders (investors, producers, shippers, potential customers).[357] Some information was collected specifically for the purposes of the Sector Inquiry, other information – where necessary on an anonymous basis - was used from other sources.[358]

III.2. LNG current and future demand

(871) Demand for LNG in the EU has been increasing in the past years. In 2005, the EU as a whole imported 43 bcm of LNG, corresponding to 9% of total gas consumption.[359]

Table 42

Natural gas demand, imports and LNG in the EU (bcm).

Year	Gas demand	Total Import	Import via LNG	Import LNG/Demand %	Import LNG/ Total Import
2000	417	296	28	6,7	9,5
2001	427	286	27	6,3	9,4
2002	427	310	33	7,7	10,6
2003	447	325	34	7,6	10,5
2004	459	339	34	7,4	10,0
2005	475	369	43	9,0	11,6

Source: IEFE, 2006.

355 See paragraph (873).

356 As part of this exercise, a study has been commissioned within the framework of the Energy Sector Inquiry to the consortium: Università Bocconi – IEFE (Istituto di economia e politica dell'energia e dell'ambiente) / Ernst & Young Financial Business Advisors S.p.A.

357 e.g. information gathered in Art.22 exemption procedures, from participation in conferences, monitoring of industry publications, meetings with stakeholders.

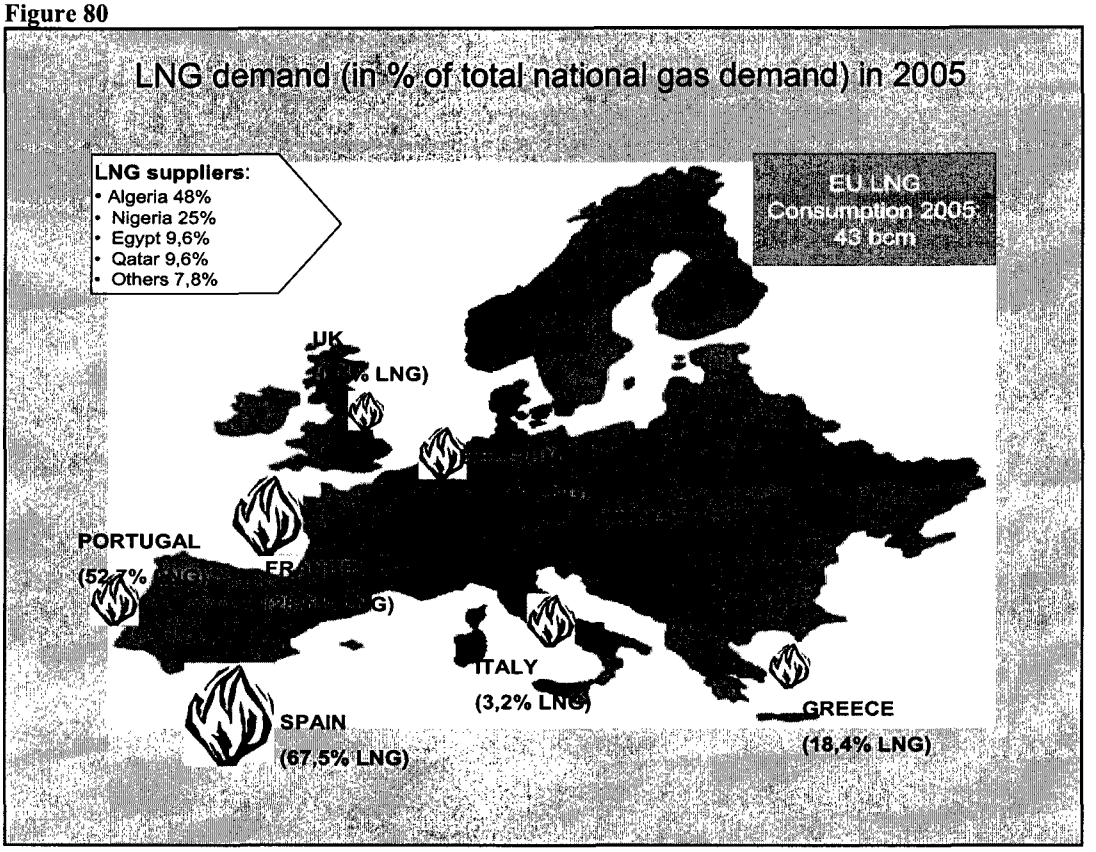
358 Some of this information is of confidential nature and is reported in anonymous form.

359 BP Statistical Review of World Energy, 2006.

Currently, no more than seven Member States (E, P, F, GR, BE, I, UK) have functioning LNG import facilities[360]. The average importance of LNG for these 7 Member States is of course, much higher. As Figure 80

(872) shows, Spain is, in relative terms (measured as a percentage of national consumption), the main importer of LNG in the EU, followed by Portugal and France.

Figure 80



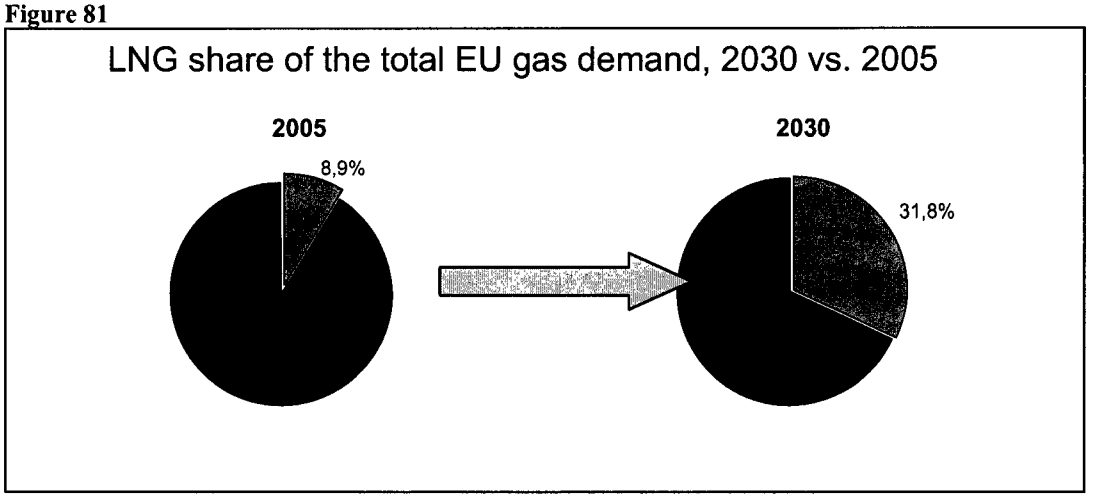
Source: Ernst & Young, 2006.

(873) In 2005 Spain was also the most important LNG importing country in the EU in absolute terms (21.85 bcm imported), followed by France (12.83 bcm), Belgium (2.98 bcm), Italy (2.50 bcm) and Portugal (1.58 bcm)[361]. The volume imported by the UK can be expected to rise steeply from 2006 onward.

(874) Regarding future supplies it is generally expected that the importance of LNG imports will rise significantly both in relative and absolute terms. Considering new re-gasification projects planned and under construction, the available receiving capacity of EU terminals is likely to expand from 74.8 bcm per year to around 141.9 bcm per year by 2010[362]. According to IEA projections and other forecasts[363], LNG deliveries are expected to reach 240 bcm per year by 2030. This would correspond to a six-fold increase compared to the current figure, representing about 31.8% of the total gas demand in 2030.

360 The main facilities necessary to import LNG are berths and unloading equipment, storages and regasifiers.
361 BP Statistical Review of World Energy, 2006.
362 IEFE, 2006 (GTE, Drewry Shipping Consultants Ltd., press releases on the internet).
363 Cedigaz.

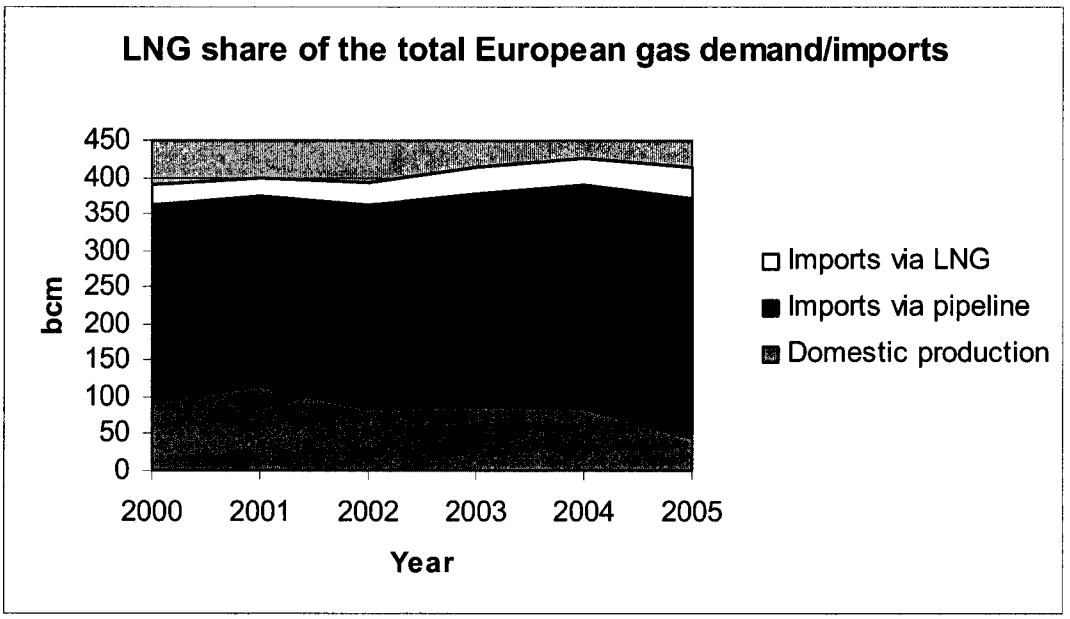
Figure 81



Source: BP Statistics (2006).

(875) However, it is important to note that rather than displacing current pipeline gas imports, LNG is expected to take a large share of incremental import needs arising from the fact that EU demand for gas is increasing[364], while European domestic gas production is in decline.

Figure 82



Source: IEFE, 2006.

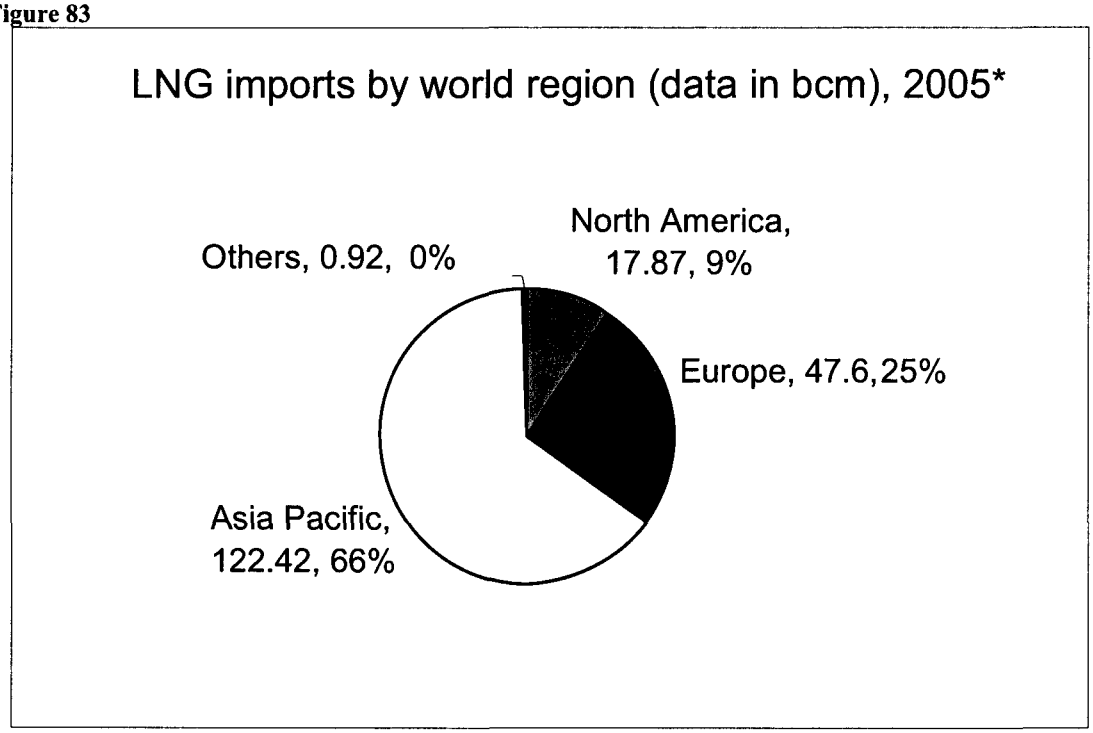
364 See paragraph 21 in section B.a.I.1.

(876) A number of factors explain the interest of many energy companies in importing LNG and that of governments in facilitating such investments.

- First, it allows diversification of their gas purchasing portfolio, thus contributing to a diversification of sources of imported gas.
- Second, the flexibility potential of LNG can contribute to developing spot markets.
- Third, LNG can be beneficial in optimising the performance of grids.
- Fourth, LNG can be an option for supplying geographical regions far from existing gas grids[365].

(877) Looking at the global picture, the Asia-Pacific region is currently, by far, the world's most important LNG consuming region (year 2005 figures), with its LNG trade accounting for about two thirds of the world's LNG trade.

Figure 83



Source: BP, Statistical Review of World Energy, 2006.
*Note: * Europe includes Turkey. The EU imported 42,72 bcm; others refer to Central and South America.*

365 For example to connect large islands or other regions which are difficult to reach pipelines.

III.3. Overview of LNG supply chain

(878) In order to understand the development of LNG supply, it is important to look at the key characteristics of its value chain. Three main segments can be identified: i. production, ii. shipping, and iii. operation of LNG receiving terminals.

Current and potential suppliers

(879) World LNG production is growing rapidly as new liquefaction plants are being installed in exporting countries, allowing new players to enter the LNG world market. Considering the number of projects in progress, overall production capacity will double by 2010[366]. In particular, Qatar has made huge investments that will make it the world's largest LNG producer by the year 2010.

(880) At the same time, the supplier structure of LNG into Europe is becoming more diversified. In 2002, Algeria had a share of 77% of the total EU market (and the remainder was supplied by Nigeria, Qatar, Brunei, Oman, Libya, Malaysia, Trinidad and Tobago, UAE and Australia). In 2005, the main LNG suppliers to the European market were Algeria (48% of current supplies), Nigeria (25%) and Qatar (9.6%). Other suppliers (7.8%) included Trinidad, Libya and Egypt. In the future, the regions relevant to the EU will probably include the Middle East (Qatar, Oman, Yemen, Iran), where 40% of world gas reserves are located, as well as Africa (Algeria, Libya, Egypt, Nigeria) and Norway. The extent to which Russia will produce LNG within the geographical reach of Europe is currently unclear. At least for spot trades South American and Caribbean producers such as Trinidad and in addition Venezuela could be viable relevant suppliers. Producers in the Far East, by contrast, are unlikely to supply directly to Europe, due to transport costs and high demand for LNG in the Far East.

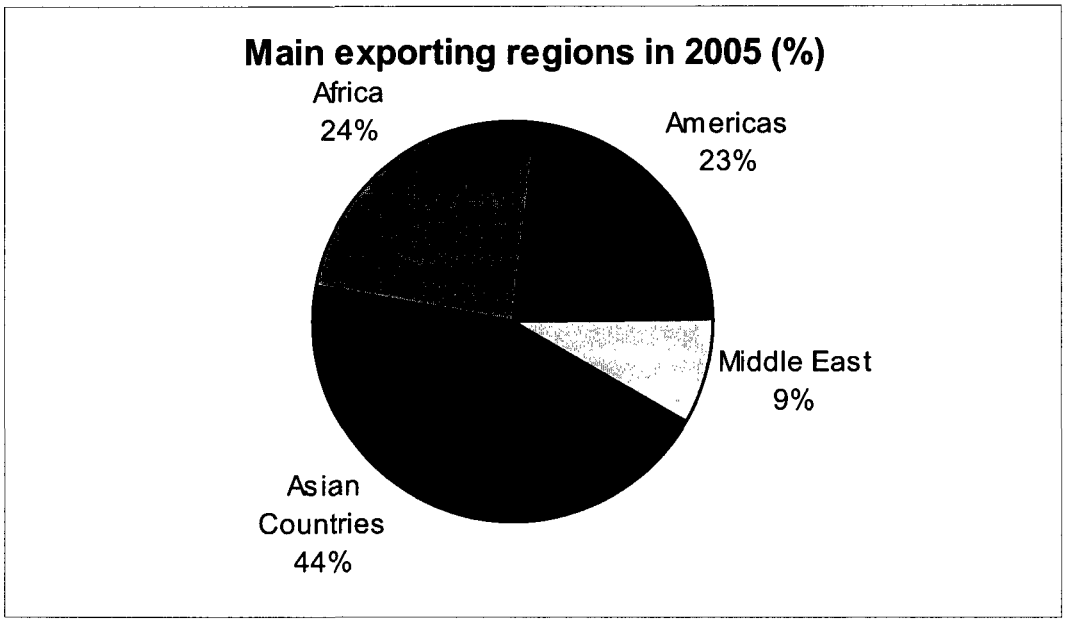
(881) A trend registered in the last few years is that LNG operators are moving downstream or upstream, increasing the level of vertical integration in the main segments of the LNG chain. In particular, producers are moving downstream and obtaining access to both re-gasification terminals in Europe as well as transportation segments[367] while importers are increasing their presence in the shipping industry and, to a lesser extent, in the liquefaction segment.

---

366 Assuming no delay in construction timing, an additional liquefaction capacity of 187 mtpa, could be available by 2010.

367 E.g. the partners in Qatar's LNG projects, Qatargas and Rasgas, will produce LNG and ship it to those import terminals (in the UK, France and Italy) partly owned by the same partners.

Figure 84



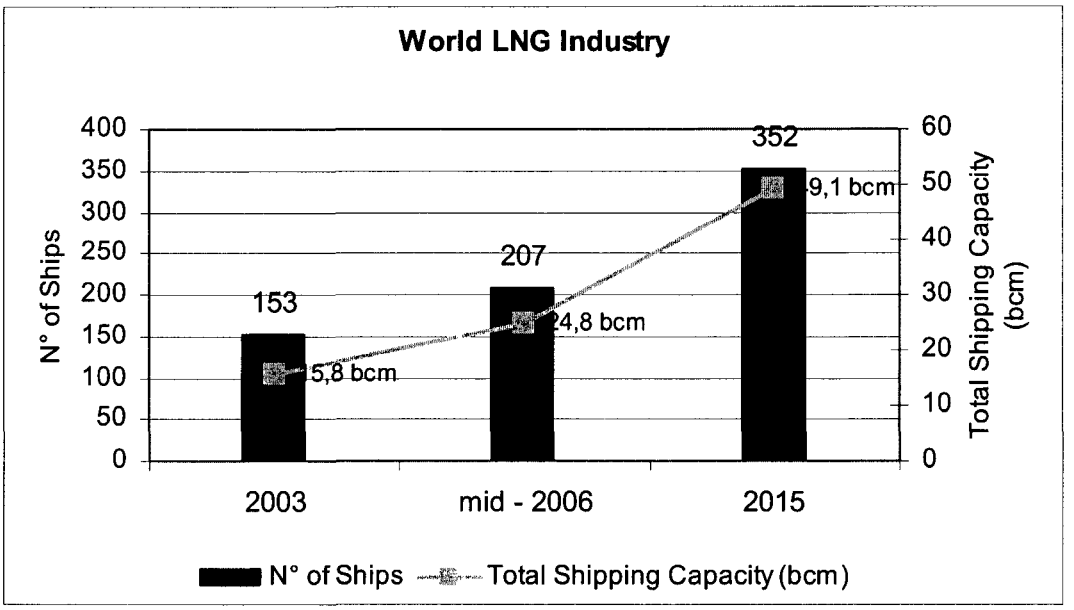
Source: BP Statistics, 2006.

Shipping capacity

(882) Shipping represents an important link in the LNG value chain, currently undergoing major transformation. The recent increases in LNG demand have resulted in the expansion of the LNG shipping industry and many tankers have been built in the past few years. In just three years – between 2003 and 2006 – the total number of vessels has increased by 35% and the transportation capacity by 57%. In the next decades the shipping industry is expected to grow further and by the year 2015 the total transportation capacity is likely to double, as 145 tankers are either planned or already under construction[368]. By the end of this decade, 25 new tankers will serve Europe, thus increasing the total transport capacity by 60%. The tables in the Annex K provide a detailed picture of the shipping capacity on the primary routes to the EU.

[368] Maritime Business Strategies. At the moment, about 64 tankers serve the European market.

Figure 85

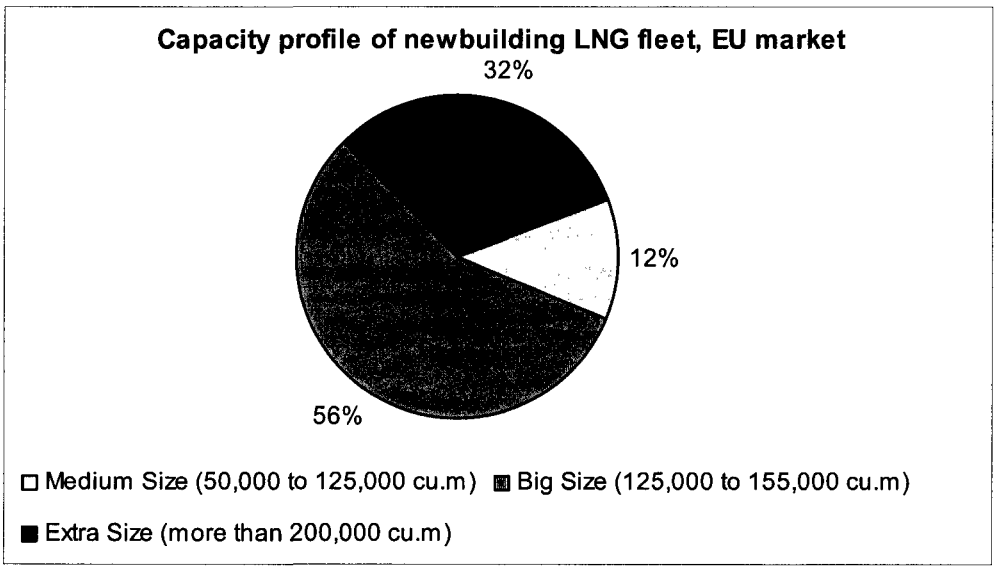


Source: Ernst & Young's elaboration of Maritime Business Strategies' data.

(883) In the past decades, LNG tankers used to be built for specific (very) long-term contracts and routes, tending to be rather small in terms of size. However, the recent trends are towards ever larger ships being built for charter contracts of shorter duration or even without a link to specific contracts.

(884) The available data on the new vessels planned and assigned to serve the EU market show a clear tendency: on average, the planned tankers are larger than the existing ones. In particular, as the following chart illustrates, there are no small tankers under construction, while a large number of extra size ships (more than 200,000 cm) will be delivered in the coming years.

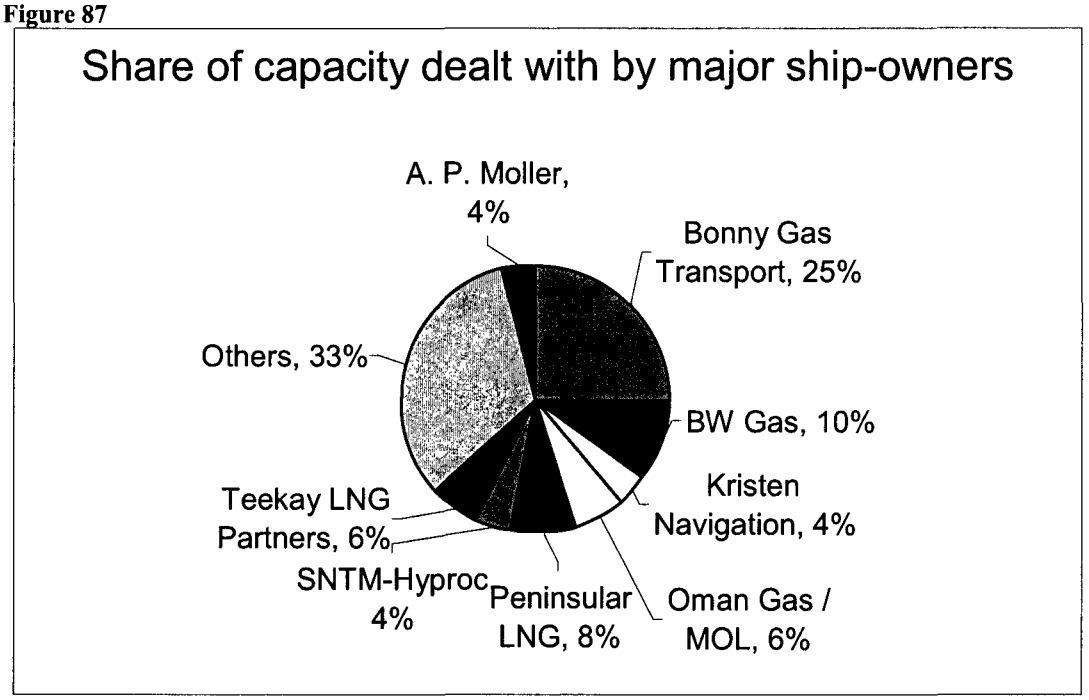
Figure 86



Source: Ernst & Young's elaboration of Maritime Business Strategies' data.

(885) According to the available data, less than 10 transportation companies control about two thirds of the available capacity. Among them, Bonny Gas Transport – a wholly owned subsidiary of Nigeria LNG limited – holds about 25% of the total existing shipping capacity devoted to serve the European market.

Figure 87



Source: Ernst & Young's elaboration of Maritime Business Strategies' data.

(886) Vertical integration between producers and ship owners is quite widespread. Of the 64 available tankers serving the European market, at least 25 ship owners are vertically integrated with the producers. Producers often cover the transportation segment directly through a wholly-owned transportation company or as shareholders in a transportation company. This type of integration also exists between importers and ship owners. Usually, large incumbents (such as Gaz de France or ENI) operate in the transportation segment, directly managing LNG tankers, or by means of a controlled shipping company[369].

Receiving terminals in the EU

(887) Currently, 12 LNG regasification terminals are operated in the EU in 6 Member States. 12 more are under construction, while 38 terminals have been proposed by prospective operators (and are in various stages of the planning and permission process), also in Member States not previously importing LNG, such as Cyprus, Germany and Sweden. Table 43 and Table 44 provide a cross-country comparison of such terminals.

[369] E.g. Messigaz is 100% owned by Gaz de France.

Table 43

Status of EU-25 regasification terminals by country in 2006					
		Existing	Under construction	Proposed	**Total**
Country	Belgium	1	1	0	**2**
	Cyprus	0	0	1	**1**
	France	2	1	3	**6**
	Germany	0	0	1	**1**
	Greece	1	1	2	**4**
	Ireland	0	0	1	**1**
	Italy	1	2	13	**16**
	Latvia	0	0	1	**1**
	Netherlands	0	0	3	**3**
	Poland	0	0	1	**1**
	Portugal	1	0	1	**2**
	Spain	5	4	5	**14**
	Sweden	0	0	1	**1**
	UK	1	3	6	**10**
Total		**12**	**12**	**39**	**63**

Source: IEFE, 2006.

Table 44

Maximum capacity of EU-25 regasification terminals in bcm, in 2006					
		Existing	**Under construction**	**Total**	**Proposed**
Country	Belgium	4,5	4,5	9,0	-
	Cyprus	-	-	-	0,7
	France	14,8	8,3	23,1	16,0
	Germany	-	-	-	10,0
	Greece	2,3	4,3	6,6	n.a.
	Ireland	-	-	-	n.a.
	Italy	3,5	16,0	19,5	84,2
	Latvia	-	-	-	n.a.
	Netherlands	-	-	-	>12,0
	Poland	-	-	-	3,0
	Portugal	5,2	-	5,2	3,3
	Spain	39,9	12,8	52,7	>9,6
	Sweden	-	-	-	n.a.
	UK	4,6	26,5	31,1	>18,9
Total		**74,8**	**72,4**	**147.2**	-

Source: IEFE, 2006.

(888) Most of the existing capacity (73%) on the existing terminals is currently allocated to national incumbents, 21% is held by other operators (within the same Member State) and 6% by non-EU producers (namely, Qatar and Algeria). The situation is somewhat different for the terminals under construction, where – for the terminals for which the planned capacity allocation is known - only 30% of the capacity will be controlled by the national incumbents, while the remaining 64% will be held by operators different from

the incumbents[370]. The remaining 6% is yet to be allocated[371]. The 64% held by operators other than the national incumbents, can be split into 25% allocated to national competitors, 37% to competitors from other EU countries and 38% to non-EU producers seeking to access downstream markets. As this analysis[372] shows, the ongoing construction of new LNG capacity opens possibilities for new entry. LNG terminals therefore have a potential of promoting market integration and competition within the European gas sector.

(889) As regards the capacity of proposed terminals, the only information currently available concerns ownership structure, which does not allow any reliable forecast of future capacity reservations. The terminals proposed will be owned, to varying degrees, by national incumbents (11% of invested capital), by national operators other than national incumbents (51%) and by foreign competitors (37%). Proposed terminal ownership participation of non-EU producers is currently minor (1%)[373]. Capacity reservation will depend on a number of factors. However, the ownership structure of current LNG terminal projects confirms the previously stated trend of entry of new players and therefore towards a greater degree of market integration and competition for EU gas markets.

III.4. The role of LNG for security of supply and competition in EU gas markets

(890) This section deals with the role that LNG is expected to play for the functioning of energy markets in terms of security of supply and increased competition downstream. It also considers possible obstacles to these developments.

III.4.1. Security of supply

(891) The development of LNG market is generally expected to contribute to the objective of security of supply. This is (i) because the range of LNG producers is broader than the number of countries from which gas can be delivered to the EU via pipelines, and (ii) because the flexibility of LNG supply (through spot trade) increases the ability of EU market to respond to short term supply and demand variations.

(892) Firstly, a greater reliance on LNG allows the EU to import gas from regions otherwise not reachable via pipeline and thus to diversify its supplier base. Diversification of suppliers through LNG has already taken place over the past few years with new Middle East and African producers having started to sell LNG to various Member States. Based on new contracts with deliveries starting over the next 2-3 years it can be expected that this trend will continue. Spot trade may occasionally involve even producer countries located in more distant regions.

(893) Secondly, LNG has a significant potential for enhancing the flexibility of gas markets. An advantage of LNG is that its production and transport infrastructures are less regionally constrained compared to pipelines. This fact allows the redirection of supply if the

370 These figures are calculated on the basis of just 8 out of the 12 terminals under construction – which account for 86% of the total capacity under construction -, because of the lack of detailed figures for the 3 remaining projects (Revithoussa expansion 1; Huelva expansion 1; Cartagena expansion 1; Barcelona expansion 1).

371 This corresponds to the share of the LNG terminals under construction in Italy which is reserved for third party access.

372 IEFE, 2006.

373 IEFE, 2006.

circumstances make it more profitable. Arbitrage transactions – in so far as they are not restricted – then permit LNG flows to rapidly react to market signals.

(894) This supply flexibility potential was not utilised in the traditional business model in which incumbent EU suppliers contracted dedicated long-term upstream LNG supply, transported it with dedicated ships and imported it through their LNG terminals which were dedicated to serving this very limited number of the incumbent's long-term contracts. However, LNG trade is gradually moving away from this rigid structure and is now converging towards a more flexible structure, which is more sensitive to market signals. The factors that foster the development of a flexible short-term LNG market are: (i) the presence of uncommitted liquefaction capacity; (ii) the presence of excess capacity on receiving terminals; (iii) the availability of tankers not committed under long-term contracts; (iv) use it or lose it measures imposed on capacity holders in terminals.

(895) The main trends of the LNG supply chain that have been presented in the previous section seem to confirm the current development of such factors on the world LNG market. Indeed, it appears that new liquefaction facilities in Algeria, Oman, Qatar and Trinidad are increasing the available spare capacity for spot trade. In addition, an increasing number of new vessels are being delivered with no link to specific routes which will thus be dedicated to LNG spot trade. As a result of these trends, LNG spot trade has emerged alongside long-term trade in the last ten years and in 2005 it accounted for 11% of the global LNG trade[374]. In Europe, the development of the Spanish market is most advanced with regard to spot transactions.

[374] Petrostrategies, 2006. Spot trade refers to transactions of less than a year.

Table 45

LNG spot market														
Spot LNG Trade, 1992-2005 (bcm and %)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Trade movements (bcm)	1,06	1,59	2,34	3,27	2,33	1,64	2,12	4,72	7,6	10,75	11,44	16,3	19,8	20,7
Share of the world LNG trade	1,3%	1,9%	2,7%	3,5%	2,3%	1,5%	1,9%	3,8%	5,5%	7,5%	7,6%	8,9%	10,9%	11,1%

Source: "Security of gas supply in open markets", OECD/IEA, 2004, Table 4.5, p192.

Table 46

Spot LNG sales and purchases as % of total LNG exports and imports in 2003			
Exporters		**Importers**	
Abu Dhabi	17	Belgium	7
Algeria	10	France	10
Australia	3	Italy	5
Brunei	2	Japan	0
Indonesia	0.4	South Korea	7
Malaysia	3	Spain	33
Nigeria	7	USA	53
Oman	28	Puerto Rico	8
Qatar	11		
Trinidad	25		

Source: "LNG cost reductions and flexibility in the LNG trade add to security of supply", published in Energy Prices & Taxes, OECD/IEA, 1st quarter 2005, Table 2, page xxxi.

(896) The share of LNG spot transactions is expected to increase in the next decade. It is forecast that by 2020, LNG spot trade could account for 30% of the global LNG trade[375]. Obviously, this also means that by far the largest part of LNG supplies (about 70%) will continue to be made on the basis of long-term contracts.

III.4.2. Competition in downstream markets

(897) The increasing role played by spot transactions in enhancing flexibility of the gas market could also facilitate the emergence of competition in downstream markets since new entrants can more easily source gas in liquid markets. The diversification of gas producers and the emergence of LNG spot transactions, which have been illustrated in the previous section, seem to open up new opportunities for a new entrant to source gas. To the extent that LNG increases the liquidity of EU markets, it can be expected to contribute to creating an environment which is more favourable from the point of view of creating competitive and integrated markets.[376]

375 Cedigaz, "Security of gas supply in open markets", 2004, IEA.

376 Increased liquidity brought about by LNG spot trade may furthermore provide an impetus to a shift in reference prices. E.g. in the US, the benchmark price for short-term transactions is the Henry Hub price.

(898) It is therefore important that this pro-competitive potential of LNG supplies is indeed realised. For this purpose, the Commission will monitor the development of the upstream gas market and the trends emerging in the different segments of the LNG value chain (including access to LNG terminals) to ensure that the ability of new entrants to access this type of gas at competitive conditions is not unduly restricted.

III.4.3. Pipeline to LNG competition

(899) The ability of a new entrant to compete in downstream markets through access to LNG will also depend on the cost-competitiveness of the LNG chain in comparison with pipeline gas. In the past LNG technology was considered too expensive to be able to compete directly with gas delivered via existing pipelines. However, in recent years the competitiveness of LNG compared with pipeline gas has improved, in particular in an environment of rising gas prices, and thanks to technological changes that have substantially reduced costs. For example, between 1990 and 2000 liquefaction costs have fallen by 25% to 35% and shipping costs by 20% to 30%.[377]

(900) The Commission has asked an economic consultant to carry out a simulation which allows a comparison of the cost of LNG with gas from long-distance pipelines.[378] A comparison has been made between the costs of pipelines of different throughputs (10, 25, 40 billion m^3/year) and LNG costs necessary to cover the same throughput. This comparison is based on a number of critical assumptions, and it is therefore of purely indicative value.[379] For pipeline gas, capital expenditure related to laying pipelines on land and building gas compressor stations was considered[380]. As regards LNG, the project chosen includes a tanker of 135,000 m^3 LNG and a re-gasification terminal with a capacity of 8 bcm per year. All facilities, including the liquefaction plant are assumed to be according to current best technological practice.[381]

---

377 Sources: Drewry, Poten and partners, LNG Observer, Oil and Gas Journal.

378 Consortium: Università Bocconi – IEFE (Istituto di economia e politica dell'energia e dell'ambiente) / Ernst & Young Financial Business Advisors S.p.A.

379 In particular, only the industrial cost of gas transportation is considered. More, specifically, taxes, royalties, efficiency gains, commodity value, extraction costs, production costs, operators' mark-up, financing costs have not been included.

380 These costs have been calculated as a function of the distance and on the pipeline's diameter. There are vast economies of scale associated with inland pipelines. The main CAPEX cost driver is assumed to be the price of steel ($35/inch/meter with a price of steel of $1,250/ton). CAPEX are considered as referring to an inland pipeline on a flat ground. Costs increase as the territory becomes more mountainous.

381 The main assumption is that all economies of scale are achieved at the nominal capacity of 7.5 million tonnes per year for the liquefaction plants, 135,000 LNG m^3 for tankers and 10 billion m^3 for regasification terminals. Because of the above assumptions, in the LNG chain there are significant economies of scale only relating to distance. Furthermore, for a new liquefaction plant a total installed cost of $200/tpy has been used. A specific fuel-gas requirement of 7% of the inlet gas is used for calculating the cost of fuel gas needed for liquefaction. The lifespan of the LNG liquefaction terminal is assumed equal to 25 years, while annual OPEX (operating expenditure) is 2% of CAPEX (capital expenditure). With regard to shipping, it is assumed that CAPEX is equal to $170m and OPEX $11.3m/year. Finally, as far as regasification is concerned, it is assumed specific fuel-gas consumption of 1.5% of the LNG to be evaporated and maintenance costs of 2% / year of the plant investment.

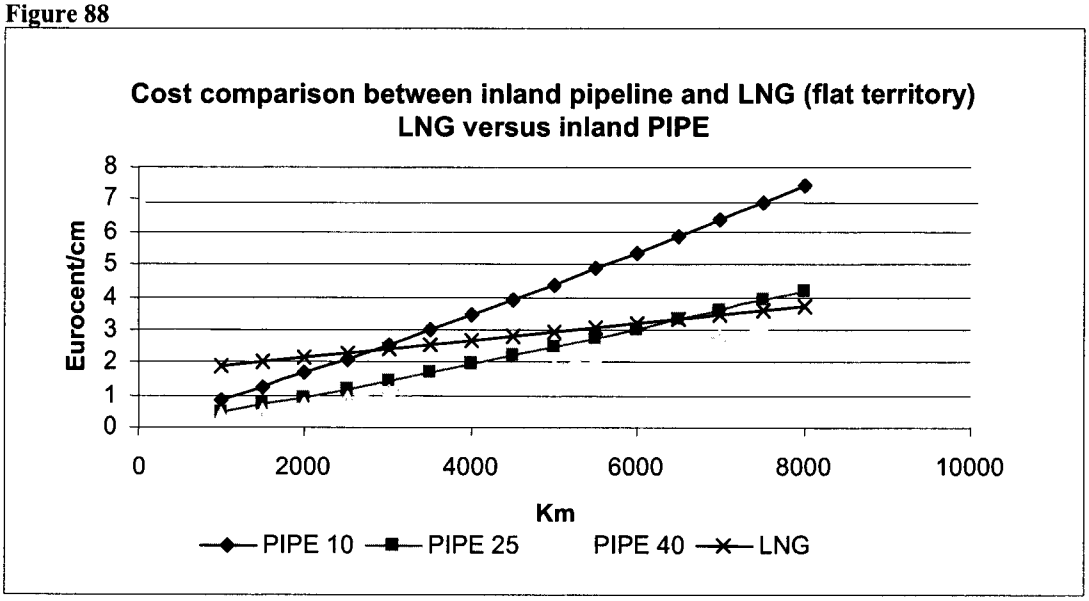
(901) The results of these comparisons suggest that, for a typical 25 bcm/year pipeline project

a. if the pipeline is built on a completely plain territory, it remains cheaper than the LNG project up to a 6,500 km distance from the production site;

b. if the pipeline is built on a topographically more mixed territory[382], LNG becomes cheaper from 5,500 km.

For smaller projects (10 bcm/year) LNG becomes cheaper from 3,000 km if the pipeline is built on a completely plain territory and for shorter distance in case of mountainous territory. For bigger projects (40 bcm/year) the pipeline remains more competitive for all distances. These results would change in case of submarine pipelines whose costs are assumed to be twice the cost for inland pipelines in plain territory.

Figure 88



Source: IEFE, 2006.

382 For the "mixed" scenario the following topography is assumed: 70% flat, 25% hilly and 5% mountainous.

Table 47

Cost comparison between inland pipeline and LNG (flat territory) Eurocent/cm								
distance	**1000**	**1500**	**2000**	**3000**	**4000**	**5000**	**7000**	**8000**
PIPE 10	0.82	1.24	1.66	2.54	3.44	4.38	6.35	7.39
PIPE 25	0.46	0.70	0.94	1.43	1.94	2.47		4.17
PIPE 40	0.36	0.54	0.73	1.11	1.51	1.92	2.78	3.24
LNG	1.91	2.03	2.16	2.41	2.66	2.91		3.69

Source: IEFE, 2006.
Note: data in c€.

LNG competitiveness versus PIPE 10

LNG competitiveness versus PIPE 25

Table 48

Cost comparison between inland pipeline and LNG (mixed territory) Eurocent/cm								
distance	**1000**	**2000**	**2500**	**3000**	**4000**	**5000**	**5500**	**6000**
PIPE 10	0.93	1.89	2.68	2.88	3.91	4.97	5.51	6.07
PIPE 25	0.52	1.07	1.34	1.62	2.20	2.80		3.42
PIPE 40	0.41	0.83	1.04	1.26	1.71	2.18	2.42	2.66
LNG	1.91	2.16	2.28	2.41	2.66	2.91		3.17

Source: IEFE, 2006.
Note: data in c€.

LNG competitiveness versus PIPE 10

LNG competitiveness versus PIPE 25

(902) This comparison illustrates that the economics of transportation (distance between production and consumption centres, topography of territory, economies of scale, etc.) strongly influences the ability of LNG to compete with gas delivered via pipeline and thus to constrain the price of the latter. However transport cost will only be one factor for the producer in deciding the best-suited transport mode. Considerations such as the increased flexibility of LNG (which can also bring higher value to the producer) and considerations of political stability of transit countries will also influence decision making. Finally, producers at a large distance from major centres of consumption or separated by the sea do not, in any case, have the option of supplying by pipeline at all.

III.5. The regulatory framework

III.5.1. Introduction

(903) In order to fully reap the potential benefit of LNG for enhancing competition and security of supply, it is essential that the right regulatory system is put in place in Europe. In this respect, the Second Gas Directive contains a number of provisions with regard to, or with a particular impact on, LNG infrastructure. These can be summarized as follows:

a. The Directive requires that prices for accessing LNG infrastructure and capacity allocation are regulated.

b. This includes obligations on the TSO to ensure that the rules for access to the system (i.e TPA or third party access rules) are non-discriminatory and also

requires that the tariffs charged for using the system are approved by the relevant regulatory authority.

c. However, a derogation possibility exists in the Second Gas Directive by which new or upgraded infrastructure can be exempted from the third-party access rules.

d. The granting of an exemption is subject to a number of conditions, including, crucially, that the exemption not be detrimental to competition. These exemption criteria are set out in full in Article 22 of the Second Gas Directive.

e. For operators of LNG infrastructure unbundling requirements are limited to accounting separation.

f. 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 areas of activity.[383]

III.5.2. Investment issues including exemptions under Article 22 of the Second Gas Directive - trade off between openness of access and investment incentives

(904) The Preliminary Report of The Energy Sector Inquiry contained a number of remarks with regard to investment issues which remain valid and have a particular importance for investment in LNG terminals and the regulatory framework applicable to them. The main themes are reproduced and complemented below:

(a) 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 and the drive to further diversify supplies. This will most likely require substantial investment in new LNG terminal infrastructure. As explained above, a significant number of LNG terminals are already under construction or in the planning stage.

(b) New infrastructure can, by increasing 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. However, the existing long-term reservations on transit lines demonstrate the risk of cementing market shares in destination markets. It is therefore important to ensure that the conditions of any procedure for allocating LNG receiving capacity do not perpetuate the current level of foreclosure observed on existing transit lines. This has already been achieved for the new LNG terminals under construction. A significant share of their capacity will be allocated to operators different from the incumbents, both to new entrants and to producers themselves.

(c) Since LNG projects require significant capital investment[384], the nature of the financing arrangements is key in order to ensure their viability. Projects without

383 The issues of vertical integration and insufficient unbundling are dealt with in chapter B.a.II.2.

384 This is the case although, of the three main steps in the LNG chain, it is the re-gasification terminal which requires the least investment (14%) while it is the liquefaction terminal which needs the highest investment (60%). Transportation, in turn, accounts for 26% of the total investment required.

appropriate financial security will not take off at all. 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.

(d) Article 22 of the Second Gas Directive provides an exemption possibility from TPA rules for new or enhanced infrastructure. This is an important means to encourage investment. It should, however, be noted that the granting of an exemption, as an exception to the default arrangements, is not necessarily a requirement in order for new infrastructure to be built. Indeed, it has been highlighted that other ways of encouraging investment exist, e.g. through an enhanced regulated rate of return.[385]

(e) In assessing an exemption request from the point of view of competition, one of the key facts to consider are the rules followed for allocation of such capacity[386] and the nature of any contracts allocating capacity on the new or upgraded infrastructure, and in particular the counterparties concerned, the scope of the contracts, and their duration. The impact of these elements will be assessed in the light of the degree of competition in downstream markets and the possibilities for access to other terminals in the vicinity.

(f) In addition, another consideration is whether the specific conditions of such a procedure indeed allow for different types of companies (including new entrants) to participate in the expansion. For example, it will be 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 and where there is no liquid wholesale market for gas. In certain situations, the risk that access to short-term capacity is foreclosed for a long time must therefore be taken into account even if this can run counter to the desire of the project developer to lay-off as much risk as possible through locking-in long-term contracts.[387]

(g) Moreover, strong incentives for an effective functioning of the secondary market should be set, e.g. through ensuring an effective application of use–it-or-lose-it principles or use-it-or-lend it principles. This is particularly important whenever there is the possibility that the LNG terminal may provide the capacity for the gas at the margin and set the market price. In that case, the long-term capacity holders, even if they are not in a dominant position on a national wholesale

385 Cf. the CEER paper 'Investments in gas infrastructures and the role of EU national regulatory authorities'. Reference can also be made to the Spanish LNG market which does not take recourse to TPA exemption provisions and has found other means to secure investment.

386 For instance, it has been widely acknowledged 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.

387 Reference can be made to decisions of the Italian regulator, not to exempt a maximum of 20% of the terminal capacity from regulated TPA. While this may lead to the risk that the remaining 80% of exempted capacity also have to guarantee the income of the remaining 20% to the developer (thus increasing their costs), such effect is not inevitable: (i) the developer can be expected to take over a certain minimum amount of financial risk (mitigated by the fact that the operational time of the terminal may well go beyond the 20 [or even 25] year period upon which many project-finance calculations are based (ii) some initial higher capacity reservation payment by the long-term capacity holders could be paid back to the from the (regulated) revenues of the short-term sales.

market, may not always have the commercial incentive to use free capacity to the maximum. The only exempted terminal in operation is the first phase of the Isle of Grain LNG terminal. It is worth noting that shortly after the beginning of its operation an issue of capacity underutilisation arose at a time of rising prices.[388]

(h) Thus, while the exemption scheme has so far worked satisfactorily in stimulating investment, it is necessary to consider that the experience gathered so far with regard to the exemption procedure and its specific effect on the market is still limited and that the effect of future exemption applications has to be assessed carefully.[389]

III.5.3. Current national regulatory conditions in EU LNG terminals, in particular with regard to capacity allocation mechanisms and pricing

(905) The importance of pro-competitive primary and secondary capacity allocation mechanisms, both in exempted and non-exempted (regulated) TPA regimes, has already been underlined. The current section looks at the regulatory regimes in Belgium, France, Italy, Spain and the UK.[390]

Exempted and non-exempted ("regulated") terminals

(906) Only in the UK and in Italy exemption mechanisms from TPA for new investments have been applied. Exemption periods for these terminals are 20-25 years. For two terminals in Italy (Brindisi and Rovigo) the exemptions cover 80% of the capacity, whereas for three UK terminals 100% of the capacity was exempted, the British regulator having a review possibility if market conditions should be substantially different to the expectation at the time of the exemption. As only one of the exempted terminals (the Isle of Grain terminal in the UK) is currently in operation, the large majority of LNG terminals in the EU are currently subject to regulated TPA.

(907) For the "old", pre-Directive, regulated terminals in Belgium, France and Italy, two capacity allocation mechanisms for primary capacity in old terminals currently exist side by side. At Zeebrugge (Belgium) and in France, capacity is allocated according to the principle of first-come-first-served (FCFS). In Italy's Panigaglia terminal, capacity allocation follows a priority order by which first priority is given to holders of take-or-pay contracts signed prior to 10 August 1998.[391] In spite of these differences, the outcomes in these three countries are similar. Due to long-term capacity bookings, even today a large part, sometimes even all, of this old-terminal capacity continues to be reserved for the incumbents.

(908) Regarding new terminals or terminal expansions of regulated-access terminals, there is again a difference in approach. In Belgium, capacity for the terminal expansion has been allocated through an open season process, while in France 90% of new capacity at the

388 Reference can be made to the UK case study in section B.a.II.3.4., regarding the contractual congestion problem at the Isle of Grain terminal at the beginning of winter 2005.

389 Five terminals have obtained exemptions of which one has started operations while three others are being built and are scheduled for entering into operation in the next few years.

390 The two terminals in the two countries still benefiting from a general exemption from the liberalisation provisions of the Second Gas Directive (Sines in Portugal and Revithoussa in Greece) were not considered in this context.

391 Subsequently, the merit order foresees the allocation of the remaining capacity to holders of other pluriennal importing contracts and then to holders of annual importing contracts. (Capacity requests of the same priority class within that merit order which can only be partly satisfied are split on a pro-rata basis.)

new Fos Cavaou terminal is reserved to project sponsors and 10% is available for third parties on a pro-rata basis. In both cases, the incumbent (or its group) secured the largest part of the new capacity. Capacity allocation for the regulated part of the Brindisi and Rovigo terminals will be subject to a different priority order than for existing terminals. In particular, this is intended to favour the access to capacity by final consumers[392] and by shippers wishing to trade gas at the Italian hub (PSV).

(909) In Spain, where capacity is allocated following a FCFS method, the situation is different from Belgium, France and Italy insofar as a much larger number of shippers have gained access to primary capacity. Several circumstances can be expected to have had an influence on this situation, in particular (i) ownership unbundling of supply and import and transmission infrastructure, (ii) the construction and operation of additional terminals by third parties and (iii) specific regulatory action. As a specific regulatory measure, a cap applies to short-term capacity in Spain. While 75% of the total capacity is set aside for contracts with a minimum length of 2 years, the remaining 25% is for contracts with a duration of less than 2 years. No shipper is to hold more than half of this short-term capacity on the same terminal.

(910) Regarding the exempted terminals in the EU, an open season procedure was used to allocate primary capacity at the Isle of Grain terminal in the UK where the operator of the terminal is a separate entity from the shippers who have reserved the whole capacity. As regards the other exempted terminals in the UK (Dragon and South Hook) and in Italy (Brindisi and Rovigo), the users of capacity are largely the same companies who own and sponsor the project.

Secondary capacity and anti-hoarding provisions

(911) In all countries examined, terminal operators have organised a secondary market for capacity allocation although the only country with explicit regulation for a secondary market is Belgium. The mere existence of secondary markets at EU terminals is, however, not sufficient to ensure their well-functioning. It is generally acknowledged that in Europe secondary trading has not fully developed yet.

(912) Anti-hoarding clauses are present in the five countries analysed (B, F, I, ES, UK) but are characterised by a considerable variety of specific provisions. They are mainly in the form "use it or lose it" (UIOLI)[393] with either an ex ante or an ex post effect. In an ex ante system each slot that is not used by the capacity holder has to be offered to the market. In an ex post system, the degree of unused slots is afterwards taken as an indication of changes that need to made for future capacity allocation: should the operator that has reserved capacity on the terminal not use a certain amount of it for a certain period of time, the booked future capacity (or a part of it) will be lost.

(913) More specifically, in Belgium the user of the LNG terminal must notify Fluxys LNG of the slots that will not be used two months in advance at the latest. In France, three conditions must be fulfilled for the user to lose its allocated capacity: underutilisation of part of allocated capacity in a terminal where there is no more available capacity; the capacity owner refuses to sell that part of capacity on the secondary market at a higher price than the tariffs; the capacity owner is unable to justify its behaviour. In Italy, if during a gas year more than 20% of the exempted capacity is not used, the user loses the

392 Excluding electricity producers.

393 In Belgium the term "use it or lend it" is also applied.

exemption right for the overall capacity starting from the following year. In Spain, a real UIOLI system does not exist, but every operator can apply to the TSO, informing him of under-utilisation of capacity which is then attributed to other interested competitors[394]. The primary users can however also notify that they intend to use a smaller amount of the capacity reserved up to three months in advance. Finally, in the UK (Isle of Grain) if the capacity holders do not sell their unused capacity, the LNG terminal operator is allowed to sell that capacity to another party[395]. In this case, the notice period is ten days. It has to be pointed out that penalties, although of quite different deterrent effect, are present in all the above countries with the exception of the UK.

(914) At this stage, experience with the effectiveness of the various anti-hoarding measures is still limited and will need to be closely monitored. A factor of some importance in this context is the advance notice period of available slots. Shippers should obviously have a sufficient possibility to react to the availability of a slot in order to re-direct the route of their ships. It can be noted that sailing time for an LNG vessel from the Arabian Gulf to an existing UK terminal has been stated as 15 days, and sailing times from Nigeria, Trinidad and Egypt as 7-10 days.

Pricing issues

(915) The determination of access charges to LNG terminals is complex. Various models exist. However, as an in-depth survey on the views of stakeholders is absent, this report abstains from taking position on this issue, apart from making the following remarks.

(916) Firstly, an issue that has been brought to the Commission's attention is the separate marketing (and split tarification) of individual services (berthing and unloading; storage; send-out). It has been argued that such split marketing and pricing can be an advantage whenever shippers' individual needs differ. e.g. a small shipper with a low frequency of cargoes can have substantially higher terminal storage needs than a large player with a high frequency of cargos. The split marketing of these service components on the secondary market should therefore be encouraged.

(917) Secondly, regarding pricing of spot cargos, tables below provides a comparison, for 4 Member States, of the cost of a spot unloading of 1 TWh with an emission on the transmission network of 30 days. The result shows that the costs for France and Italy (730 000 EUR and approximately 850 000 EUR, respectively) are significantly lower than for Belgium (3 720 000 EUR). It must be noted, however, that this result for Belgium is strongly influenced by the fact that the standard period for send-out in Belgium is 10 days only and any shipper surpassing that period would have to buy this service for the whole year (instead of only for additional 20 days as in the example given). Such spot cargo shippers, in Belgium, would therefore be dependent on the secondary market where a long-term shipper could offer them either a whole berthing slot including more generous send-out conditions or just such send-out conditions in isolation at a much more favourable price than in the example. Nevertheless, even without any costs for additional emission time, the price for Belgium would clearly be the highest (1 010 000 EUR). For Spain, no such booking could take place in practice since the amount of storage an LNG shipper can have on a terminal is subject to more stringent

394 In this case, the primary holder of capacity loses as well part of the guarantee provided for the utilisation of capacity.

395 Capacity can only be advertised when there is the right combination of a berthing slot, tank storage and sufficient time to send gas out into the network before the next scheduled slot.

limitations[396]. A variation of this example calculates the price for a shorter send-out period of 8 days.

Table 49

Cost of a spot unloading of 1 TWh		
	With an emission on the transmission network of 30 days	**With an emission on the transmission network of 8 days**
Belgium	3 717 043 EUR	1 010 443 EUR[397]
France	730 000 EUR	Not possible[398]
Italy	851 929 EUR	851 929 EUR
Spain	Not possible[399]	635 333 EUR

Source: Commission elaboration of IEFE and national regulators data.

(918) The details of these calculations are shown in the Annex 2. This illustrates that not only tariff levels (including gas consumptions and guarantees), but also tariff structures differ substantially across Member States.

Further sensitive aspects concerning access to capacity

(919) There are an number of areas where regulatory provisions and/or operational rules may play an important role in ensuring effective access to the capacity of LNG terminals such as: the duration of individual slots[400], the conditions of access to the national grid, the conditions of access to the terminal's storage capacity, transparency on the operation and utilisation of the terminal, vetting procedures necessary for new ships.

(920) The ways these aspects are dealt with differ substantially between Member States. While individual situations can vary and can call for certain terminal-specific solutions it is nevertheless unlikely that such wide variations even on fundamental issues such as transparency reflect an optimal outcome. Further possibilities for regulatory improvements, e.g. through adoption of best practice, should therefore be explored[401].

396 Storage is limited to the greatest amount between 30 GWh or 8 days of the contracted capacity calculated as an average of the last 30 days. An emission on the transmission network of 30 days would not respect these limitations. Holding storage capacity over a longer period could be obtained as a result of swaps among different users of capacity.

397 In Belgium a slot includes unloading, storage and re-gasification capacity for 10 days

398 For France, the calculation is not possible for less than 30 days, since GdF proposes only a constant emission during 30 days for a spot cargo. Nevertheless, it is technically possible to decrease the number of days of emission by using the secondary market on the point of exchange of LNG.

399 See footnote 396.

400 Berthing times of slots can limit the overall capacity of the terminal if they are too long. Unloading times of vessels are always less than 24 hours. Nevertheless berthing slots in some countries have a duration of 1 day and in others of 5 days. In some cases the access conditions to the grid discourage utilisation of slots.

401 NERA is currently preparing a study for CEER/ERGEG which has as its main topic the various regulatory approaches to LNG re-gasification terminals. This study can be expected to make a valuable contribution to such discussion.

Conclusions

LNG supplies widen Europe's upstream supplier base and are important for both security of supply and competition between upstream suppliers.

The potential of LNG supplies to reduce concentration on downstream markets still needs to be realised.

Traditionally LNG has been imported by national incumbents who also own LNG terminals, which has not permitted the potential of LNG imports to increase downstream competition to be realised. 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 access, LNG-storage or emission rules with negative effects on competition, or by anti-competitive behaviour.

Strong investment in LNG terminals has taken place and is scheduled to continue in the coming years. Investment in some LNG terminals has benefited from exemptions from third party access obligations under a test applied by national regulators under Commission supervision. This test seeks to achieve a balance between *ex ante* incentives to invest and competition once the investment has been made.

The regulatory regime to be put in place in the EU needs to ensure efficient short-term access to unused slots and to prevent any foreclosure of the market.

c. ELECTRICITY

I. Downstream market

(921) Competition at the retail level is an essential element of well-functioning markets. The confidence of electricity consumers in the liberalisation process relies precisely on effective downstream competition. Moreover, any imperfections of the retail market can be expected to have serious spill-over effects for the wholesale markets including generation activities (and vice-versa). If retailers do not have to vigorously compete for final customers, they also do not need to secure the lowest cost generation portfolio, whether it is their own production or from other producers. Thus competitive pressure from the demand side is required for effective wholesale trade. This in turn increases the risk of collusion between wholesale suppliers.

(922) Even if the wholesale trade is highly concentrated, customers can still benefit from the existence of competitive downstream markets. Competition at the retail level prevents double marginalization, which occurs when downstream firms mark up over their input cost. Hence, thanks to competition on the downstream market, a mark-up on a mark-up, i.e. double marginalization, is less likely.

(923) This chapter gives an overview of some basic features of the downstream market. It essentially deals with the question of possible market foreclosure through long-term supply contracts and the number of the offers from competitors available for customers. The chapter aims at providing provide some indication as to the level of downstream competition.

(924) The focus of the chapter is on the industrial clients. These industrial customers were first to become eligible, so this segment of the retail market has the longest history of being open to competition. Furthermore, it encompasses the most attractive clients in terms of consumption volumes. Finally, the industrial clients, all other things being equal, are the best informed consumers, whose price sensitivity is expected to be the highest among all customers.

I.1. Foreclosure on downstream markets

(925) The concept of downstream foreclosure refers to the anti-competitive effects which can arise from a bundle of parallel long-term agreements between final customers and their suppliers - be it a dominant supplier or a network of suppliers engaging in the same type of practice[402]. A network of parallel contracts can adversely affect the market when the contracts prevent alternative suppliers from finding suitable outlets for their products. The customers have met their entire demand – or a large part thereof - on the basis of long-term contracts with incumbent suppliers and are thus no longer available on the market.

[402] Suppliers with a market share not exceeding 5% are in general not considered to contribute significantly to a cumulative foreclosure effect (De-minimis Notice, OJ of 22.12.2001, C368, p. 13).

(926) When assessing long-term exclusive supply relationships at least the following four elements will normally be taken into account[403]:

- the volumes tied under the individual contracts (exclusivity)
- duration of the contracts
- cumulative market coverage of the contracts, and
- efficiencies claimed by the parties (e.g. recuperation of sunk investments)[404].

Whereas efficiencies are to be considered on a case by case basis, the other three criteria (exclusivity, duration, and cumulative market coverage) will be examined in turn in order to obtain a first indication on whether downstream contracts raise barriers to entry. In the present context the intention is not to spell out in which circumstances such contracts may be incompatible with Articles 81 and 82, but to ascertain whether from a factual point of view new entry and expansion by other market players is made more difficult.

I.1.1. Exclusivity

(927) From the market foreclosure perspective, contractual exclusivity provisions are the most common tools to ring-fence the customers from potential competitors throughout the entire contractual period. As described in the downstream chapter for gas, these provisions may take the form of either *de jure* or *de facto* obligations to meet most of or the entire demand from a given electricity provider.

(928) *De jure* obligations oblige the customer to meet its entire demand or a very high (fixed) percentage thereof with the current supplier. De facto obligations can take a variety of forms. They may be created through tight scheduling of the off-take quantities based on historical data (fixing past consumption levels as minimum off-take). Suppliers may also apply other clauses, which can strengthen the impact of the above-mentioned provisions. For example, suppliers might remove the necessary flexibility that previously existed in contracts to switch at least for partial deliveries to an alternative supplier or they may give customers an incentive (e.g. through rebates) to take all or large part of their requirements from the incumbent supplier.

(929) In the framework of the Sector Inquiry, a number of suppliers selling electricity to final customers were asked to provide copies of their standard contracts which they offer to eligible end-consumers with an annual consumption equal to or larger than 5 GWh[405]. The analysis of these standard contracts has confirmed that most of these contracts contain provisions which give rise to *de facto* exclusivity of supply during the entire duration of the contracts. The suppliers require the customers to sign up to a specific off-take obligation that is usually fixed at values close to the customers' total consumption. Such an off-take obligation is often additionally sheltered by a take-or-pay clause or an excess charge that are to be applied when actual consumption diverges from an off-take

403 See DG Competition discussion paper on the application of article 82 of the Treaty to exclusionary abuses page 42f. Other issues that can be taken into account include: other entry barriers, the nature of the customer (key customer justifying a market entry in its own right) and countervailing buyer power.

404 See paragraph 44 of the Commission Guidelines on the application of Article 81(3) of the Treaty [2004], OJ C101/97. The present chapter, which aims at describing markets, deals with the first three elements. However, in the application of Articles 81 and 82 to individual cases all four elements are taken into account.

405 This does not, however, exclude that certain customers, in particular the biggest customers, are offered tailor-made contracts to suit their requirements. For example, one of the UK suppliers informed about its commercial policy to offer the 'over 120 GWh customers' a possibility of splitting their purchases into separate tradable products.

forecast. One of the standard contracts from the sample explicitly obliges a customer to agree 'to take only from the Supplier its total requirements of electricity at each of the Customer's Premises during the Term [of the agreement]'.

I.1.2. Duration of contracts

(930) The second important element to consider when assessing downstream foreclosure, is the duration of contracts[406]. As explained above long-term contracts curb the customers' mobility and prevent the customers from choosing the best offer available on the market at a given moment in time. On the other hand, depending on the structure of the individual contract, in particular the price formula contained in the contract, long duration may allow the customers to better manage the risks related to adverse price movements, to which they would otherwise be exposed. The benefits of price security, which for certain customers may represent a real value, may not however outweigh the negative effects on competition and overall consumer welfare of long-term contracts on market contestability. This fact must also be considered when discussing the recent calls for re-introduction of long-term reservations (of the already congested and scarce interconnections) in order to enable long-term supply contracts.

(931) Contracts can be signed for a fixed or an indefinite period. In the first case, the original contract term may be subject to a tacit renewal clause. Tacit renewal seems to have a constraining effect on customer switching. For the purpose of competition analysis, contracts containing such a clause are usually considered to have a similar impact on the market as contracts of indefinite duration, particularly for small customers for whom the electricity price is only a minor proportion of overall productions costs.

(932) The Sector Inquiry shows that when the standard contracts foresee a specific term, as is, for instance, the case in the United Kingdom, France and Germany, the agreement is usually signed for the period of 12 months or of a factor of 12 months (for more on the duration of contracts see Figure 89 to Figure 95). These standard contracts often contain a tacit renewal clause, which applies in the absence of prior notice to terminate the agreement.

(933) A notice period is another time-related element which has to be considered when assessing the duration of contracts. Whilst the possibility to terminate a contract would seem to allow a customer – at least in principle - to look for alternative suppliers, other elements might need to be considered, such as incentives not to make use of the possibility or obstacles to effectively exercise the possibility to terminate the contract (see also above on tacit renewals of a contract). A long notice period implies that the customer must have a new contract with an alternative supplier in place long before the existing contract expires. A short notice period on the other hand gives him the opportunity to find an alternative supplier shortly before the contract expires. For the alternative supplier this means that he has better knowledge as regards his ability to deliver. A long notice period has a price-wedge effect creating expectations of a risk premium both on the demand and supply side. Consequently, it lowers the likelihood of switching.

---

406 The Bundeskartellamt recently adopted a decision against long-term supply contracts in the proceedings against E.ON Ruhrgas AG (Bundeskartellamt, 8. Beschlussabteilung, B8 -113/03 -1, 13 January 2006). The immediate enforceability of the Bundeskartellamt decision was confirmed by the Düsseldorf Higher Regional Court (VI-2 Kart 1/06 (V), 20 June 2006).

Table 50

Country	Notice period	
	From	To
France	45 days	
Germany	3 months	6 months
United Kingdom	28 days	60 days

Source: Energy Sector Inquiry 2005/2006

(934) The Sector Inquiry reveals that notice periods differ between Member States as well as between individual suppliers (see Table 50). In the United Kingdom, notice periods range from 28 to 60 days. In France, the standard contracts fix a notice period at 45 days, whereas in Germany the most common notice period is 3 months. The threefold, or even sixfold, difference in the duration of notice periods appears to be rather high, especially taking into account that the level of risk faced by the big suppliers on the three markets in question is similar. The shorter duration in UK contracts shows that short time notice periods do work in practice.

I.1.3. Cumulative effect

(935) The final element to be considered in the foreclosure analysis is the cumulative market coverage of the bundle of contracts. Since electricity markets are characterised by a high level of maturity, which manifests itself in a relatively low number of new connections to the grid as compared to the total number of customers, the bulk of new clients can only be recruited among existing customers by means of lower prices and/or better terms and conditions of sales. However, in order to profit from a competitive offer, the existing customers must be first free to switch. One occasion where such conditions typically prevail are households changing their residence. On that occasion, in principle, a considerable number of potential clients are free to switch or even have to decide on a new supplier. Mobilizing this market might therefore facilitate market entry by new suppliers. However that means specific rules whereby new entrants get access to necessary data about customers who are moving house.

(936) If a good part of demand or the commercially most attractive customers are tied by long-term contracts, it leads to a situation in which the new entrant suppliers are effectively foreclosed from the market.

(937) Figure 89 to Figure 95 demonstrate the impact of contracts of different durations on the electricity markets in Belgium, Czech Republic, Hungary, Poland, Germany, France and United Kingdom. The figures are based on the replies of industrial customers who were asked to submit information concerning electricity supply contracts for each site with an annual consumption of over 1 GWh during 2004[407]. With a few exceptions, there was only one contract per industrial site, which suggests that a large majority of the contracts is at least *de facto* exclusive.

(938) The analysis of the cumulative market coverage of supply contracts consists of two parts. First, the total duration is verified and then the results are recalculated to reflect the time remaining before the supply contracts expire. The latter calculation shows after how many months the customers and the demand quantities represented by them were

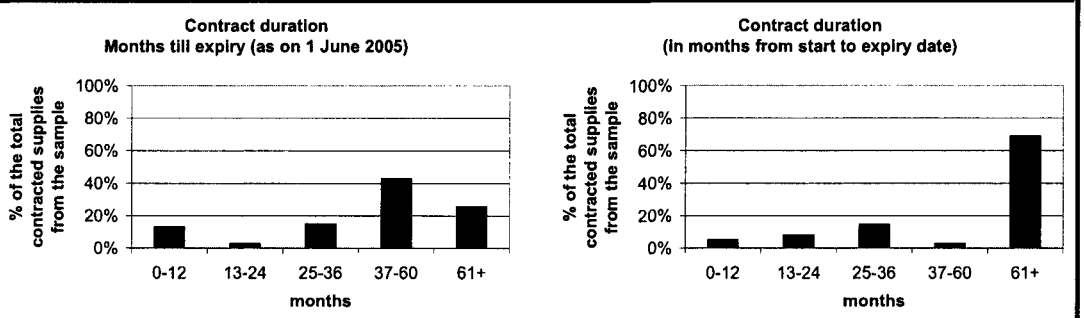
[407] The sample includes a limited number of supply contracts predating the liberalisation of the electricity sector.

expected, as of 1 June 2005, to return to the market in search for new offers[408]. For those months, the part of the overall demand tied in the existing supply contracts was unavailable for potential competitors which would seek an opportunity to enter the incumbent's market.

Figure 89

Belgium

Final electricity consumption – Industry and Transport (in 2004)			41,869 GWh
Sample size			
Number of sites	38 sites	Total contracted supplies	10,342 GWh



Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	63	Consumption weighted average	92
Simple average	24	Simple average	40
Most frequent contract duration (mode)	7	Most frequent contract duration (mode)	24

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

(939) Figure 89 shows that a vast majority of demand from industrial customers in Belgium is tied by contracts which were to continue for a period of 37 and more months calculated from 1 June 2005. Nearly 70% of the total contracted supplies in the sample were originally agreed for a period exceeding 5 years. The difference between the weighted and the simple average contract duration till expiry, 63 and 24 months respectively, indicates that the most important contracts in terms of quantity are foreclosed for potential new entrants for the longest time. The statistics on contract duration also show that the duration of contracts was increasing before the date of the Sector Inquiry, because the remaining period till expiry is longer than a half of their total duration.[409]

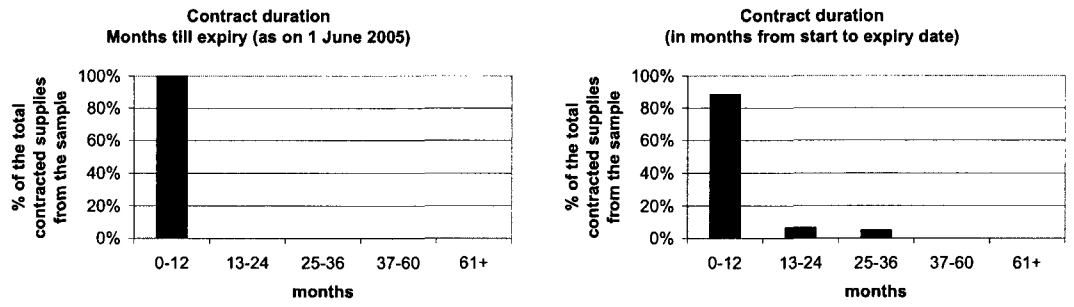
408 In order to make the statistical picture as complete as possible, the duration of retail contracts is described with three measures, these are: weighted average, simple average, and mode (the value that appears most often in the data set).

409 Another possible explanation would be that an external factor, for instance opening of the market, ushered in a new wave of long-term contracts that have not, for the time-being, reached their mid-term and thus they bias the sample.

Figure 90

Czech Republic

Final electricity consumption – Industry and Transport (in 2004)			24,526 GWh
Sample size			
Number of sites	59 sites	Total contracted supplies	3,985 GWh



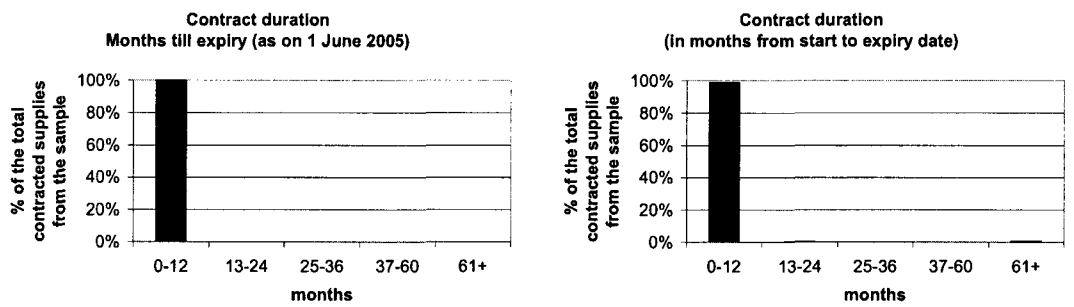
Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	7	Consumption weighted average	14
Simple average	7	Simple average	17
Most frequent contract duration (mode)	7	Most frequent contract duration (mode)	12

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

Figure 91

Hungary

Final electricity consumption – Industry and Transport (in 2004)			10,590 GWh
Sample size			
Number of sites	27 sites	Total contracted supplies	2,301 GWh



Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	7	Consumption weighted average	12
Simple average	5	Simple average	15
Most frequent contract duration (mode)	7	Most frequent contract duration (mode)	12

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

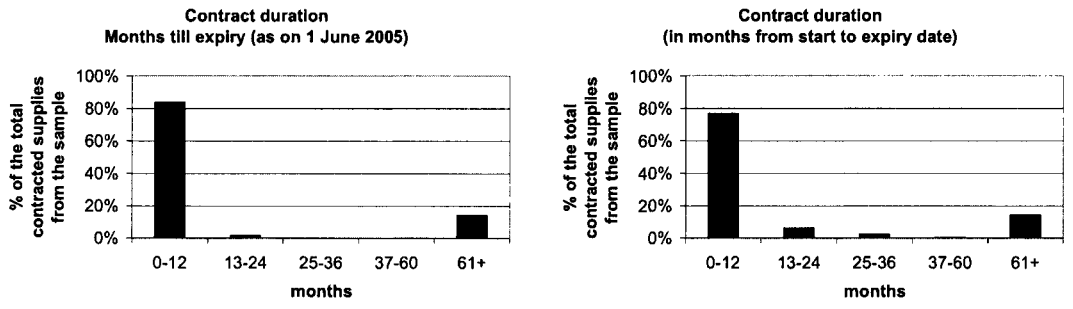
(940) In the Czech Republic and Hungary (see Figure 90 and Figure 91), the opposite trend can be observed. Although the size of the respective samples in terms of contracted supplies is too small to draw any firm conclusions, it is sufficient to notice the predominance of one-year contracts overlapping with the calendar year (hence, on 1 June 2005, most of

the contracts were to expire in 7 months, that is at the end of the calendar year).[410] Perhaps the same conclusion, as to the trend, could be drawn for Poland (see Figure 92). However, the Polish sample contains a very limited number of sites and in addition is biased due to the impact of two particularly long contracts that were signed for 25 and 30 years respectively. This is, however, a natural consequence of the tiny size of non-regulated market in Poland, where, in 2005, only 35 users exercised their eligibility purchasing some 12 TWh.

Figure 92

Poland

Final electricity consumption – Industry and Transport (in 2004)			46,670 GWh
Sample size			
Number of sites	12 sites	Total contracted supplies	9,891 GWh



Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	44	Consumption weighted average	60
Simple average	47	Simple average	72
Most frequent contract duration (mode)	7	Most frequent contract duration (mode)	12

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

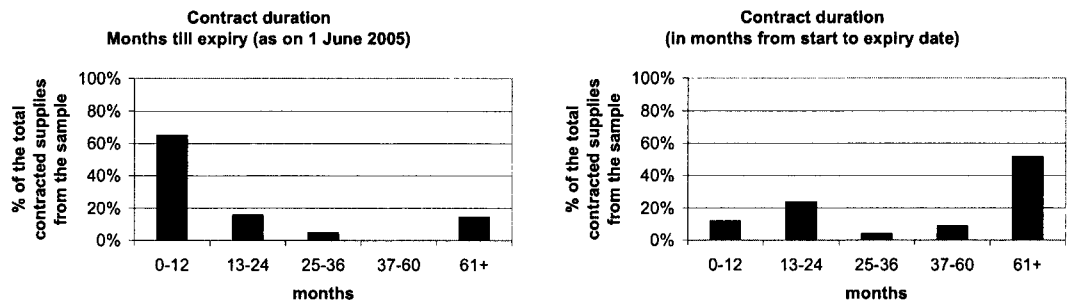
(941) A more robust picture emerges from the German data (see Figure 93). The average duration of the supply contracts in case of the German industrial customers has been decreasing over time along with a certain number of long-term contracts approaching their term. The most common contract is signed for 24 months and, on 1 June 2005, was expected to expire in 7 months. The difference in the duration of the supply contracts struck for the sites with relatively high and low consumptions has also been narrowing down. The German sample, however, excludes a number of smaller contracts that were signed for unlimited periods or have a tacit renewal clause and thus could not been included in the calculations without an attribution of certain arbitrary duration to this group of contracts.

410 In this context, it is interesting to note that, both in Hungary and Czech Republic, the downstream contract periods overlap with the January-December terms adopted for the annual cross-border capacity auctions in the two countries as well as for the annual VPP auctions run by CEZ, the Czech incumbent.

Figure 93

Germany

Final electricity consumption – Industry and Transport (in 2004)			250,042 GWh
Sample size			
Number of sites	255 sites	Total contracted supplies	32,806 GWh



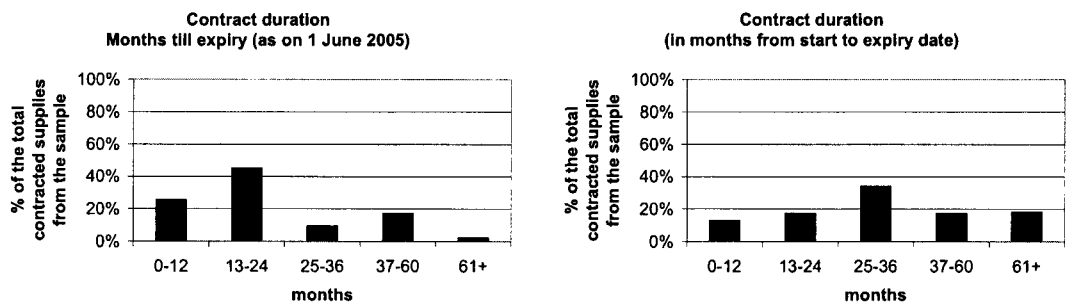
Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	23	Consumption weighted average	69
Simple average	16	Simple average	37
Most frequent contract duration (mode)	7	Most frequent contract duration (mode)	24

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

Figure 94

France

Final electricity consumption – Industry and Transport (in 2004)			146,332 GWh
Sample size			
Number of sites	159 sites	Total contracted supplies	13,701 GWh



Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	26	Consumption weighted average	46
Simple average	37	Simple average	54
Most frequent contract duration (mode)	55	Most frequent contract duration (mode)	57

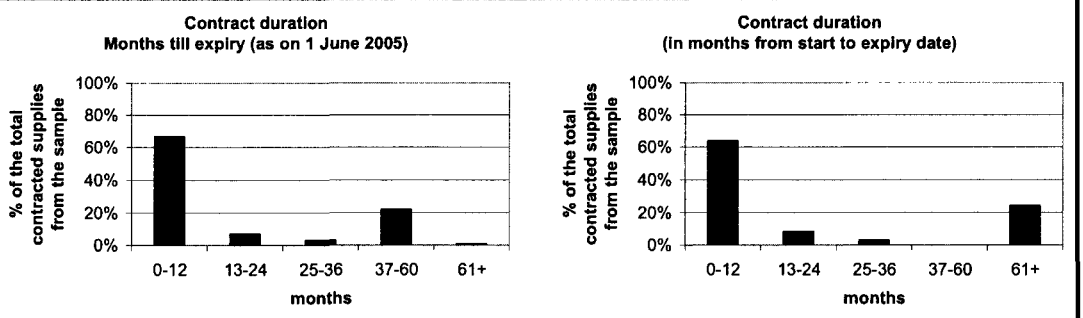
Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

(942) The French market is characterised by a variety of contractual periods. Although the category of the contracts of 37 and more months till expiry represents only some 20% of the total contracted supplies from the sample, the number of contracts to expire in the course of next 12 months was, on 1 June 2005, noticeably lower than in Germany and UK, not to mention the East European markets in the Czech Republic, Hungary and Poland.

Figure 95

UK

Final electricity consumption – Industry and Transport (in 2004)			125,183 GWh
Sample size			
Number of sites	112 sites	Total contracted supplies	10,237 GWh



Statistics on contract duration (in months)			
Months till expiry (as on 1 June 2005)		Contract duration (in months from start to expiry date)	
Consumption weighted average	17	Consumption weighted average	37
Simple average	13	Simple average	19
Most frequent contract duration (mode)	10	Most frequent contract duration (mode)	12

Source: Energy Sector Inquiry 2005/2006, Eurostat Energy Statistics

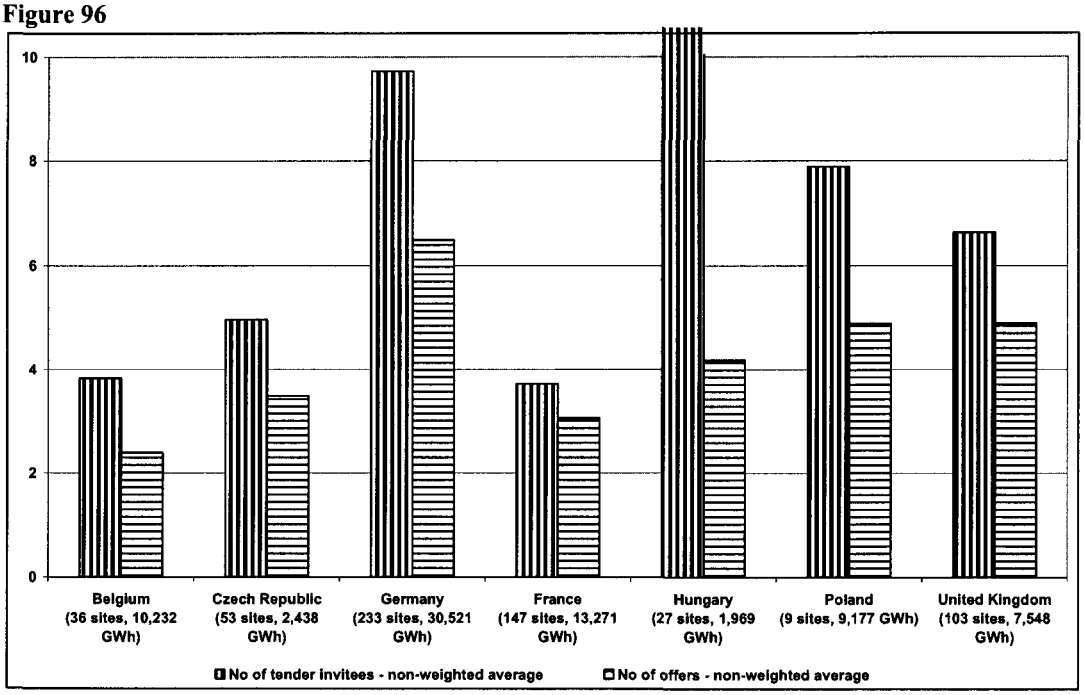
(943) In the United Kingdom, the supply contracts offered to the industrial customers are of relatively short duration. The predominant number of sites has contracts signed for 12 months, and these are 71 out of 112 sites within the presented sample. This duration can be also considered to be at the bottom end of the scale since only a few contracts were signed for less than 12 months. Finally, it must be noted that the UK weighted averages are influenced by the existence of a single 9-year contract covering some 2.2 TWh. If that contract was excluded from the sample, the difference between the weighted and the non-weighted average contract durations would substantially narrow down. New weighted averages, expressed in time till contract expiry and in overall contract duration, would amount to 10 and 17 months, respectively.

I.2. Number of offers

(944) When a supply contract expires, the customer is potentially free to turn to the market in search for the best offers. In this context, the degree of customer choice is largely dependent on the number of competitive offers available on the market. In the framework of the Sector Inquiry, industrial customers provided information on the number of companies that had been invited to tender for supplies to the customers' individual sites as well as on the number of the suppliers that, in the end, submitted offers.

(945) The number of companies that are invited to tender can be considered a first indicator of whether customers expect to find any potentially competitive offers on the market. All other things being equal, the lower this number, the weaker competition on the downstream market is likely to be and also the lower are the chances that the customer will receive competitive offers.

Figure 96



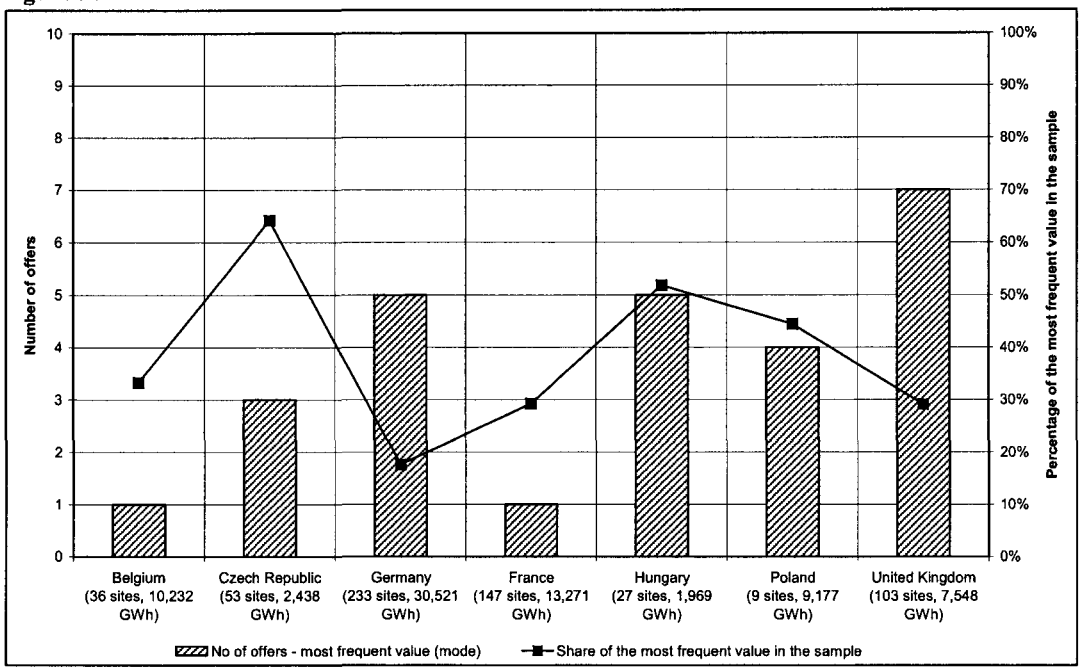
Source: Energy Sector Inquiry 2005/2006

(946) Data for a selection of national markets, including both the old and the new Member States (see Figure 96) indicate that the situation varies substantially between the individual markets. The Belgian and the French industrial customers invite the lowest number of companies to tender and also receive the lowest number of offers. In Belgium, the weighted average number of offers is close to two, which means that some sites may have problems finding any alternative offers.

(947) Both in France and Belgium, industrial customers most frequently receive only one offer (see Figure 97). This situation concerns some 30 per cent of industrial customers in the respective samples. At least half of the industrial customers in these two Member States invite only three or less companies to tender. This situation mirrors the high market concentration ratios reported for the two Member States in question (see chapter B.b.II.1).

(948) The values for other Member States like Germany, United Kingdom, Czech Republic, Hungary and Poland look more favourable (see Figure 96). However, these values are not directly comparable. First of all, the results for Member States like Hungary and Poland have to be analysed with much caution due to the small proportion of eligible customers exercising their rights in these two Member States. In addition, the customers on the newly liberalised markets are, all other things being equal, more likely to have difficulties in identifying potential suppliers that will submit truly competitive offers. It is natural that such customers show a tendency to send more, but less targeted, invitations to tender than the better informed customers operating in more mature markets. As a matter of fact, this is also the most plausible explanation for the mid-range values and the high tender response ratio observed in the UK, whilst Hungary and Poland are characterised by a relatively low response rate.

Figure 97



Source: Energy Sector Inquiry 2005/2006

(949) In Germany, United Kingdom, Czech Republic, Hungary and Poland, industrial customers are on average able to discern at least 5-6 potential suppliers to which they send invitations to tender. The response rates are on average higher than 3.4 offers per tender (see Figure 96). The results for Germany and United Kingdom suggest that large customers invite few companies to tender and also obtain fewer offers than small customers. Whilst, in the context of this inquiry, it is not appropriate to speculate about the reasons for these facts, one possible explanation may be that large customers often have more complex needs, for instance, they may require ancillary services, and therefore not all suppliers are in position to make appropriate offers.

(950) Before concluding on the chapter, it must be noted that the number of offers do not in themselves make the market more or less competitive. For example, so-called defensive offers, where an offer is only made in order to fulfil a perceived legal obligation (antitrust scrutiny concerning market allocation) to respond to a tender invitation, might inflate the statistics and thus falsify the true picture. Customers must have a choice of competitive offers that reflect real competitive effort. If such a competitive offer is made by a new entrant, the result should be the switching of a given customer away from the incumbent.[411]

I.3. Use restrictions

(951) The assessment of the standard contracts gathered in the context of the SI has also revealed that some contracts contain so-called use restrictions. Use restrictions oblige the buyer to use electricity only on site and/or only for their own purposes. Any further transmission/resale to third parties, if allowed at all, requires the supplier's written approval. It is obvious that resale clauses undermine the possibilities of arbitrage and

[411] For the statistics on switching, see: *Technical Annex to the Report on Progress in Creating the Internal Gas and Electricity Market, p.38* http://ec.europa.eu/energy/electricity/report_2005/doc/2005_report_technical_annex.pdf

therefore will enable a given supplier to price discriminate between his individual customers.

Conclusions

The degree to which the industrial customers are tied to incumbent suppliers on a long term basis differs significantly between Member States. In some countries, the duration of retail contracts may have a substantial impact on the possibilities of alternative suppliers to successfully enter the market.

The number of competitive offers that customers receive differs significantly between Member States. In some countries, characterised by a high level of concentration in generation the number of offers is particularly unsatisfactory.

Certain standard contracts contain use restrictions which may raise competition concerns.

II. Balancing in the liberalised electricity market

II.1. Introduction

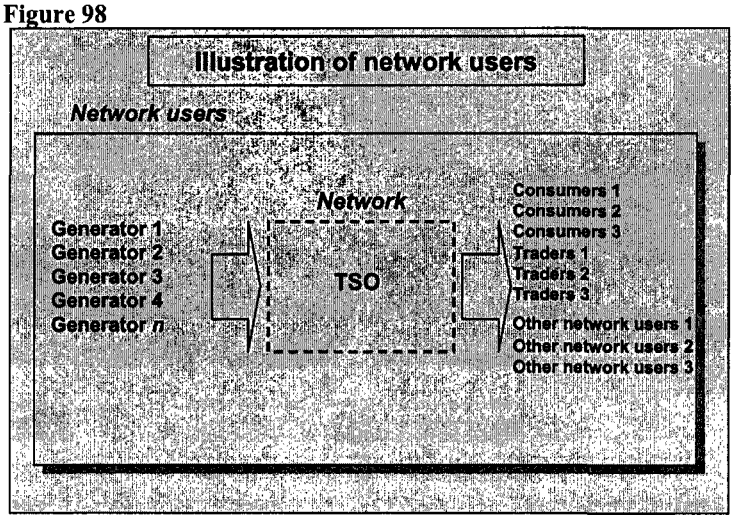
(952) Maintaining a constant balance between electricity supply and demand on electricity transmission networks is important to ensure system stability. Ensuring system balance is a complex task because electricity -contrary to gas- cannot be stored and deviations from supply and demand occur more regularly. This requires TSOs to constantly monitor the network and to take corrective (balancing) measures when needed. In practice this means that a TSO in charge of a control area must either be able to call on certain generators to increase or decrease production at short notice. The same effect can be achieved by an increase or decrease in consumption (upward or downward regulation).

(953) Balancing mechanisms are not only a technical issue to ensure system stability, but have also important commercial implications and in turn implications for effective competition. This is due to the fact that TSOs need to procure balancing services from generators that might also have supply interests in the market concerned. Furthermore balancing services do not come for free, they are paid for by network users. As for gas, the provision of balancing services constitutes a "market of last resort" for network users. The way in which this "market" functions is likely to have knock-on effects on the entire wholesale market.

(954) For the purpose of this chapter balancing services are defined as including all activities that TSOs engage in order to ensure system stability and accordingly all costs charged to network users for these services.[412] In a nutshell TSOs buy both balancing capacity (MW) and balancing energy (MWh) from generators that are technically capable of supplying reserve power or balancing energy at short notice. The TSOs then charge the costs associated with balancing to the network users either in form of network tariffs (most prominently for their capacity reservations in plants offering reserve power) and/or in form of direct payments for balancing energy. The figure below schematically illustrates this relationship.

412 In economic literature "balancing markets" are generally defined as a small element of the balancing mechanisms described here. They are understood as merely comprising the market/platform where market participants can place short term (e.g. day ahead) bids to the TSO to provide incremental (generate more or consume less) and decremental (generate less or consume more) production.

Figure 98



Source: Energy Sector Inquiry 2005/2006

(955) It is obvious that balancing mechanisms should be as efficient as possible and contribute to competition in related electricity markets (e.g. supply). This chapter will demonstrate however, based on information gathered in the Sector Inquiry, that balancing markets are highly concentrated. Due to this concentration, TSOs, who do not own generation assets, are often faced with few suppliers (generators) who can supply balancing capacity and balancing power. Further, vertically integrated TSOs will often procure balancing capacity and power from their affiliate companies i.e. intra-group. This may affect their motivation in designing such mechanisms.

(956) There are two main concerns that may result from this. First, there is a risk that network users are exposed to excessive imbalance charges when paying for the balancing *power* (MWh) supplied by the generators via the TSO in order to restore imbalances. In particular it may eat away the profits of supply companies with a small supply portfolio, for which changes in the off-take by one customer are less likely to be compensated by corresponding changes in off-take by other customers. This can constitute a barrier for entry in the supply market. Ultimately it decreases scope for competition as it reduces the number of supply companies that consumers can choose from. Secondly, there is a risk that all network users are charged an excessive tariff for using the network, when TSOs pay excessive prices for balancing *capacity* (MW) to generators. These costs are usually fed into the network tariffs and in the end passed on to the end users of electricity. Because some TSOs are vertically integrated with incumbent generators some market participants are concerned that such TSOs may not address both two issues adequately, resulting in a transfer of consumer welfare to producers.

(957) There is also a concern that in some Member States, more capacity is purchased by the TSOs than is strictly necessary, because incumbent generators who are affiliated to the TSO are the main suppliers of balancing services. This may result in under-utilisation of generation and increase prices in wholesale markets more generally. Also, this chapter will show that significant differences in balancing rules and designs undermine the creation of an integrated market and cause unnecessary complexities for cross border trade. The chapter will start with a general description what balancing markets are, how they work and what their relevance is to electricity markets.

(958) This chapter does not aim to cover all issues relevant to electricity balancing mechanisms. The focus is to present the results of the Sector Inquiry (e.g. level of concentration) and will for instance only touch briefly on certain market design issues (e.g. whether imbalances are settled at a single or a dual price). In comparison with the corresponding chapter for gas, this chapter will in particular not deal in any detail with the actual level of imbalance prices and penalties paid by network user and/or other commercial conditions governing the relationship between network users and the TSO. This is not due to the fact that there might not be concerns for the functioning of the markets, but rather that no information was gathered in the context of the inquiry for this aspect of the balancing markets.[413]

II.1.1. Importance for balancing in liberalized markets

(959) Maintaining a balance at all times between electricity supply and demand is a complex task, since electricity cannot be stored. Maintaining a constant balance is complicated because transactions made by generators, traders, suppliers and consumers result in complex electricity transmission within and between regions. When balancing fails, the stability of the network is jeopardized and disturbances can occur.

(960) The total volumes that pass through balancing markets are quite small. For instance the total upward balancing power used as a percentage of consumption (2004) was in the United Kingdom 0.04%, in Belgium 0.3%, in Germany 0.43% and in Spain 1.3%. Although these volumes are modest (related to the overall consumption) the design of a balancing mechanism has an important impact on the overall performance of liberalised electricity markets, as prices charged for balancing power send important scarcity signals for the related (supply) market. Improper design may ultimately lead to welfare loss due to entry barriers for (new) market participants.

(961) An inefficient and unreliable balancing market may create barriers to entry for supply companies who do not have generation of their own or for new generators without an existing portfolio of customers. Because retail consumption is impossible to predict with complete certainty, a supplier without flexible production facilities often has to rely on the balancing market. The supplier has to pay for this and this reduces the profitability for his supply business. This is confirmed in some SI answers.

II.2. General description of a typical balancing mechanism

(962) The main task of TSOs is to provide a secure and stable high-voltage grid operation. This includes activities to balance supply and demand in their own so-called control area and between control areas, which contributes to ensuring the global system balance. In most Member States a single TSO fulfils these tasks and these Member States have one single control area. Some Member States have more than one control area (e.g. Italy, Germany and Denmark) and each is run by a separate TSO – except for Italy who has a single TSO. To manage commercial transactions and physical flows in a secure (balanced) manner, TSOs employ a set of technical and administrative rules. Jointly these rules are referred to as balancing mechanisms. Though these rules differ across Member States the section below attempts to explain how these rules generally work and what TSOs do.

---

413 With the same token this chapter does not deal with the number of balancing zones (which is a major issue for the gas sector). It should be noted that the size of the balancing zones is also a concern for the electricity sector, however balancing zones appear to be larger when comparing electricity with gas.

(963) Given the need to ensure "second by second" balance of supply and demand in the grid, at some point trading by market participants has to cease and the system has to pass from decentralized trading to centralised control by the TSO. That point is generally referred to as 'Gate Closure'[414]. Prior to this moment, trade amongst market parties may take place across a number of different timescales, for instance day ahead, month ahead and year ahead. In these periods before Gate Closure market participants will typically aim to cover their expected physical positions (i.e. suppliers contract to purchase electricity to cover their customer demand, or generators contract to sell energy from their power stations).

(964) At Gate Closure, all participants submit data to the TSO setting out: (i.) intended consumption schedules for the next period by location (normally per control area); (ii.) intended production schedules for the next period by location (control area) and (iii.) commercial trading schedules. Once these data have been passed to the TSO, bilateral trading for physical delivery at Gate Closure should cease.

(965) Normally after this phase the positions of each market party are supposed to be in balance. In practice, however, deviations between supply and demand occur because participants may not produce or consume the exact volume they expected. Deviations could be caused for instance due to unforeseen generation plant failure, changes in demand, changes in wind speed and/or changes in imports/exports. To ensure a continued secure grid operation, the TSO must therefore have:

- sufficient reserve production available on the system
- the ability to call up plants to increase or decrease power on the system
- enough network capacity.

(966) The increase (or decrease) in generation or decrease (or increase) in consumption required to balance supply and demand may come in various forms, each with particular physical and economic characteristics. For example, there may be relatively few generation plants in the system, which can respond very quickly (e.g. within few seconds) to a shortfall or surplus in demand and the capacity available may be relatively expensive to run. Hence, the price for such short-term flexibility may be high. There may be more plants available, which can respond over a longer timescale – and these plants may also be cheaper to operate. In general TSOs procure a range of different types of reserve. In general one can distinguish between immediate reserve to allow TSOs to cope with short-term deviations, and less immediate reserve, which can be used to replace the more expensive fast reserve once the immediate imbalance has been addressed. For the UCTE area (essentially the entire Continental Europe[415]) these different types of reserves are set out in Table 51.

414 Gate Closure if the point in time when market participants notify the TSO of their intended final physical position and its for example set at one hour ahead of real time. In addition no further contract notification can be made.

415 See: http://www.ucte.org/

Table 51

Characteristics of the three frequency control levels in UCTE			
	Primary control	**Secondary control**	**Tertiary control**
Why is the control used?	To stabilize the frequency in case of an imbalance	To bring back the frequency and the interchange programs to their target	To restore the secondary control reserve, to manage eventual congestions, and to bring back the frequency and the interchange programs to their target if the secondary control reserves is not sufficient
How is control achieved?	Automatically		Manually
Where is this control performed?	Locally	Centrally (TSO)	
Who sends the control signal to the source of reserve?	Local sensor	TSO	Generators, Consumers or the TSOs (after receiving instructions from the TSO)
When is the control activated?	Immediately	Immediately (seconds)	Depends on the system
What sources of reserves can be used?	Depends on the system: partially loaded units, loads, fast/slow starting unites, changes in exchange programs		

Source: ETSO (2006).
Note: in this chapter "control" is referred to as "balancing power".

(967) Primary power (approx. 3000 MW for all of UCTE) is only used for making very small corrections (within seconds) and is in particular needed because small disturbances in a particular place cannot immediately be restored by plants located thousands of kilometres away. Primary power is not activated by TSOs, is often not bought in a separate market nor is it tendered by each TSO and constitutes a relative small proportion of all reserve powers. Therefore this type of power was not the focus of the Sector Inquiry and is not further addressed in this chapter.

(968) Secondary power is activated by TSOs to replace primary power. In order to be able to effectively supply to a TSO secondary power, a power plant needs to be directly connected to the TSOs' command centre and it should have a sufficiently fast respond time to increase production.[416] Only then can it be called up by the relevant TSO to make the necessary immediate balancing corrections. This could be done upwards or downwards in a time frame of seconds until typically 15 minutes.

(969) Tertiary power is less immediate power and can be called up by TSOs with some delay. This type of power frees secondary control by re-scheduling power plants manually. Plants must meet a set of technical criteria in order to qualify for the provisions of these balancing services.

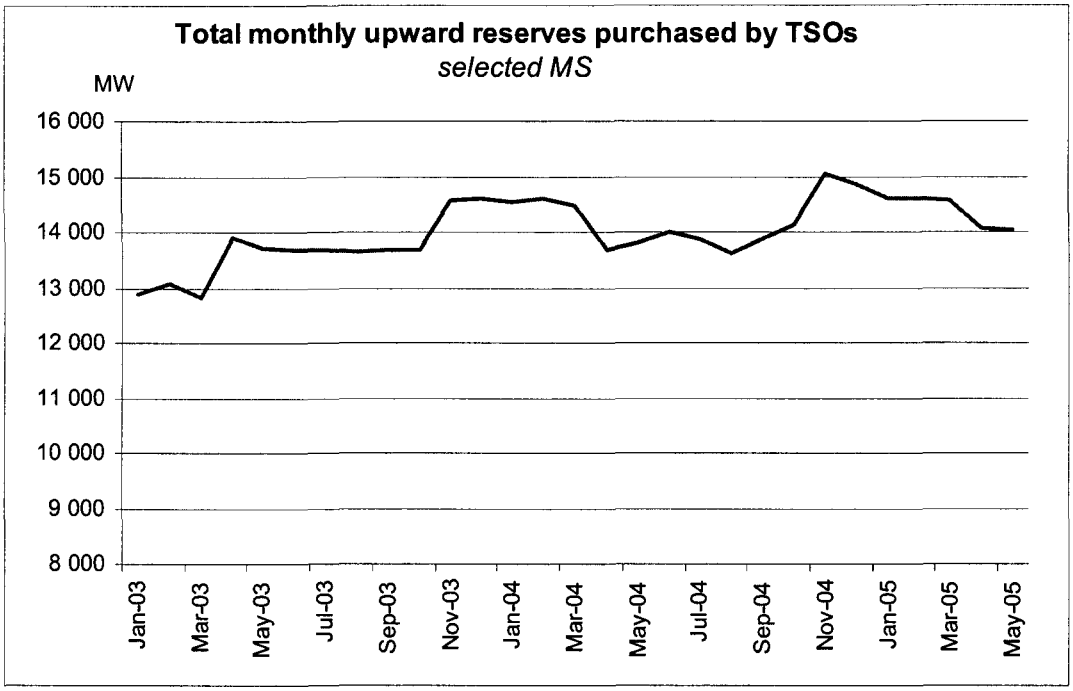
II.2.1. TSOs contract balancing capacity

(970) Because TSOs do not own generation capacities they need to undertake procurement (capacity) with longer term (e.g. one year ahead) arrangements from generating companies to ensure that sufficient system services of the types above will be available in relation to specific delivery periods. This is sometimes referred to as "spinning reserves", which is capacity that is on line ready to be called up on by the TSO when balancing power is needed. Hence, prior to Gate Closure the TSO will enter into contracts with participants, under which the participants guarantee to be available to provide reserves.

[416] For instance, in the Netherlands the TSO asks for a reaction speed of 30 seconds and the plant should be able to increase output 7% per minute.

This is often done by means of half-yearly or yearly tender procedures. The contracts typically specify the technical characteristics of the service required, the required availability (=capacity), and a price – either for energy provided only, or for both availability (capacity) and energy.

Figure 99



Source: Energy Sector Inquiry 2005/2006

(971) Figure 99 shows what the estimated aggregated level of upward (secondary and tertiary) reserve capacity was purchased by TSOs in 12 Member States. The figure reflects the amount of capacity in MW contracted by TSOs and reveals that the amount is subject to significant changes. As the load that is being served in each control area changes over time, it is certainly possible to have summer and winter patterns in the level of monthly capacity requirements.

(972) The roughly estimated aggregated cost for this capacity is almost 120 million euro per month. To be clear, this includes only the payments to (mostly) generators for capacity that, if needed, can be called up by the TSO to supply upward power. In most Member States these contract costs are fed into the tariffs paid by users of the TSO network who will eventually factor it in as cost to the end consumers[417].

II.2.2. TSO calling of balancing energy

(973) Following Gate Closure, the TSO is in a position with its spinning reserves to ensure secure supply by calling off secondary (automatically) and tertiary (manually) reserve power and hence manages the system. While some reserve capacity may be contracted long time in advance, as described above, there is typically also a mechanism by which some participants can place shorter term (e.g. day ahead) bids to the TSO to provide

[417] In addition there will be a charge on those network users causing the imbalance, which need to buy balancing energy (see below).

incremental and decremental production. This market is usually based on energy-only bidding. For this chapter this mechanism is defined as the balancing market, as it allows participants to submit bids to the TSO, which assist them in balancing overall supply and demand. In this limited form of trading the TSO is always the counterparty.

(974) The next and final step is that the services (quantities) used by the TSO have to be metered exactly and TSOs pay for the purchased and used services to the generators in line with the underlying contracts. This mechanism causes costs for the TSO, which are normally covered by those market parties causing the deviations in the control area. For that, these parties are charged with a so called "imbalance price". This imbalance price may be derived from the bids received in the balancing market.

(975) Depending on how a balancing market is arranged it can have a so-called dual imbalance price or a single imbalance price. The first refers to an arrangement where a different price is paid to positive and negative imbalance volumes in case where incremental as well as decremental balancing power is necessary. A single imbalance pricing refers to an arrangement where a single imbalance price is used for both positive and negative imbalance volumes. Each of these arrangements may affect the level of liquidity in wholesale markets however this relation will not be discussed in this chapter.

II.2.3. National balancing markets

(976) Balancing markets are generally national in scope (or smaller) because most generators located in one Member State cannot supply reserve power (bids) across a border to an adjacent Member States. For example, it is currently not possible for Dutch, French or Polish generators to submit bids to a German TSO. There are however exceptions such as in France, which allows bids from generators outside France. It is at this stage not entirely clear why cross border balancing is not more widely used. Two factors seem to explain this. First, it would require a new information communication platform between TSOs to facilitate cross border balancing arrangements, as explained in the next paragraph. Secondly, it may be that there is not sufficient interconnector capacity. Thirdly, it would need new regulatory rules to be established at cross border level.

(977) Cross border balancing would technically be feasible if after Gate Closure all interconnected markets would have arrangements which for a given generator made it appear as if he was bidding to a single Balancing Market. Under such an arrangement, all TSOs could see, and potentially use, the same bid. Once a bit was accepted in one market it would need to be withdrawn from the other(s), since each bid can only be used once. This would require a platform that closely co-ordinates between TSOs.[418]

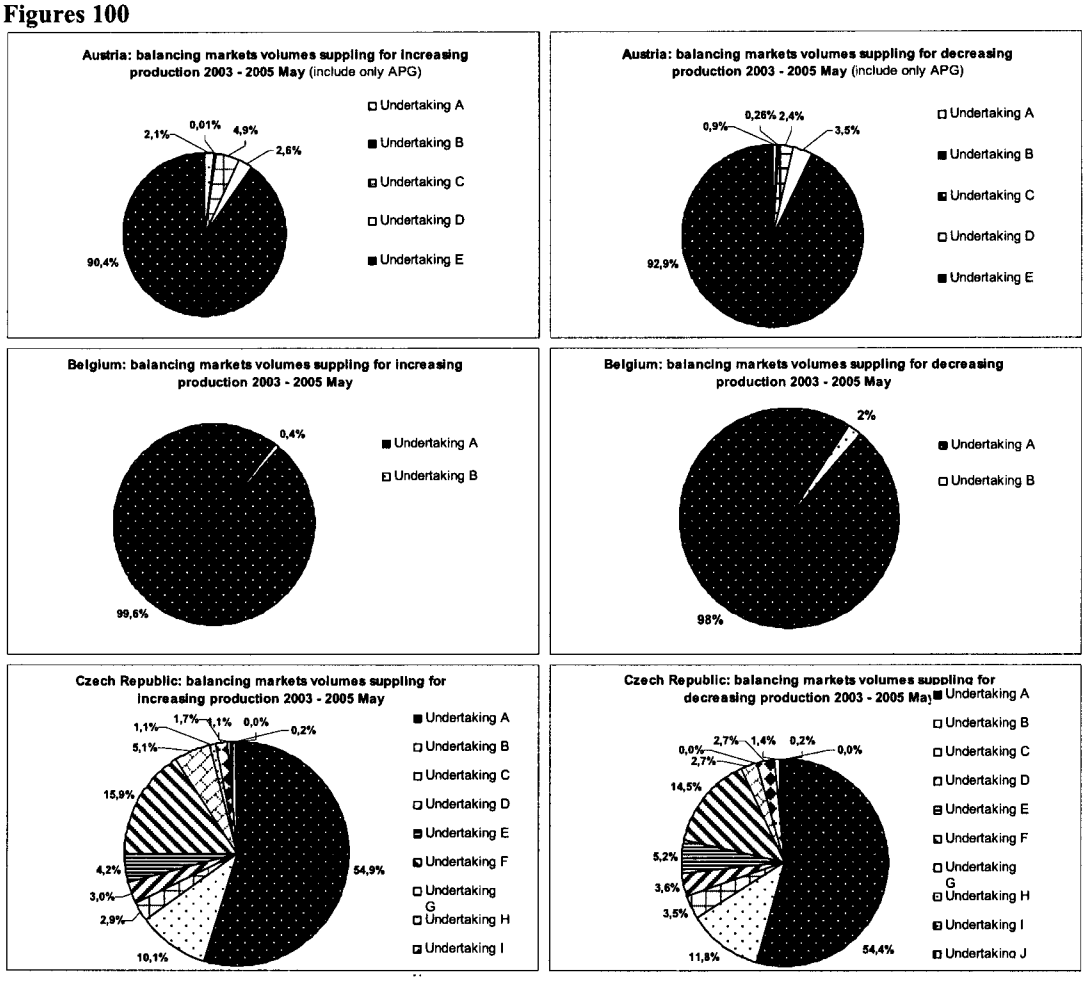
[418] Based on these principles the Nordic governments aim to develop a fully integrated Nordic balancing service. See: http://www.norden.org/energi/el/sk/Electricity%20Market%20Group%202006.pdf

II.2.4. Concentration

(978) An insufficient level of competition in the balancing market due to concentration may result in high balancing prices. These difficulties are made worse where network users are unable to adjust their positions close to real time. Network users that have no flexible generation capacities at their disposal or which are not permitted to revise their nominations, face a higher risk of being exposed to imbalancing charges. This adversely impacts the level of competition in other segments of electricity markets (e.g. retail market).

(979) Figures 100, as well as the figures for other Member States in Annex M, show that balancing markets in most Member States are highly concentrated. The situation mirrors the concentration levels in generation as described in the chapter B.b.II.1 on concentration and market power in many wholesale markets, but concentration in balancing is often higher. This is due to the fact that not all generators can supply balancing power since only plants that meet a set of technical criteria qualify for the supply of balancing power. The figures represent the volumes supplied (MWh) by generators aggregating secondary and tertiary reserves that have been supplied during January 2003 until May 2005. Not surprisingly a similar result appears in the market for supply of balancing reserves (MW).

Figures 100



Source: Energy Sector Inquiry 2005/2006

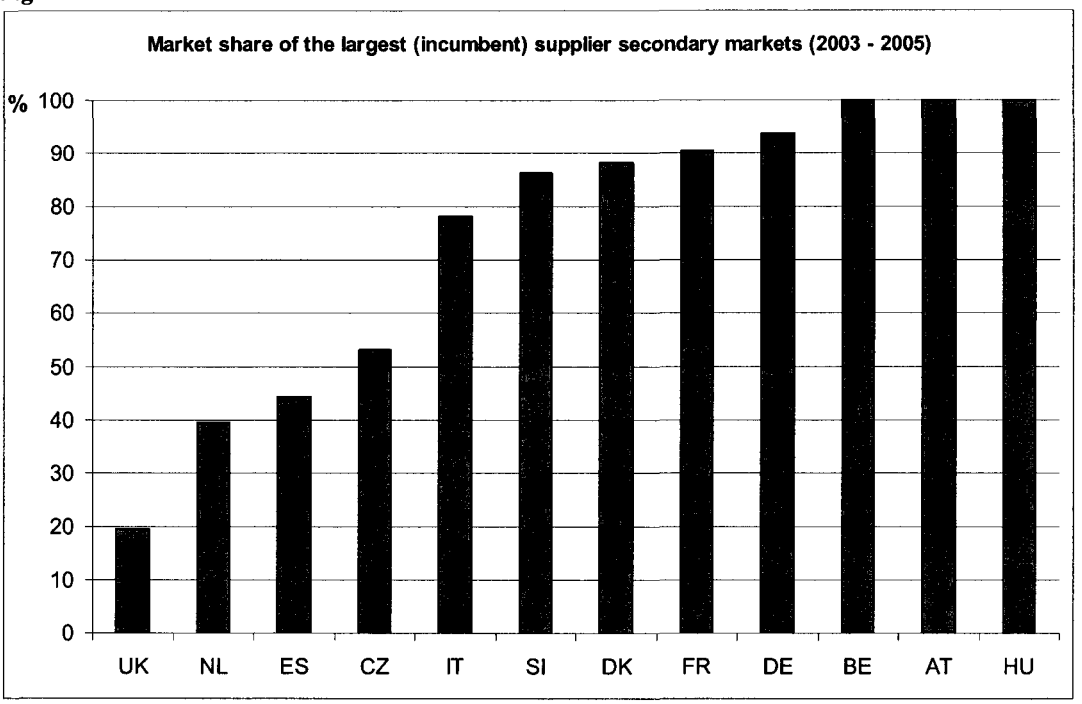
Note: (1) The figures represent the volumes supplied (MWh) by generators aggregating secondary and tertiary reserves that have been supplied during January 2003 until January 2005.

(2) Balancing mechanisms differ between Member States. In some Member States these mechanism payments for services supplied to the TSOs are regulated and hence in such cases there is in fact no market for reserves. Austria information represents only the largest TSO.

(980) The pie charts reveal that in particular in Member States such as Austria, Belgium, France, Finland, Italy, Slovenia and Slovakia balancing markets are highly concentrated. They also show that the level of concentration in the segment of secondary reserve is often higher than in the tertiary reserve segment (see also Netherlands). This is likely to be the result of the different technical qualification criteria. As has been explained above, tertiary reserves are called up manually with some delay, while secondary reserves are called up immediately. The technical prequalification criteria affect the number of (potential) participants.

(981) Figure 101 shows the largest supplier of secondary reserves in a selection of Member States. The figure reveals that in Member States such as Austria and Hungary the TSO have no alternative for contracting secondary power. But also in Member States such as Italy, Slovenia, Denmark, France and Germany TSOs face high concentration. Moreover, since competition in these markets is limited and affiliated generators often provide a significant share of balancing services the danger of cross-subsidisation exists. This is in particular of concern in Member States where the payments for the supply of capacity are fed in the network tariffs.

Figure 101

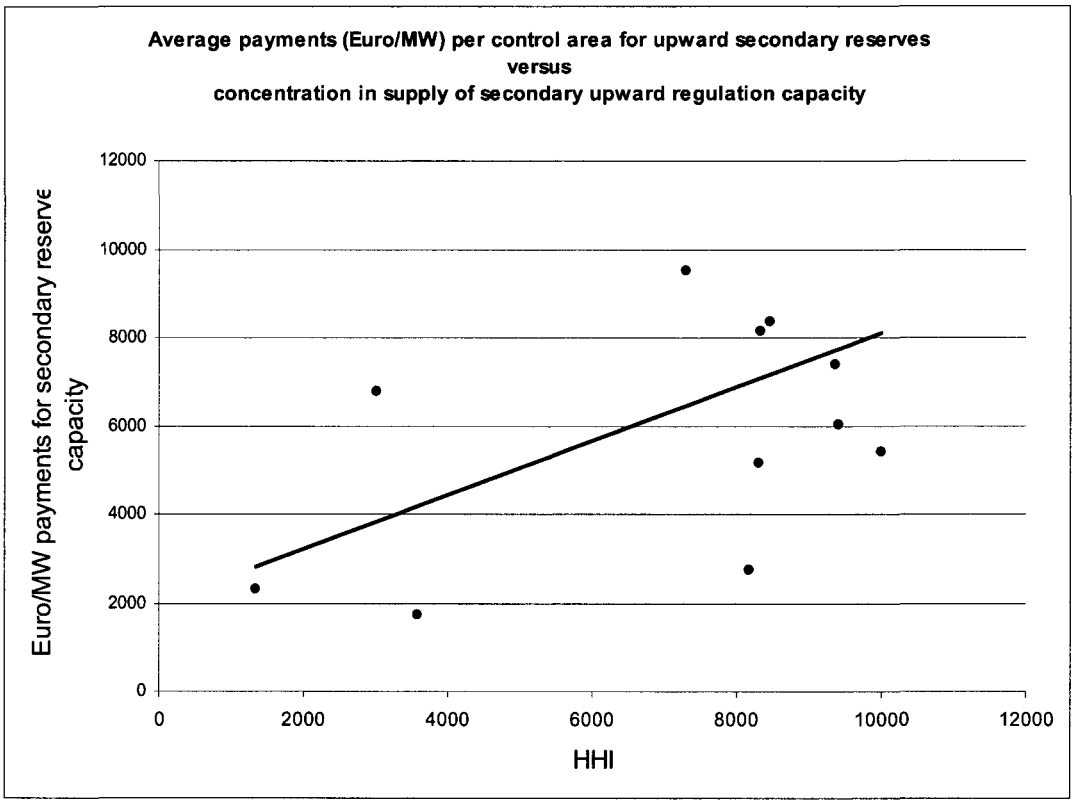


Source: Energy Sector Inquiry 2005/2006

Note: In Member States where more than one control area exists, an aggregation is provided of the largest supplier in each control area. AT includes information only for the largest TSO. BE includes data from 2004 and IT from April 2004.

(982) One would expect that in concentrated markets the payments for capacity reserves would be higher due to market power. An assessment of this correlation has been attempted in Figure 102. This Figure correlates the HHI, as measure of concentration, for supply of secondary reserve capacity with the average of Euro/MW and year per TSO. Interpreting this figure is not straightforward, because it does not take into account the fuel technology (costs) used, the general price levels in the respective markets or the market structure. However, the preliminary result in Figure 102 indicates that there is a correlation between concentration on the supply side for balancing reserves and the payments for secondary capacity reserves. At this stage further statistical assessment could not be done.

Figure 102



Source: Energy Sector Inquiry 2005/2006

Note: Information for non-UCTE Member States includes total reserves. Outliers require further examination.

II.2.5. Benefits of lowering concentration

(983) Lower concentration levels on balancing markets would result in efficiency gains for at least two reasons. First, lower concentration would reduce the scope for exercising market power. Generators within national systems are able to exercise market power either as a result of their location or their ability to provide flexibility.

(984) Secondly, by integrating balancing markets, low cost resources would be better utilised, yielding a decrease in overall costs for balancing services. If there are separate markets, low or medium cost resources in one Member State might remain unused, whilst expensive resources in an adjacent Member State are used. Clearly, if two balancing markets were linked (assuming sufficient transmission capacity between the two systems) it would reduce the overall costs for maintaining the balance across the two systems. The efficiency gains may be very high if the two Member States have generation systems that differ in fuel mixes.

(985) Thirdly, as has been explained in the balancing chapter for gas, smaller balancing markets (control areas) go along with smaller (customer) portfolios in these control areas. This results in higher risks of being charged imbalance prices particularly for new supplier with a low number of customers per balancing zone. However, the very high number of balancing zones in gas seems less evident in electricity. This is because most balancing markets are national in scope, though, for instance, Austria counts more than one control

area. Here, companies supplying customers in multiple areas would benefit from a portfolio effect if integration of relevant control areas would materialise.

(986) The question is what measures could be taken to reduce concentration in balancing markets without adversely impacting the design of the current systems and markets in Member States? One important avenue, besides plant divestitures[419], would be to change the rules in the current balancing market arrangement in order to harmonize them across Member States in such way that it provides economic and technical opportunity for all qualified generators to supply reserve power across borders. This could start at a regional level.

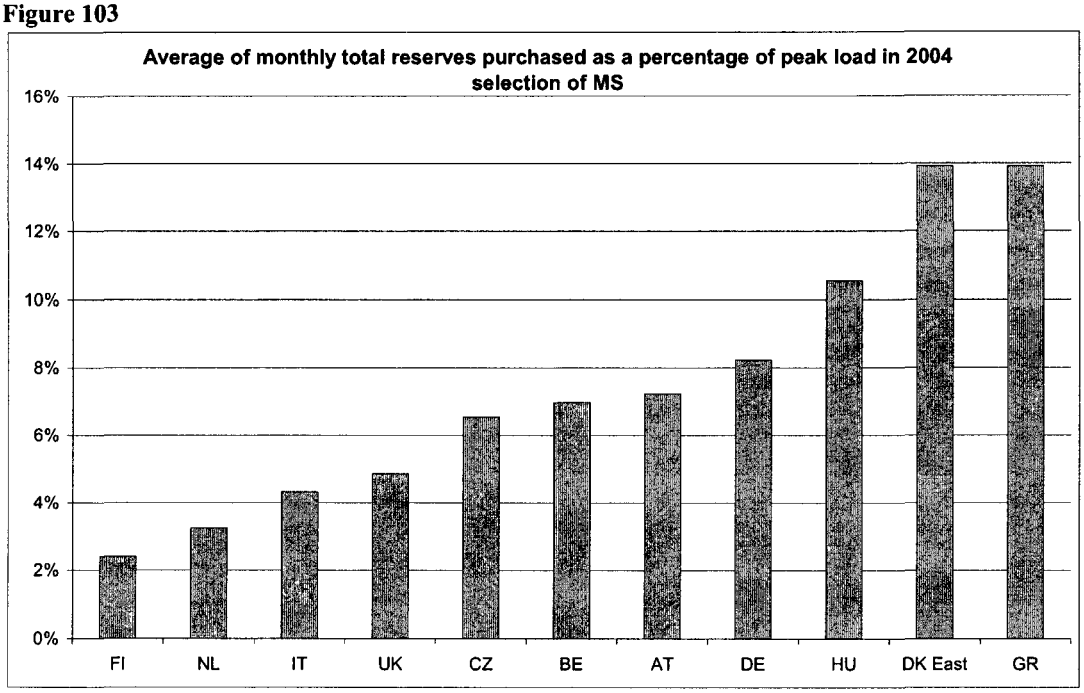
II.2.6. Comparison of TSOs

(987) TSOs contract reserve capacities in advance and use them to balance their systems in real time. While the existence and availability of these capacities is crucial for the functioning of the respective system, keeping unreasonably large – i.e. going beyond security of supply needs - reserve capacities reduces the size of the commercially available generation park and unnecessarily increases balancing costs.

(988) Further, since the cost of the reserve capacities are often recovered through the grid charges, network users will be charged for them. In cases where ownership unbundling has not been implemented there is a danger of cross subsidising because TSO's affiliated generators often have significant shares in providing balancing power. These TSOs may therefore lack incentives to purchase only the amount of reserve capacities that is strictly necessary.

[419] Divesture cannot be replaced by the intermediate measure of Virtual Power Plant auctions since because the VPP buyer normally is only granted a day ahead scheduling right. Hence intra-day flexibility, needed for supply of balancing reserves, remain with the seller.

Figure 103



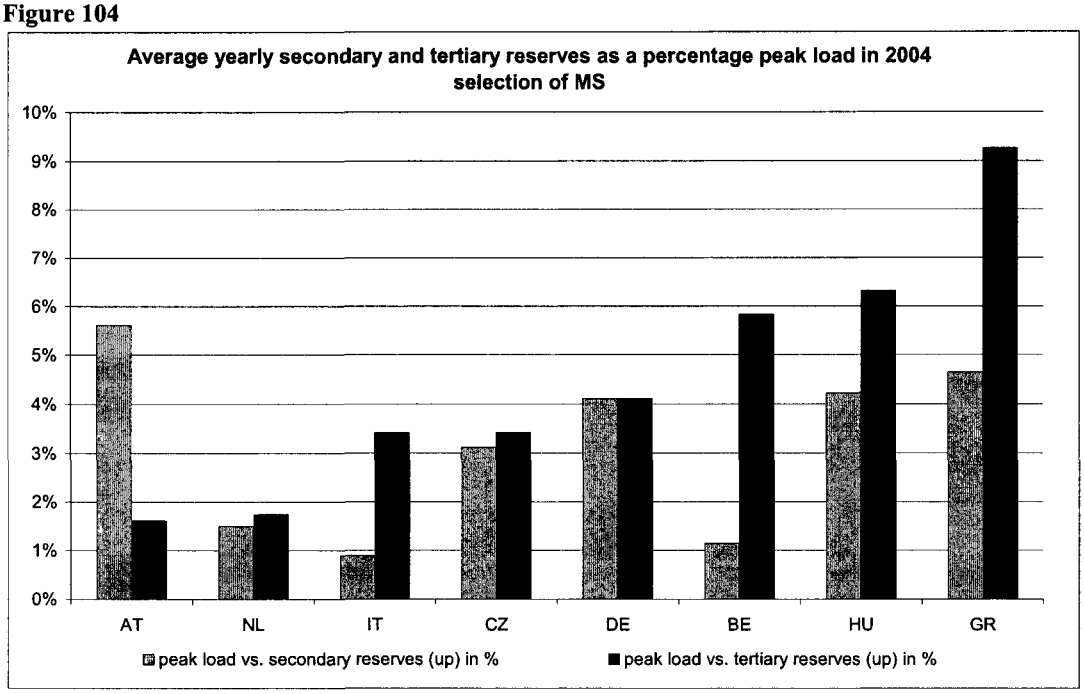
Source: Energy Sector Inquiry 2005/2006

Note: Information for Germany includes an aggregate for all TSOs in that Member State As for the TSOs operating within the UCTE system the report concentrates on secondary and tertiary reserves while in case of the Nordel and UK systems figures represent overall reserve capacities without qualification.

(989) Figure 103 represents overall reserve capacities (MW) that are purchased and are at the disposal of TSOs across Member States as a percentage of the peak load. This ratio corrects for the different sizes of control areas and results in better comparability. In other words, a larger load requires more reserve power, since it should anticipate larger plant failures. Though, there may be justifiable factors[420] that explain the variance this figure it is striking that Greece and East Denmark purchase almost six times more reserves than Finland.

[420] Such as the fact that reserve capacities have to cope with an unexpected outage of a generating unit. The capacity of such a unit might be relatively large compared to the overall size of the balancing area. Some differences can also be explained by varying market designs, i.e. the way how TSOs secure the reserve capacity they need.

Figure 104



Source: Energy Sector Inquiry 2005/2006

Note: Peak load for AT based on an estimation. DE includes aggregation of all TSO. FI and UK are excluded from this figure as they are non-UCTE Member States.

(990) Figure 104 plots the average secondary and tertiary reserves capacities booked by the respective TSOs in 2004. This figure is a break down of the information shown in Figure 103. It reveals that TSOs differ substantially in their way to buy reserves. In Austria the TSO books almost 3.5 more secondary than tertiary reserves, whilst in Belgium the ratio is only 0.2. In general it would seem favourable to turn to the tertiary reserves where concentration levels are in general lower and TSOs can thus choose between more suppliers (which should normally also have an impact on prices). However, regulatory and security reasons may limit the freedom of choice for TSOs.

II.3. Harmonisation

(991) Some Member States have been successful in integrating their forward and spot markets on a regional level (i.e. NordPool). Others are gradually taking action in a similar direction (Belgium, France and the Netherlands). Far fewer efforts have been made to integrate balancing markets. This is partially justifiable since volumes traded on forward and day-ahead markets are much higher than those on balancing markets. As explained above balancing markets serve mainly for corrections between supply and demand, which involves smaller volumes. Linking balancing markets is also likely to bring about more logistical difficulties than linking day ahead or forward markets, as they are nearer to gate closure.

(992) However, it is clear that a harmonisation of the design of balancing markets could improve efficiency as it would pave the way for cross border balancing services.[421] At present the design and hence the rules in Member States for their balancing differ substantially. For instance, payments for balancing power are in some Member States

[421] Also the integration of so-called intraday markets would significantly improve this situation, though these markets fall outside the scope of this chapter.

based on marginal prices. That means that those who make bids for balancing power will all be rewarded with the price that is set by the marginal bid. Hence, in principle all have an incentive to bid in at marginal cost. This is the case in for example the Netherlands, Sweden, Finland, Norway, Spain and Greece. However, in the other Member States it is the bid price that is paid by the TSO and hence participants have less incentive to bid at marginal cost.

(993) Further, in some Member States prices for these services are not based on a market mechanism but defined in a kind of regulatory framework based on obligations on generators or bilateral contracts between TSOs and generators. Table 52 provides an overview of these differences in systems. Clearly, each system has a different impact on incentives for companies to provide balancing power.

Table 52

	Market or fixed prices	Gate closure	Average TSO sell price	Average TSO buy price	Spread
Austria	market	day ahead	51	24	27
Belgium	hybrid	"ex-post"	56	12	44
Denmark	market	1/2 hour	36	27	9
Finland	market	1/2 hour	32	27	5
France	market	6 during day	50	45	5
Germany	market	3 during day	70	2	68
Greece	fixed	day ahead	44	44	0
Ireland	hybrid	day ahead	69	60	9
Italy	market	day ahead	102	23	79
Luxembourg	fixed		-	-	-
Netherlands	market	1 hour	69	28	41
Portugal	fixed	2 during day	58	23	35
Spain	market	2 1/4-3 1/4 hrs	-	-	0
Sweden	market	1 hour	32	28	4
UK	market	1/2 hour	55	39	16
Norway	market	1 hour	29	29	0
Estonia	n.k.	day ahead	-	-	-
Latvia	n.k.	2 hours	-	-	-
Lithuania	n.k.	2 hours	-	-	-
Poland	market	day ahead	37	24	13
Czech R.	market	1 1/2 hour	51	0	51
Slovakia	n.k.	day ahead	-	-	-
Hungary	market	day ahead	40	0	40
Slovenia	market	day ahead	-	-	-

Source: Regulators' data, DG TREN analysis of TSO websites.

Note: Gate Closure is the point in time when market participants notify the System Operator of their intended final physical position. Thereafter no further contract notification can be made. "6 during day" means that at six moments during the day adjustements can be made.

(994) As noted previously, a key difficulty for small market participants arises where there is the risk of a large spread between the buying price from the TSO and the selling price. This occurs in a number of Member States and is likely to be detrimental to the development of competition. A high spread (see Table 52) may be indicative of an insufficient level of competition in the balancing market, which may be dominated by only one or two main generators. Such difficulties are made worse where network users

are unable to adjust their positions close to real time. Greater integration of balancing markets would significantly improve this situation.

(995) Further, the gate closure differs between Member States (see Table 52) and in addition, as is already explained in the chapter on Market Integration (Table 31), the time frames in which imbalances are settled in each control area differ in Member States. Harmonizing balancing market rules would not only be a first step prior to integration, it would also simplify trade and transparency for market participants that are active in more than one Member State.

(996) There are already some initiatives to integrate electricity markets under way. However, it seems questionable if these initiatives will soon yield positive results as it remains challenging for national regulators and TSOs to seek European solutions in the context of national legislations.

Conclusions

Balancing markets are highly concentrated. This gives scope for exercising of market power. It can result into an entry barrier for new suppliers as they face a high risk of being exposed to excessive imbalance prices and/or excessive network charges. This may deter entry and hence reduce the scope for competition on the supply market. Concentration on balancing markets could be reduced if the geographical size of control areas was enlarged.

Balancing market regimes have incompatible market designs. Harmonization of balancing market regimes would help to reduce concentration in these markets, simplify EU trade and hence reduce barriers to trade. Further integration remains challenging for national regulators and TSOs when they seek European solutions in the context of national legislations (cf. however the ERGEG Guidelines of Good Practice on Electricity Balancing Markets Integration).

In some Member States the structural relation between TSOs and their affiliated generation provides an incentive for the TSO to buy the reserve capacity from their affiliated generation. Results indicate that the amount of capacity reserves bought differ substantially between TSOs. Though it is not proven that lack of ownership unbundling is causing this, it is clear that ownership unbundling would better guarantee that TSOs have no incentive to buy too much capacity. In addition ownership unbundled TSOs would have (stronger) incentive to cooperate with the aim to facilitate competition and integrate electricity (balancing) markets in the EU.

III. Electricity Study – Analysis of hourly variations of concentration

(997) In the first phase of the Sector Inquiry the level of concentration in the electricity markets was analysed for all Member States concerned by the inquiry (see chapter B.b.II.1). The main conclusion was that many markets are characterised by a high degree of concentration giving market operators scope to exercise market power. In the second phase of the inquiry, a more refined analysis of market power was carried out for six Member States. This chapter sets out the results of this analysis.

(998) In this respect it is important to note that electricity spot markets have been mainly organised on an hourly basis[422]. This stems from the varying nature of demand and creates in particular variations of the quantity and price of each relevant market every hour. Furthermore, capacity available to generate electricity also varies on an hourly basis due to technical constraints, maintenance, etc. In order to fully assess competition in such markets it is thus necessary to make an assessment on an hourly basis.

(999) Taking into account the very large amount of data to be analysed, a study[423] of the hourly variations was commissioned to external consultants. The study relates to the electricity markets of Belgium, France, Germany, the Netherlands, Spain and the UK in the period between 1 January 2003 and 31 December 2005. The study measured concentration systematically on an hourly basis and the effects of a number of market characteristics (interconnectors, long-term contracts and reserves) on concentration.

a) Traditional concentration indices

(1000) As indicated above, the situation of an electricity market varies from hour to hour. This is well known for the load (demand) to be served, but this is also true in particular for the capacity of generation that is available to serve the load. The *effectively available capacity* (hereafter "available capacity") of each generation unit in the market during each hour of the period depends on all the constraints that reduce availability of generation capacity (periods of maintenance, forced outages, seasonal de-ratings, etc.[424]). The following table shows that such available capacity varies substantially between hours in a given market:

---

422 In fact nominations on transmissions networks are done on an even smaller (15mn) basis, but markets have been organised on a hourly basis, except the UK market which is settled on a half-hourly basis.

423 The study was carried out under the steering of DG Competition and at the premises of DG Competition by a consortium led by London Economics and including Global Energy Decisions and a number of Professors acting as consultants for the project. The study is referred to in this document as the LE-GED study.

424 These constraints were reported by the generators to the Commission for each unit for the whole period. The calculation of effectively available capacity is first based on the effective maximum capacity at which the units can be run in a sustainable manner. This capacity can vary between seasons, in particular between summer and winter, in which case this was taken into account. Then available capacity was reduced or brought to nil when there was maintenance, partial or full outages. Available capacity could also be reduced to other constraints such as restrictions on transmission capacity from the plant to the rest of the grid.

Table 53

Hourly variation of total available capacity in 2003-2005 (in MW)						
	Belgium	France	Germany	Netherlands	Spain	UK
Average	12429	76801	74313	14341	38808	60562
Maximum	14738	92675	85228	16463	43843	71832
Minimum	9645	57011	59893	10808	32291	48193
Standard deviation	786	7100	5152	828	1874	4294
Standard deviation /average	6.3%	9.2%	6.9%	5.8%	4.8%	7.1%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

(1001) All the analysis of these markets presented hereafter has been thus been done by taking into account the hourly available capacity of each generating unit.

i) CR2 and HHI

(1002) Concentration has been first measured on an hourly basis by looking at the sum of the shares of the two largest firms on the market (CR2) in terms of *available capacity* and in terms of production (realised generation) and by calculating the HHI index of the market[425] in terms of available capacity and effective generation. These results constitute a detailed refinement of calculations made in chapter B.b.II.1.3 of this report.

(1003) The results show that concentration levels can vary depending on the hour, although to a much lesser degree than total available capacity and not to a degree that would render concentrated markets non-concentrated for certain hours. The table below shows the value of CR2 for effectively available capacity.

[425] The Herfindahl-Hirschman Index (HHI) for market shares is equal to the sum of the squares of the market shares of the different operators. It is very low in an atomised market and equal to 10000 for monopoly. The index was calculated on the basis of operators with an installed capacity above 250 MW in the respective markets.

Table 54

Hourly variation of concentration of production (available generation) in 2003-2005						
	Belgium	France	Germany	Netherlands	Spain	UK
Minimum CR2	87.2%	90.9%	49.1%	50.5%	60.8%	27.9%
Maximum CR2	97.5%	94.8%	60.1%	67.4%	78.7%	40.0%
Average CR2	90.7%	92.6%	54.1%	57.7%	71.4%	32.6%
Standard deviation	1%	1%	1.7%	3%	3%	2.2%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Note: In the case of Belgium and France, the figures concern CR1 (i.e. the market share of the main operator) as the first two operators constitute virtually all of the available capacity in the market.

(1004) The study also analysed the HHI based on available capacity and actual generation. The table hereafter presents the values of HHI in terms of realised generation. It tends to show that the more concentrated the market is, the more HHI varies. That being said, variations are not of such a degree that they would render concentrated markets non-concentrated for certain hours. Rather, the variation shows that in the less concentrated markets, concentration can reach much higher levels than average for certain hours (e.g. HHI can almost double to reach almost 1800 in the UK).

Table 55

Hourly variation of concentration of production (actual generation) in 2003-2005						
	Belgium	France	Germany	Netherlands	Spain	UK
Minimum HHI	7578	8298	1795	2308	2135	863
Maximum HHI	9944	9764	2665	3397	3991	1775
Average HHI	8843	9072	2143	1861	2837	1129
Standard deviation	517	264	132	149	257	125

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

ii) Impact of long-term contracts[426] and reserves

(1005) CR2 and HHI indices based on available capacity have been adjusted further by taking into account long-term contracts and reserves. As regards long-term contracts, if an operator has secured generation output on a long-term basis from another operator (e.g. in the form of drawing rights), then market outcomes are influenced by the first operator (and not the owner of the generation assets who is bound to deliver the output). The

[426] For the purpose of this analysis, a long-term contract is a contract of duration longer than three years.

capacity has therefore to be attributed to the first operator rather than the second. Furthermore, if an operator is committed to supplying certain customers under long-term contracts, it has less incentive/scope to use the corresponding capacity to affect the market outcome: in such a case the corresponding capacity was taken out of the total capacity of that operator for the purpose of the calculation. As regards reserves, all capacity earmarked for reserves has also been subtracted from the available capacity of that operator as such capacity cannot serve the wholesale market.

(1006) The following table shows the combined impact of long-term contracts and reserves on concentration, i.e. the increase of the CR2 index due to these "constraints" on the availability of generation capacity. As can be seen from the table, the impact is small except for Germany (where significant amounts of generation are contracted by one of the two main generators from other operators) and Belgium.

Table 56

Variation of concentration in available capacity due to reserves and long-term contracts						
	Belgium	France	Germany	Netherlands	Spain	UK
Increase of average CR2	-4.3%	+2.6%	+3.1%	-2.2%	+0.4%	-1.4%
Increase of maximum CR2	-4%	+2.7%	+4.5%	-1.2%	+0.1%	-1.8%
Increase of minimum CR2	-6.2%	+2.1%	+2.4%	-4.8%	+0.3%	-1.5%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Note: In the case of Belgium and France, the figures concern CR1 (i.e. the market share of the main operator) as the first two operators constitute virtually all of the available capacity in the market.

iii) Impact of interconnectors

(1007) Finally, the impact of interconnectors on CR2 and HHI measurements based on available capacity and actual generation was assessed. For that purpose, in addition to the hourly adjustments for capacity mentioned in paragraph (1002), interconnector capacity has also been adjusted on an hourly basis to what was effectively available for cross-border sales of electricity in each and every hour. Then capacity was allocated under different scenarios. The following table shows the impact of interconnectors on HHI in terms of capacity. The scenario for the allocation of interconnection capacity reported in the table is based on the assumption that all capacity is exclusively used by competitors of the undertaking under study.

Table 57

Decrease of concentration due to interconnectors						
	Belgium	France	Germany	Netherlands	Spain	UK
Average HHI without interconnectors	8307	8592	1914	2332	2790	1068
Average HHI with interconnectors	5332	6505	1160	1151	1945	1004
Maximum HHI without interconnectors	9508	8987	2158	2647	3259	1246
Maximum HHI with interconnectors	6030	7437	1351	1283	2360	1118
Average NTC as a proportion of total available capacity	25%	14%	16%	17%	6%	2%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

(1008) These results overestimate the positive impact of interconnectors on competition, as in practice the interconnectors are also used by operators already active on the market. Further, these results are based on the assumption that all the available transmission capacity would be allocated to competitors *and used* which is not what happens in practice as was seen in section B.b.II.3. That being said, these results already indicate that, in most markets, interconnectors do not reduce concentration to a level that would allay any competition concern.

b) Electricity specific concentration indexes: pivotality and residual supply

i) The pivotal Supplier Index (PSI)

(1009) The analysis of traditional concentration indices needs to be complemented by some sector-specific indices on market structure in the reports made by competition or regulatory authorities[427]. Given that supply and demand have to meet at every hour and that buyers cannot postpone purchases or store the product, it is of particular interest to assess if there is any operator which is indispensable to meet demand[428] at a given

[427] See for instance the approach taken by the Italian Energy Authority (*Autorità per l'Energia Elettrica e il Gas*, "AEEG") and the Italian Competition Authority (*Autorità Garante della Concorrenza nel Mercato*, "AGCM") in a Joint Report published on 9 February 2005 (the "Joint Report"). The Joint Report "*Indagine consoscitiva sullo stato della liberalizzazione del settore dell'energia elettrica*" is available on the website of AEEG http://www.autorita.energia.it/elettricita/index.htm
as well as on the website of AGCM, http://www.agcm.it/index.htm.
See also the market monitoring by the US FERC.

[428] The load used for the calculations reported in this chapter is the sum of generation of all units that were reported to the Commission: this load is not equal to the load which was recorded on the networks of the TSOs as it includes units which are connected at DSO level.

moment in time. The fact that an operator is indispensable does not mean that it can automatically profit from the situation[429], but it gives an indication of its possible market power.

(1010) The degree of indispensability of an operator can be first measured by the Pivotal Supplier Index (PSI)[430], which provides the percentage of hours at which a given operator is indispensable in the market, i.e. where the sum of the available generation capacities of all other domestic producers (possibly including imports) is not sufficient to meet demand of the market in the given hour. A large percentage of hours indicates that the operator in question is indispensable (pivotal) for substantial periods of time[431], giving it scope to exercise market power for sustained periods of time. The table shows the PSI index for the three largest operators in each of the markets over the period 2003-2005. This calculation of PSI indices takes into account the amount of capacity earmarked for reserves and the capacities which are tied into long-term contracts[432]. The following table shows the same PSI index, taking into account interconnectors in the scenario most favourable to competition[433].

---

429 Theoretically an operator is able to dictate prices in an hour when it is indispensable to meet demand, *if it can foresee it.* This is possible because operators know rather well what capacity exists in the market and the load on the network is usually published. For large operators in a tight market, a position of indispensability will be reached once demand exceeds a certain level, which is usually occurring at foreseeable moments given that electricity demand mainly varies in cycles between peak (which is usually the period 8:00-20:00 of a working day) and off-peak (other moments). Because of this cyclical repetitive nature of the market, an indispensable operator can learn to forecast when it becomes indispensable and adapt its behaviour accordingly. Theoretically the operator could give an infinite price but this would attract corrective measures that could be detrimental to the operator, especially if the "infinite" prices occur regularly. Thus, prices could probably be raised only to a finite value. Then, it will be profitable for an indispensable operator to increase prices in the hours when it is indispensable, only to the extent that the foregone profit of not running the whole capacity of that operator that would normally serve demand is compensated by the additional profit gained with the higher price obtained on a smaller part of its portfolio. In other words, an operator whose generation portfolio is to a very large extent indispensable to meet demand has a higher incentive to exercise market power.

430 PSI is equal to one if the sum of the capacity of all other operators is lower than demand in that hour (meaning that the operator investigated is indispensable to meet demand). PSI is equal to zero if the sum of the capacity of all other operators is higher than demand in that hour (meaning that the operator investigated is not indispensable to meet demand). The results reported here are the percentages of hours when PSI is equal to one.

431 This naturally corresponds to periods of higher demand, i.e. peak demand when occurs only for a part of the time.

432 As before, if capacity is supplied through a long-term contract by a given operator to another this capacity is added to the capacity of the latter operator and subtracted from the capacity of the former. Further, if an operator is committed to serve through long-term contracts certain customers, it cannot affect the outcome of the market on the short-term with the capacity dedicated to serve these customers. Thus the capacity allocated to those long-term contracts is subtracted from the total capacity of that operator and from total demand as that part of the demand is served. This second situation does not affect the PSI but the RSI index presented thereafter.

433 Several scenarios have been studied as in section III.a.iii. The scenario most favourable to competition determines that all interconnector capacity is used by competitors established on neighbouring markets on the basis of their market shares there.

Table 58

Degree of indispensability of the main operators disregarding interconnectors: percentage of hours when the main operators are indispensable						
PSI	Belgium	France	Germany	Netherlands	Spain	UK
Undertaking 1	100%	100%	11.5%	31.3%	25.7%	0%
Undertaking 2	0%	0%	49.8%	14.5%	19.8%	0%
Undertaking 3	0%	0%	0%	5%	0%	0%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Table 59

Degree of indispensability of the main operators taking into account interconnectors: percentage of hours when the main operators are indispensable						
PSI	Belgium	France	Germany	Netherlands	Spain	UK
Undertaking 1	97.2%	100%	0%	0%	8.2%	0%
Undertaking 2	0%	0%	0%	0.7%	5%	0%
Undertaking 3	0%	0%	0%	0%	0%	0%
Average NTC as a proportion of total available capacity	25%	14%	16%	17%	6%	2%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

(1011) The results show that interconnectors barely affect the indispensability of the main operators in France and Belgium, despite the rather high level of interconnectivity of these Member States. On the other hand, with a much lower level of interconnectivity, interconnectors in Spain reduce the market power of the two main undertakings, albeit not completely. And in the UK, which has by far the lowest level of interconnectivity, the existing low level of concentration means that interconnectors are needed only to a very small degree to mitigate potential market power. In other words, the right level of interconnectivity needed to mitigate possible market power depends very much on the level of concentration in the domestic generation market. This means that at certain levels (like in Belgium and France) there is little perspective that interconnectors can mitigate such market power. This means also that even in less concentrated markets market power can be all the more increased by national mergers given the low levels of interconnectivity.

(1012) Another interesting result concerns cross-border shareholdings. In the Netherlands, interconnectors affect the indispensability of only two of the three undertakings since the third one has substantial capacity in a neighbouring market and thus does not lose so

much potential market power through the interconnectors[434]. It is thus important to take into account cross-border shareholdings in order to assess the right level of interconnectivity needed to mitigate possible market power. Also, it is very important to assess the impact of cross-border mergers on the possible market power of operators involved given the risk that such links increase their market power on both sides of the border.

ii) The Residual Supply Index (RSI)

(1013) The study also computed the Residual Supply Index (RSI), which has been developed by the California Independent System Operator to monitor competition and levels of market power. RSI has shown a good correlation with Lerner indices in the Californian market during 2000. Contrary to the PSI, which provides a binary measure of indispensability, the RSI for a given operator in a given hour is a ratio between the sum of the available capacity of all other operators and total demand in that hour[435]. This allows a continuous measurement of indispensability and market power. For instance, an RSI value of 0.5 indicates that the operator is indispensable to cover 50% of demand, which is a higher degree of market power than a situation where an operator is indispensable to meet only 5% of demand (RSI=0.95). In both cases, PSI would only indicate that the operator is indispensable. RSI also allows assessing potential market power of operators which are not strictly indispensable but close to being so and have thus potentially some market power.

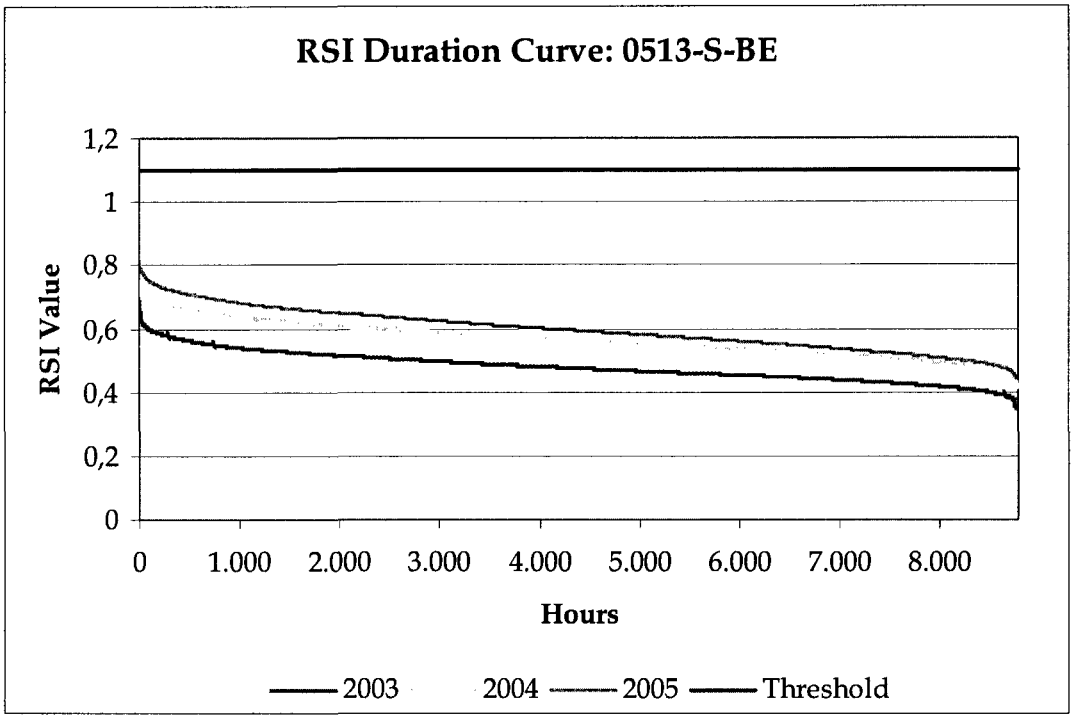
(1014) RSI was computed for the main operators in each market. For instance, the duration curve of the RSI of the main operator in Belgium is shown below. It demonstrates that, absent interconnectors, the main operator was indispensable to meet 40% of total demand for all hours in 2003 (RSI is between 0.4 and 0.6 except for very few hours on both extremes) but started to become necessary for less of demand (RSI going up to 0.8) in 2004 and 2005. The fact that the RSI is going up over the years reflects the increase of interconnection capacity and generation capacity of competitors in the market and its impact on the indispensability of the incumbent operator.

---

434 This is mitigated partly by the fact that the rules of allocation of interconnector capacity in the Netherlands impose that no operator can obtain more than 400MW of interconnector capacity in a given hour. However, on the southern border of Belgium there are de facto very few operators which can export to the Netherlands.

435 When RSI is above one, then the operator is not indispensable to meet demand and PSI is equal to zero. When RSI is below one, then the operator is indispensable to meet demand and PSI is equal to one.

Figure 105



Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

(1015) As described previously, the potential market power stemming from available capacity can be affected by several factors: reserves, long-term contracts, and interconnectors. Calculations have thus been performed to take into account these factors separately to assess what are the respective impacts of these factors.

(1016) First, a calculation of RSI taking into account only reserves has been made: in such a case the capacity available to an operator is diminished by its contribution to reserves. This makes it possible to estimate the impact of reserve requirements on the market power of an individual operator. The table hereafter shows the variation of the percentage of hours when the RSI of an operator was below 110% with and without reserve commitments. Operators are presented in the decreasing order of their RSI values without reserves. Overall variations are not significant. In the most concentrated markets (Belgium and France), reserves do not alter market power as there is already a single operator whose RSI is far below 110% all the time; and in Spain reserves even have no impact on market power since the main operators provide reserves roughly in proportion of their available capacity. However, there are exceptions. In the Netherlands and the UK, undertaking 3 provides little or no reserves (while others do) and thus increases its market power because of reserves. In the same markets, undertakings 1 and 2 do provide reserves but not to the same extent, so their market power is affected in the opposite direction.

Table 60

How reserves affect the market power of an operator: variation of the RSI due to reserves *(variation in percentage points)*						
	Belgium	France	Germany	Netherlands	Spain	UK
Undertaking 1	=	=	+11.0%	-2.8%	=	-0.9%
Undertaking 2	-3.3%	+0.1%	-21.5%	+2.8%	=	+0.3%
Undertaking 3	=	+0.4%	+0.5%	+0.3%	=	+3.2%

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Note: n.s. = non significant. It concerns situations when the percentage is equal to zero without reserves and the result with reserves is also equal to zero.

(1017) Secondly, a calculation of RSI taking into account only long-term contracts has been made: in such a case the available capacity of each operator is diminished by the amount (MW) of its obligations to supply through long-term contracts and increased by its wholesale purchases through long-term contracts (essentially drawing rights in plants of other operators). This makes it possible to estimate the impact of long-term contracts on the potential market power of an individual operator. The table hereafter shows the variation of the percentage of hours when the RSI of an operator was below 110% with and without long-term contracts. Operators are presented in the decreasing order of their RSI values without contracts. Again the impact is not very significant for most operators in these markets. But again there are a few exceptions. The table hereafter shows that long-term contracts (such as drawing rights in the plants of another operator) increase substantially the potential market power of undertaking 1 in Germany and decrease the potential market power of undertaking 3 in the Netherlands (because it is committed to supply a large part of its electricity on a long-term basis).

Table 61

How long-term contracts affect the market power of an operator: variation of the RSI due to long-term contracts *(variation in percentage points)*						
	Belgium	France	Germany	Netherlands	Spain	UK
Undertaking 1	=	=	+31.2%	+0.7%	+2.1%	+0.2%
Undertaking 2	+1.8%	=	-35.3%	+1%	+2.6%	+0.5%
Undertaking 3	=	*n.s.*	+3.1%	+0.8%	+0.1%	=

Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Note: n.s. = non significant. It concerns situations when the percentage is equal to zero without reserves and the result with reserves is also equal to zero.

(1018) The third and last factor considered as a sensitivity analysis of RSI is interconnectors. The table below shows the variation of the percentage of hours when the RSI of an operator was below 110% with and without interconnectors. For the purpose of the calculation with interconnectors, all interconnector capacity is allocated to operators established on neighbouring markets on the basis of their market shares there. The results show that

interconnectors have much larger impacts than reserves and long-term contracts. That being said, in markets with a single operator, interconnectors have no impact.

Table 62

How interconnectors affect the market power of an operator: variation of the RSI due to interconnectors *(variation in percentage points)*						
RSI	Belgium	France	Germany	Netherlands	Spain	UK
Undertaking 1	=	=	-47.7%	-43.8%	-23.9%	-0.8%
Undertaking 2	-5%	-0.5%	-76.9%	-21.6%	-21.1%	-0.6%
Undertaking 3	*n.s.*	*n.s.*	-4.6%	-22.7%	-0.6%	-0.6%

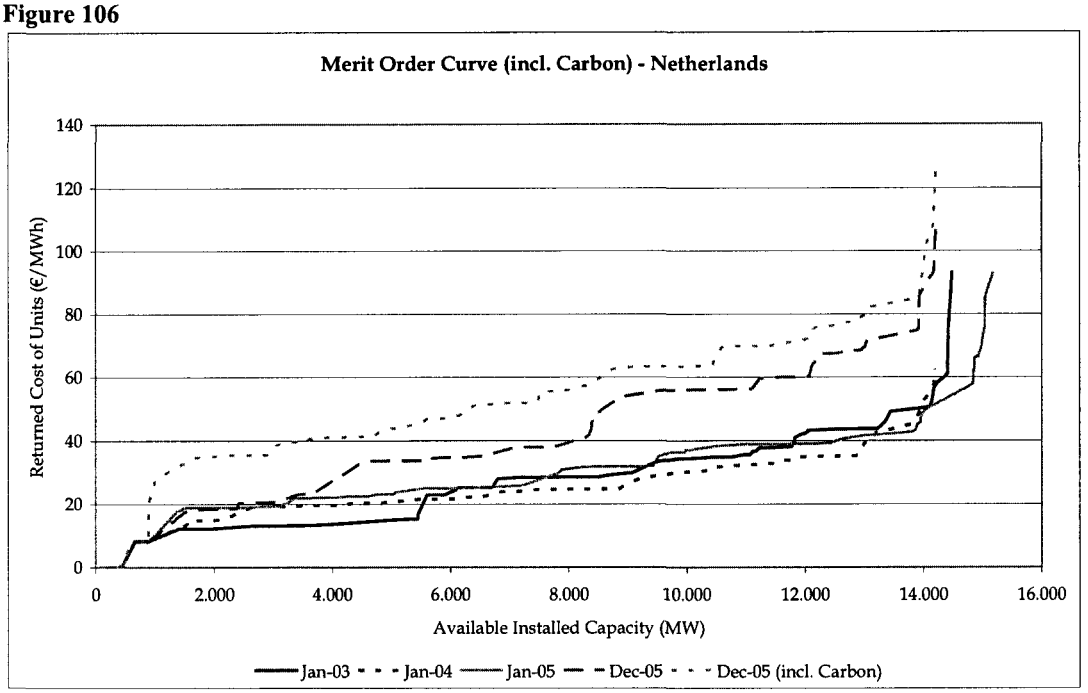
Source: Energy Sector Inquiry 2005/2006, study by LE-GED.

Note: n.s. = non significant. It concerns situations when the percentage is close to zero or equal to zero without interconnectors and the result with interconnectors is equal to zero.

c) The merit curve

(1019) As explained in chapter B.b.I.3.2.4, economic theory suggests that the electricity price at the wholesale level is very much determined by the merit curve of the overall portfolio of plants in that market. The spot market price at the spot market is determined in general by the marginal costs of the last plant called to meet demand. By using the cost of fuel and other variable costs of each generation units, it is possible to construct the merit curve in each market for every hour. The following graph shows the merit curve in the Netherlands at the beginning of each year of the period (2003, 2004 and 2005) and at the end of 2005 (first without factoring in CO2 and second with the value of CO2 emissions added). The merit curves of all markets are shown in Annex N.

Figure 106



Source: Energy Sector Inquiry 2005/2006.

(1020) This graph shows the significant impact of price increases of fuels on the curve at the end of the period. This impact is the largest factor of modification of the curve, by shifting it upwards. In 2005, the EU Emission Trading Scheme (ETS) is also contributing to a significant shift of the curve upwards, although not to the same degree as created by the increase of fuel prices. In certain markets, the evolution of the curve also shows the evolution of the overall portfolio of plants (when some plants are added or retired).

D. CONCLUSIONS

(1021) 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

(1022) **Full and combined use of the Commission's powers under antitrust rules (Articles 81, 82 and 86 EC), merger (Regulation 139/2004)[436] 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

(1023) **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.

(1024) 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.

(1025) 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

[436] Council Regulation (EC) No 139/2004 of 20 January 2005.

from the very structure of the undertaking, or where behavioural remedies would be more burdensome.[437]

- *Vertical foreclosure*

(1026) **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.**

(1027) 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 for 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.[438] Similarly, power purchase agreements in the electricity sector can have foreclosure effects.

(1028) 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*

(1029) **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.

(1030) Additionally, lack of investment and delayed investments by transmission companies with vertically integrated supply companies are other serious sources 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.[439]

(1031) **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.

---

437 See Article 7(1) and recital 12 of regulation 1/2003.

438 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).

439 The Italian Competition Authority has recently taken action against the delaying tactics of an incumbent operator to expand an important import pipeline.

Structural issues and pro-competitive regulatory environment

(1032) 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.

(1033) 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*

(1034) **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.

(1035) 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.

(1036) 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.

(1037) 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.

- *The regulatory environment*

(1038) 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.

(1039) 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.

(1040) **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*

(1041) 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.

(1042) 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).

(1043) 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 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.

(1044) 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*

(1045) 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*

(1046) 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".

(1047) **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.[440]

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

(1048) 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.

(1049) 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.

(1050) 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 Second Gas Directive, which are already now subject to strict use-it-or-lose-it rules and to the rules of competition law.

(1051) 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.[441]

(1052) 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.**

(1053) 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.

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.

441 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