

OECD REVIEWS OF REGULATORY REFORM

REGULATORY REFORM IN GERMANY

ELECTRICITY, GAS, AND PHARMACIES

-- PART I --



ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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FOREWORD

Regulatory reform has emerged as an important policy area in OECD and non-OECD countries. For regulatory reforms to be beneficial, the regulatory regimes need to be transparent, coherent, and comprehensive, spanning from establishing the appropriate institutional framework to liberalising network industries, advocating and enforcing competition policy and law and opening external and internal markets to trade and investment.

This report on *Electricity, Gas, and Pharmacies – Part I* analyses the institutional set-up and use of policy instruments in Germany. It also includes the country-specific policy recommendations developed by the OECD during the review process.

The report was prepared for *The OECD Review of Regulatory Reform in Germany* published in 2004. The Review is one of a series of country reports carried out under the OECD's Regulatory Reform Programme, in response to the 1997 mandate by OECD Ministers.

Since then, the OECD has assessed regulatory policies in 20 member countries as part of its Regulatory Reform programme. The Programme aims at assisting governments to improve regulatory quality — that is, to reform regulations to foster competition, innovation, economic growth and important social objectives. It assesses country's progresses relative to the principles endorsed by member countries in the 1997 *OECD Report on Regulatory Reform*.

The country reviews follow a multi-disciplinary approach and focus on the government's capacity to manage regulatory reform, on competition policy and enforcement, on market openness, specific sectors such as electricity and telecommunications, and on the domestic macroeconomic context.

This report was principally prepared by Sally Van Sichen in the Competition Division of the Directorate for Financial and Fiscal Affairs of the OECD. It benefited from extensive comments provided by colleagues throughout the OECD Secretariat, as well as close consultations with a wide range of government officials, parliamentarians, business and trade union representatives, consumer groups, and academic experts in Germany. The report was peer-reviewed by the 30 member countries of the OECD. It is published under the authority of the OECD Secretary General.

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ELECTRICITY, GAS, AND PHARMACIES

Introduction

Electricity and Gas Sectors

Germany liberalized electricity and gas well beyond the requirements of the European Union Directives. This resulted in the outbreak of competition in electricity—much less so in gas—with resulting substantial price falls. Some industrial prices fell up to 50%, though smaller consumers enjoyed only smaller price drops. Recently, though, prices have been edging upwards, largely due to additional taxes. This liberalization was done in the context of the national energy objectives, where secure energy supplies, economic efficiency, and environmental protection are given equal weight. Especially over the past half-decade, the sectors have consolidated into concentrated structures. The main form of independent economic regulation for these sectors is the enforcement of the Act against Restraints of Competition, although low-voltage electricity customers, e.g., households, are also safeguarded by price caps enforced by regulators at the *Land* level. The notable feature of the German system is negotiated third-party access to electricity and gas transmission/distribution infrastructure. This is effected through negotiation—between the parties desiring and able to provide access—within the framework established by Associations' Agreements, private law agreements among various business associations. This is within a tradition of associations reaching private agreements to implement political objectives under threat of legislation. Spring 2003 announcements of the expected creation of an independent regulator—who will oversee the pricing principles established under the Associations' Agreements—could move the system in the direction of more economically efficient network access conditions. Recommendations focus on the need for an independent regulator, with sufficient resources and appropriate powers.

Pharmacies

Pharmacies form just one part of a health care system now undergoing reform and renewal in Germany. Pharmacists provide a variety of professional services that enable the health care system as a whole to work more efficiently, but pharmacies are also commercial businesses. Both pharmacies and pharmacists are subject to laws and regulation that constrain both professional and commercial activities. Entry of new pharmacies and pharmacists is relatively liberal in Germany, but business structure is tightly constrained—only pharmacists may own pharmacies and a pharmacist may own at most one pharmacy in Germany. A Dutch pharmacy, using the internet and mail-order, has been very successful by filling prescriptions from German patients, pleasing also the statutory health insurance funds with its lower prices. The seeming contradiction between national health care and free movement of goods may soon be resolved in favour of the single European market, meaning that Germany would have to adapt to the coexistence of new ways of delivering pharmacy services alongside the traditional ways. Recommendations focus on business structure and on internet/mail-order pharmacies, but the idea that pharmaceutical pricing reform would form a part of a comprehensive health reform also present.

Layout of the Chapter

Reflecting the links between them, this chapter provides an integrated review of the electricity and gas sectors. The two sectors are linked by the 20% of total gas demand that is used for electricity generation and heat production, [IEA, 2002a] the substitutability of their products for some customers, and the spanning of the two sectors by the same utilities. The introduction to the chapter begins with the history of the two sectors. A recital of the industrial history allows an appreciation of the recent coalescence of these sectors from a fragmented to a concentrated structure. The history of regulation puts the current regulatory governance into perspective, as well. The next two parts describe the 1998 legislative changes that were made to implement the European Union directives on electricity and gas, as well as more recent changes in the European and German legal framework. The following two sections describe the sectors in economic terms, and describe the regulatory framework. Finally, the chapter addresses three key regulatory reform issues:

- Does the structure of the two sectors, especially its vertical integration, promote effective competition and economic efficiency?
- Does the structure of regulatory governance, especially the Associations' Agreements, efficiently promote market liberalisation and effective competition?
- Has the application of the Act against Restraints of Competition been sufficient to protect efficient access to electricity and gas infrastructure and to promote effective competition?

The review of pharmacies will note that pharmacies are just one part of the health system that is expected to be reformed over the next few years. Despite the heavy regulation that is a necessary accompaniment to an insurance scheme, the chapter examines where there is scope for allowing greater freedom, and thus scope for incentives for greater efficiency, in pharmacies. In particular, the chapter examines:

- Do the restrictions on business structure promote consumer interests?
- Would cross-border trade or mail-order trade allow lower costs, while maintaining high-quality and safe delivery of medicines?

Electricity and gas

1. An Overview of Reform

German electricity and gas reforms are made in both the national and the European Union context. The national energy objectives, given equal weight, are secure energy supplies, economic efficiency, and environmental protection. [BMWi 2002, p. 4] Within these policy goals, Germany seeks to reduce greenhouse gas (GHG) emissions, is phasing out nuclear power, subsidises domestic coal mining, and maintains significant coal-based electricity generation. The energy policies of the European Union in electricity and in gas aim to develop an internal market in both commodities. The directives note that the establishment of an internal market is particularly important in order to increase efficiency, while reinforcing security of supply and the competitiveness of the European economy and respecting environmental protection. These sector-specific objectives are set within the broader Community objectives of economic and social cohesion and creating an area without internal frontiers for the free movement of goods, persons, services and capital.

The promotion of renewable energies is an essential part of Germany's energy policy. The federal government has set the objective of doubling renewable energies' share of overall electricity production by 2010. And after 2010 there will be a push for further significant progress in this area. The stated aim is for renewables to cover roughly half of the country's energy needs by the middle of the century. The development of renewable energies still requires specific government support and this will continue to be true for the foreseeable future. Such assistance includes financial support for R&D in the field of renewable energies, the provision of investment incentives to stimulate demand, and statutory provisions that provide a guaranteed price when such energies are fed into the public grid. This assistance is to stimulate technical advances and to ensure the cost remains acceptable. In the mid to long term, the government sees that renewables must become competitive so that they can serve as one of the main supports on the domestic energy market.

Germany, more so than Europe as a whole, has limited indigenous energy resources. Almost all oil, 80% of natural gas and 43% of hard coal is imported. By contrast, almost all lignite and renewable energies are domestic. [BMW 2002] For nuclear fuel, as well, Germany is ultimately dependent on foreign suppliers. [IEA 2002a]

Demand in these sectors is expected to grow slowly in Germany. Electricity consumption is expected to continue to grow at a rate slightly below 1% per year, and gas consumption at a rate slightly over 1% per year until 2020.

The adoption of the two European directives on electricity and on gas and the 1998 legislative changes marked a step change in the legal environment surrounding the sectors. The changes in 2002-4 may prove to be a second step change. While there have been other major changes in these sectors, e.g. as regards combined heat-and-power (CHP), coal, and nuclear power, the focus of this chapter is on those reforms aimed at improved economic performance.

1.1. History to the Mid-1990s

1.1.1. Origins and Development

A review of the history of the German gas and electricity sectors allows one to appreciate the current status of these sectors and the basis for further reform. The German gas and electricity sectors have coalesced from a fragmented to a concentrated structure, while largely remaining beyond the reach of economic regulation that has substantially restricted their pricing behaviour. For decades, these sectors were decentralised and fragmented into several hundred or even thousands of utilities (about 16,000 electricity supply companies in 1936, but only about 1,000 in 1986 [Deregulation Commission 1991, para. 278]), albeit the vast number were local municipal utilities that distributed and supplied to users in their territories gas or power purchased from the large companies. This pattern reflected the historical origins of the sectors and the absence of a nationalisation event like those that occurred in many other European countries.

Technological change enabled electricity to become important in the 20th century even though gas was the first of these two sectors to develop. The gas sector has its origins in the early 19th century with the establishment of isolated municipal gas utilities based on town gas. New, private electric companies challenged these municipal gas utilities, and were seen by the municipalities as threats to the profitability of the gas business. Eventually, the municipalities took over the electric companies in the large cities. In the 1920s, technological change in electricity—the development of more efficient long-distance transmission and cheaper, larger scale generation—prompted structural change, with larger private generators merging with smaller public utilities to form mixed public-private enterprises, except in the

larger cities where the vertically integrated municipal utilities persisted. Some of the *Länder* were active in organising regional distribution, and these efforts resulted in a number of the names familiar in the electricity sector until recently. RWE (*Rheinisch-Westfälisches Elektrizitätswerk*), which for years was the largest German electric company, originated in the Ruhr basin and grew rapidly by taking over city utilities. Its growth was countered by the creation of VEW (*Vereinigte Elektrizitätswerke Westfalen*) by other municipalities in the area. The resulting takeover and price war was settled by political intervention in 1908 to assign exclusive territories to the two utilities. Other territories were assigned to other utilities, “so that by 1930 the main features of today’s industry structure were in place,” according to a book published in the mid-1990s. [Müller and Stahl 1996, pp. 279-282]

The gas sector depended on town gas through most of the 20th century. Ruhrgas, which now dominates the sector, was established in 1926 to sell town gas based on coke-oven gas. This is a by-product of the production of iron and steel created when coal is carbonized to produce coke. Among Ruhrgas’s earliest shareholders were steelmakers Krupp, Thyssen and Hoesch, companies that had surplus coke-oven gas and created Ruhrgas to market it. Ruhrgas marketed town gas to cities and industrial users in the Ruhr and Rhine basins and ultimately expanded to become a supra-regional supplier.

Initially regarded by the oil industry as a waste product, natural gas became valuable only when combined with a transport infrastructure. The construction of gas pipelines became economic only after the improvements in metals, welding techniques and pipe-making that were developed during World War II. While Ruhrgas had marketed some indigenous natural gas in the mid-1950s, the importation of large volumes of natural gas from the Netherlands, starting in the mid-1960s, and sale to municipal and regional gas companies and industrial users established Ruhrgas as the pre-eminent gas company throughout western Germany. Gas sales boomed in the 1970s and 1980s. The sale of natural gas through long-term contracts was already established in this period, fundamentally as a way to overcome a “hold-up problem:” the development of the gas production and transport infrastructure required large sunk investments and the use of natural gas required users to sink investments in conversions from other fuels.

The link between Ruhrgas and Russian gas began in the 1970s. [Ruhrgas] As part of Chancellor Willy Brandt’s *Ostpolitik* or “Opening to the East,” the legendary “gas-for-pipes” deal was signed in 1970 between Mannesmann (pipes for drilling and transport), the USSR (gas), and a consortium of banks led by Deutsche Bank (financing). In the late 1970s, 60% of Mannesmann’s entire production of large diameter pipes (which are used to transport natural gas) were exported to the USSR. [Office of Technology Assessment 1981] The Russian gas exports to Germany enabled by the 1970 deal began in 1973. In 1977, Ruhrgas began to take deliveries of Norwegian natural gas. Thus, the current pattern of imports by long-term contracts from the Netherlands, Russia, and Norway was established a quarter-century ago. After the Berlin Wall fell, eastern German households, who had been receiving town gas generated from hard coal and lignite, were switched over to natural gas.

1.1.2. Legal Environment

Neither the electricity nor the gas sector has been subject to intrusive government regulation. Until 1998, agreements in these sectors were exempt from the competition law, the regulatory structure under the 1935 Act of the Reich to Promote the Energy Industry, which later became the federal Energy Industry Act, imposed maximum price controls only on electricity sold to small consumers, and the structure of ownership and local government involvement in the sectors discouraged intrusive regulation. This pattern of government control was complemented by various agreements amongst industry actors to implement political objectives, such as continuing the use of domestic coal to generate electricity.

The cartel law exemptions, now abolished, allowed a number of types of anticompetitive agreements among electricity and gas utilities. Section 103(1)(1) exempted the various demarcation agreements (*Demarkationsvertrag*, agreements to divide markets on a territorial basis). Section 103(1)(2) exempted long-term concessions (*Konzessionsvertrag*) between municipal governments and utilities that gave the latter exclusive rights to construct and maintain distribution systems to supply electricity. Section 103(1)(3) exempted resale price maintenance agreements by which distribution/supply companies agreed to supply consumers at prices or terms not less favourable than those at which the upstream company supplied to its own direct customers. Section 103(1)(4) exempted interconnection agreements that restricted access to transmission lines and defined supply areas, supply conditions and prices. Nevertheless, these agreements were subject to abuse supervision by the cartel authority.¹ The cartel authority could order the utilities to cease and desist or to amend the offending agreement, or it could declare the agreement null and void. It was not until the 1990s, however, that the *Bundeskartellamt*, “decided to put its powers to the test by making initiatives against allegedly abusive practices in the energy supply industry that had not been challenged previously.” [Cross, pp. 141-145, in places citing the Deregulation Commission Report, pp. 194, 214-215]

The 1935 federal energy law provided the regulatory structure for electricity. (Gas has not been subject to comparable economic regulation.) The law’s explicit objective was to prevent economic harm due to competition, and it encouraged cooperation among the electric utilities. Utilities were assigned exclusive territories. Consumers were divided into two groups, households and small businesses in the first group and electric distributors and large final consumers as “special customers” in the second group. The market for sales to the latter group was virtually unregulated. The federal and *Länder* governments oversaw investment, communities regulated access to rights of way, and *Länder* regulated prices to small customers. Entry by new generators was discouraged. [Müller and Stahl 1996, pp. 296-7]

Prices to small consumers were regulated on a rate-of-return principle, in the form of a price cap, under a federal ordinance (Federal Tariff Code). Regulation by the *Länder* was never uniform, with differences in *inter alia* asset valuation, allowed rates of return, and which costs were included in the rate base. [Müller and Stahl 1996, pp. 294-300] The *Länder* were responsible for electricity tariff regulation, but “the intermeshing of public (ownership) and private (business) interests ensured that the *Länder* regulatory oversight never constituted a threat to the flow of monopolistic profits.” [Eberlein 2001] Even today, there are only ten persons in the Decision Unit of the *Bundeskartellamt* devoted to the electricity sector (excluding mergers) and at most one or two persons in each of the cartel offices in the *Länder*.

The communities in Germany play an important role in public utilities. Article 28(2) of the Basic Law guarantees *Gemeinden* (municipalities) “the right to regulate on their own responsibility all the affairs of the local community within the limits set by law.” Under this broad statement of competence, local governments can justify a wide range of activities. In particular, local governments usually provide basic public utilities, such as gas and electricity, as well as public transportation. In fact, most municipal utilities are multi-utilities supplying electricity, gas, water, sewage, and waste management. Of the about one-thousand municipal utilities, 600 supply electricity and 500 supply gas.

Because the communities exercise control over right-of-way, they have substantial bargaining power *vis-à-vis* the electric companies. The communities decide whether to provide these services themselves. If a community chose to license a private provider then the community issued an exclusive concession, usually for 25 to 50 years, providing access to the rights-of-way and, in return, service to the community and sometimes sizeable concession payments. [Müller and Stahl 1996, p. 297] Concession fees generate more than € 3bn per year for municipalities. [Dresdner Kleinwort Wasserstein Research 2002] The length of the concessions was criticised by the Monopoly Commission in 1976, which pointed out that there was no competition for these concessions. [*ibid.*, p. 301] A 1990 amendment to the antitrust law introduced a limit of 20 years on the term of these concessions, and provided special transitory rules for concession

contracts concluded before the entry into force of the amendment. It also required demarcation agreements to, essentially, give way when concession agreements end, so as not to impede competition for concessions. The communities renegotiated the concession fees to the maximum level, and in the event, only a very few franchises have changed hands, mostly by the communities taking over the utility from the private firms. [*ibid.*, p. 307-8] The municipalities generate income from the utilities to subsidise other municipal services.

The current Associations Agreements in electricity and gas (see below) are within a tradition of associations reaching private agreements to implement political objectives under threat of legislation. The *Jahrhundertvertrag* (“century agreements”) are an example. These agreements, reached in 1977, governed the sale of hard coal to German electricity generators and contained extensive rules on state aid, imports and procurement obligations. They ensured continued coal mining in Germany funded by German electricity consumers. One agreement was between the Association of the German Coal-mining Industry (GVSt) and the Association of German Electricity Supply Companies (VDEW, *Vereinigung Deutscher Elektrizitätswerke*). A parallel agreement was between the German coal industry and the Association of Industrial Producers of Electricity (VIK, *Vereinigung Industrielle Kraftwirtschaft*). “These were signed under pressure from the federal government, which threatened legislation if a voluntary agreement was not reached.” [Cross, p. 130] (This system changed under the March 1997 *Kohlekompromiss* (coal compromise), a political agreement among the federal government, the coal-producing *Länder*, the coal industry and the unions.)

Three more recent examples of agreements between Government and the private sector relate to preserving lignite mining, meeting the Kyoto Protocol commitments, and phasing out nuclear power.

- In February 2002, the German government reached agreement with the new owners of the eastern German electricity industry (VEAG), Vattenfall, that at least 50 TWh of electricity shall be produced annually by VEAG's lignite-fired power stations until 31 December 2008. This safeguards the future of eastern Germany's lignite production and its use for electricity generation in the liberalised electricity market.
- On 9 November 2000, German industry, as represented by BDI, BGW, VDEW and VIK², and the Federal Government concluded a voluntary-commitment agreement to reduce greenhouse gases. Accordingly, a 28 % reduction of carbon dioxide emissions is to be achieved by 2005, and by 2012 a 35 % lowering of emissions of the greenhouse gases named in the Kyoto Protocol (each relative to 1990 levels). Supplementary to the agreement, on 25 June 2001, the energy industry committed itself to reducing annual carbon dioxide emissions by 2010 by 45 million tonnes; at least 23 million tonnes of that amount are to be reduced by retaining, modernising, and adding on to cogeneration units.
- On 11 June 2001, the Federal Government and the operators of nuclear power stations signed the agreement that will serve as the basis for the phasing out of the use of nuclear energy in Germany.

In sum, it is within the German political tradition to seek and use agreements between Government and industry, or associations of industry, in lieu of more formal arrangements.

1.1.3. The Deregulation Commission

The Deregulation Commission was an independent commission of experts, given a mandate by the Federal Government in 1987 to examine prevailing regulations of economic activities and to make

recommendations for the reduction of regulations which are inimical to market forces. It delivered its report, *Marktöffnung und Wettbewerb* (“Opening of Markets and Competition”) in 1991. The report examined a wide range of the German economy, and provided both general guidance (see the Guidelines for Deregulation below) and specific recommendations for *inter alia* the electricity sector. Gas was not reviewed.

Box 1. The Deregulation Commission’s Guidelines for Deregulation

“34. ...The following principles should apply when each individual regulation is examined:

“Firstly, a special regulation is to be abolished or modified if not every part of it is justified...by a market failure, a failure in competition,...or that it regularly effects a reduction in the costs of economic transactions.

“Secondly, a special regulation is to be abolished or modified if the purpose of the regulation clearly does not justify the costs.

“Thirdly, a special regulation which restricts or excludes competition is to be replaced by one that does not restrict competition, or does so to a lesser extent, if this would fulfil the regulatory purpose just as well. The other costs must be taken into account.

“... ”

“38. The positive effects of justified deregulation are generally an increase in the number rewarding and useful economic transactions, cheaper ways of supplying goods and services and a release of creativity. In most cases the decisive step that leads to such effects is opening to or increasing competition.

39. If barriers to market access are lowered, outsiders will take the chance to compete with established companies for market shares and the established companies will try to resist the pressure of competition by rationalisation and innovation. Costs and prices will fall, or they will at least rise less than on regulated markets. The supply of goods and services becomes more varied and more attractive.

Source: Deregulation Commission 1991

While the Deregulation Commission made specific recommendations for reform of the electricity sector, it did not hold out much hope for the reform.

“Despite the utterly inadequate reasons given for the regulation from a systematic point of view, despite the disadvantages to the economy as a whole which the regulation of the electricity industry causes, and despite the repeated attempts at reform, a change in German electricity policy is not in sight. It is prevented by a firmly established power cartel held together by widely branching interests. It includes: the municipalities as recipients of concession fees and as owners of supply companies, most of the electricity producing and distributing companies and their shareholders – many of whom are the municipalities–, firms supplying the electricity industry, particularly power station construction firms and coal mining companies, their employees and the trade unions, the customers who are on special rates and their advocates in local politics, the state institutions with their bureaucracies, who are entrusted with the technical inspection of the supply companies, the loss-making sectors of the cross-association companies which, like local public transport, are subsidised with the profits from the electricity industry, the Federal Länder, which block reforms mainly on regional and social policy grounds, and last not least the many politicians who see their interests in offices and supervisory bodies as linked to the established electricity industry.” [Deregulation Commission 1991, para. 316]

Box 2. The Deregulation Commission's Electricity Sector Recommendations

"351. Achieving the objective of reliable and at the same time reasonably priced supplies of electricity better than before means first and foremost creating the conditions for competition. The need is both to abolish regulations that restrict competition—deregulation—and to change state intervention—reregulation. The latter is needed where competition alone cannot produce satisfactory market results, where supplies cannot be reliably ensured without additional measures or where the protection against abuse of market power would remain insufficient, but where a form or regulation that is in conformity with competition can be found.

"...

"Proposal 43: To forbid agreements that restrict competition between electricity supply companies in the form of demarcation agreements and interconnection agreements and the exclusivity clause in concession agreements between supply companies and municipalities. The relevant Sections 103, Para. 1 and 103 (a) of the Act Against Restraints of Competition should be deleted.

...

"Proposal 44: To make the operators of electricity networks subject to a general obligation to transmit electricity. The maintenance of high voltage networks should in future be an independent service which should include the guarantee of network stability."

Under this proposal, the Deregulation Commission recommended that the high-voltage network go into a separate state enterprise or a state-controlled private company. "The best solution would no doubt be a company in which all the parties needing to use the network were shareholders..." [para. 359]

"Proposal 45: To offer by tender a license to supply tariff customers with electricity through the local low voltage network for a limited period of time. The monopoly right granted under the licence would necessitate state supervision to prevent abuse." The Deregulation Commission said that the tender would have to be obligatory, since "Otherwise there would be an incentive for all municipalities that rated handsome profits more highly than low-price supplies to their citizens to act as suppliers themselves." [para. 361]

"Proposal 46: To introduce one-part and load-dependent electricity prices for tariff customers."

"Proposal 47: Gradually to abolish concession fees. The obligation for supply companies for the cost of using routes would not be affected."

Source: Deregulation Commission 1991

The Deregulation Commission perhaps foretold the future, at least with respect to the electricity sector. Of these five proposals it made for the electricity sector, only Proposal 43 was implemented. The liberalisation of consumers is an analogue of Proposal 45, though which mechanism would make demand more price sensitive, and thus better discipline suppliers with market power, is unclear.

1.2. *The European Directives and 1998 Legislative Changes*

In the mid-1990s, the regulatory environment in Europe and in Germany changed. The European Union adopted two directives, on electricity in 1996 and on natural gas in 1998.³ These established minimum standards for the regulation and structure of the respective sectors in the Member States. In 1998 Germany amended the federal Energy Industry Law and the competition law to implement the directives. (There is some dispute whether the implementation is complete.)

The European directives established minimum standards to try and establish an internal market in the respective sectors. It is not necessary to rehearse their well-known provisions here, but simply to highlight those relevant to the focus of this chapter.

Box 3. The European Directives on Electricity and Gas

Selected Provisions

The electricity and gas directives:

- Establish a timetable for removing legal restrictions on larger consumers choosing their energy suppliers (Art 19 Electricity, Art 18 Gas)
- Require all electricity undertakings and natural gas undertakings to produce audited accounts and either publish them or make them publicly available (Art 14(2) Electricity, Art 13(2) Gas)
- Require “accounting unbundling” of the monopoly and the potentially competitive parts of vertically integrated companies (Art 14(3) Electricity, Article 13(3) Gas)
- Require that access to the monopoly parts of the sectors be objective, transparent and non-discriminatory (Arts 8, 16 Electricity) or at least non-discriminatory (Art 7 Gas) and with the objectives of fair and open access, achieving a competitive market in natural gas and avoiding any abuse of a dominant position (Art 23(2) Gas)
- Allow Member States to choose between independent regulation and negotiation on the terms and conditions of access (Art 16 Electricity, Art 14 Gas)
- Restrict legal barriers to entry into generation (Arts 4-6 Electricity) or natural gas facilities (Arts 4-5 Gas)
- Require the designation of Transmission System Operators with certain powers and obligations, including independent management from other businesses (Art 7 Electricity)

The gas directive:

- Makes provision for the long-term take-or-pay natural gas contracts in that a utility could apply for a temporary derogation if it “encounters or considers it would encounter serious economic and financial difficulties because of its commitments accepted in one or more gas purchase contracts.” (Art 25 Gas)
- Provides bases for refusal to grant access to natural gas infrastructure (lack of capacity, granting access would prevent the utility from carrying out assigned public-service obligations, or the utility would suffer serious economic and financial difficulties with take-or-pay contracts), but require substantiated reasons to be provided. If the basis of the refusal is lack of capacity or connection, and it is economical or a potential customer is willing to pay, then the Member States may take measures to ensure that the refusing undertaking makes the necessary enhancements. (Art 17 Gas)
- Instructs that, “Member States shall create appropriate and efficient mechanisms for regulation, control and transparency so as to avoid any abuse of a dominant position, in particular to the detriment of consumers, and any predatory behaviour. These mechanisms shall take account of the provisions of the Treaty, and in particular Article 86 thereof.” (Art 22 Gas)

New directives in these sectors were adopted to address some of the competition problems that have arisen in the markets over the past few years. Box 4 provides a summary of some of the major changes.

The German energy law was amended in 1998 to provide a fundamentally new legal framework for electricity and gas and to implement the European Union electricity directive. The gas directive had not been adopted at that time, but was foreseeable and therefore at least considered in the German legislative process. The amendment had the following main results (see below for a more detailed discussion):

- Remove legal monopolies for the supply of electricity and gas for all consumers, regardless of size.
- Eliminate the exemption from the competition law of anti-competitive agreements within the sectors, including the ending of exclusive supply territories.
- Eliminate special licensing requirements for electricity generation (except those for nuclear generation), and minimize licensing requirements for supplying third-parties.
- Retain the obligations of “general suppliers” to connect and supply consumers in low-voltage and low-pressure areas.
- Retain maximum price regulation for small electricity consumers, applying the federal rate schedule methodology for calculating a cost-based price cap.
- Retain the government's standardization of electricity and gas supply agreements for small consumers.
- Require electricity companies to separate the accounting for their different activities (production, transmission, distribution), and to separately manage electricity transmission, retain the responsibility of the Länder energy authorities to apply the Energy Industry Act, but did not introduce additional regulatory oversight over the accounts.
- Retain negotiation, rather than regulation by an independent regulatory authority, on access terms and prices to electricity transmission and distribution.
- Introduce the right of third-parties to non-discriminatory access to electricity transmission and distribution.

Agreements among associations of gas suppliers, electricity suppliers, and business users were signed, with government encouragement, to provide a framework to facilitate reaching of negotiated, legally-binding third-party access agreements between individual suppliers and users. These framework agreements are the so-called Associations' Agreements (AAs or *Verbändevereinbarung*). The latest amendment to the Energy Industry Act (expected April 2003) has introduced important changes, described below.

The 1998 amendment and the Associations' Agreements had implications for institutions. First, a Task Force dealing with problems of third party access to the grid was established at the Federal Ministry of Economics and Labour. However, this was aimed more at disputes where one party is a small consumer, rather than disputes between energy companies. Together with relevant associations it created a best-practice catalogue and worked at dispute settlement. Second, the crucial issue of network access of competitors to electric wires or gas pipelines was entrusted to self-regulation through agreements among associations of energy companies and of businesses, but controlled by the Bundeskartellamt within procedures against the abuse of a dominant position. The most important abuse cases the Bundeskartellamt deals with concern excessive fees for network use. These arrangements aimed to fulfil the obligations in the European directives to establish a dispute settlement body, independent of the parties. Third, the *Bundeskartellamt* created a decision unit and increased the number of personnel to deal with competition issues in the electricity sector, and is expected to establish a corresponding decision unit for the gas sector.

The 1998 Energy Industry Act amendment also requires the Federal Ministry of Economics and Labour to report to the Bundestag in 2003 about the experience with the impact on competition of the rules on negotiated access to the system and alternative access to this system. Once this experience and the relevant Court rulings have been evaluated, a decision shall be taken as to whether, in order to achieve the overall policy objectives of secure, low-cost and environmentally compatible electricity and gas, and to ensure effective competition, changes are needed to the rules on access to the system. At the end of August 2003, the Ministry of Economics and Labour sent a report to parliament where it announced the introduction of a new regulatory framework and the proposed nomination of RegTP as regulatory authority for electricity and gas by July 2004.

The competition law was amended to eliminate the exemption of agreements in the electricity sector, and to include an “essential infrastructure facilities” provision at Section 19.

One other important change in the regulatory environment resulted from a court decision. The Düsseldorf Higher Regional Court, in its decision in May 2002 regarding RWE regional energy supplier Energie Sachsen Brandenburg AG (WuW DE-R 914 "Netznutzungsentgelte"), expressly confirmed that the *Bundeskartellamt* may also apply a cost basis, in addition to the comparable market basis, in determining whether prices were abusive. This was considered by the competition authorities to improve significantly their instruments of investigation and establishing evidence.

In summary, the gas and electricity sectors began as fragmented, municipally and privately owned, and not subject to intrusive government regulation. Instead, agreements between government and industry have been used to implement political objectives. The European single market objective, which electricity and gas liberalisation supports, changed the German environment by increasing the economic choices of consumers and new market participants. But this new environment prompted responses by the incumbents, responses which are the subject of the next section.

1.3. *Market-Initiated Restructuring*

Profound changes in the structure of the sector followed the changes in the European and German regulatory environment. In Germany, there have been more than 400 mergers, instances of cooperation or takeovers. [Platts] The nine vertically integrated German electric utilities have merged to four. The high-water mark of this merger wave was 2000, with the near simultaneous mergers of four large electric utilities into two (E.ON from VEBA-VIAG, RWE from RWE-VEW). The approvals of these mergers by, respectively, the European Commission and *Bundeskartellamt*, were conditioned on the parties disposing of certain holdings in the electric sector. These disposals were intended *inter alia* to reduce cross-shareholdings and to form part of a “third force” in the east, that is, a third large vertically integrated utility to exert competitive pressure on E.ON and RWE. This third force was formed in 2001 out of *Bewag AG*, Berlin (Bewag), *Hamburgische Electricitäts-Werke AG*, Hamburg, (HEW) and VEAG.⁴ The third force is now owned by Vattenfall, the Swedish state-owned utility. The fourth largest electric utility in Germany is *Energie Baden-Württemberg AG* (EnBW). *Electricité de France* (EdF) bought 25.1% of EnBW in 1999, a stake now grown to a controlling 34.5%.

Table 1. Shares of Generation in Germany, Pre- and Post Merger

		TWh	Pre-merger (%)	Post-merger (%)
VEBA	} E.ON	89.93	18.77	} 28.74
VIAG		47.74	9.97	
RWE	} RWE	138.63	28.94	} 37.27
VEW		39.89	8.33	
EnBW		41.21	8.60	8.60
HEW	} Vattenfall	12.31	2.57	} 15.03
BEWAG		10.21	2.13	
VEAG		49.50	10.33	
Others		49.60	10.36	10.36
Total		479.00	100.00	100.00

Source: Reproduced from Table 1 of Brunekreeft 2001, based upon Europäische Kommission, 2000, Entscheidung der Kommission vom 13.06.2000 zur Vereinbarkeit eines Zusammenschlusses mit dem Gemeinsamen Markt und mit dem EWR-Abkommen., COMP/M.1673-VEBA/VIAG, Europäische Kommission, Brussels, 2000, p. 23 and Brunekreeft's own calculation.

The horizontal consolidation and purchases by large, foreign state-owned utilities was accompanied by the grid-owning incumbents purchasing stakes in municipal utilities (*Stadtwerke*) in their traditional regions. In the first 18 months after liberalisation, the VDEW had registered 50 instances of cooperation involving 400 companies, and 15 mergers involving 40 companies. [Eberlein 2001 quoting Handelsblatt, 22 August 2000] While many of these transactions involve less than 20% of the shares, i.e., below the threshold at which the *Bundeskartellamt* formerly took notice (this has since changed; see below), nevertheless the *Bundeskartellamt* estimated in February 2002 that 40 of the 60 acquisitions of the large vertically-integrated utilities in the electricity sector since 1 January 2000 involved RWE or E.ON. [Bundeskartellamt 2002a]

In sum, there have been three main trends in the structure of ownership of the electricity sector: horizontal consolidation of the large vertically-integrated utilities, purchase of some of the larger vertically-integrated utilities by large foreign utilities, and vertical consolidation of the municipal *Stadtwerke* into the incumbent in whose traditional region the *Stadtwerke* is located. These mergers, combined with discounting and prolonging exclusive agreements, form part of companies' post-liberalisation strategy to defend the positions they held pre-liberalisation. The merger trends have resulted in a highly concentrated electricity sector, despite the large numbers of distinct legal entities. If the regional structure of the electricity sector—RWE in the northwest, EnBW in the southwest, E.ON in a north-south strip in the middle of the country, and Vattenfall in the new *Länder*, Hamburg and Berlin—is taken into account, then the structure approaches *de facto* regional vertically integrated monopolies.⁵ “As has been the case in so many other countries, it appears that a balance between different policy aims has been struck. Retaining "sufficient" competition on the one hand and allowing the creation of "global players" on the other hand.” [Brunekreeft, p. 11]

The gas sector had less scope for horizontal consolidation. Instead, the consolidation was vertical and across energies. Over the past few years, Ruhrgas, E.ON and RWE gained substantial holdings in regional and municipal gas companies. Ruhrgas has minority interests in 8 regional and 15 local distribution companies. E.ON's gas subsidiary Thuega has interests in over 120 German municipal utilities, and its subsidiary Heingas has a similar breadth of holdings in local gas companies. RWE through its gas subsidiary Thyssengas has a network of regional and local distribution companies. VNG has also integrated downstream. In addition, Italian gas giant ENI bought, with EnBW, gas distributor Gasversorgung Süddeutschland (GVS). E.ON bought Ruhrgas in 2003 (discussed below). The entry of Wingas as a competitor to Ruhrgas in the early 1990s was the primary counter-consolidation event.

The upstream integration has also been substantial. Ruhrgas bought, with GDF and Gazprom, the Slovak pipeline owner.⁶ Ruhrgas has also, as noted earlier, bought 6.5% of Gazprom. RWE bought Transgas, the Czech gas monopoly.

In the course of the restructuring of the electricity and gas sectors, employment in the sector has been reduced by 40,000.

1.4. Legal Changes in 2002-2003

The two years 2002-2003 saw two significant changes in the legal framework. The first was the adoption of the new European directives on electricity and gas and the second was the adoption of amendments to the Energy Industry Law and Act against Restraints of Competition. The Energy Industry Law is expected to be further amended in 2004 to implement the directives. The main features of the new directives relevant to this chapter are described in Box 4. The amendments to the German laws had two parts. First, it made the Bundeskartellamt's decisions immediately enforceable. The second major change dealt with the treatment of the Associations' Agreements. In the deliberations of the amendment, the energy industry side called for the "juridification" of the AAs, i.e., the presumption in the law that, if the Associations' Agreements on third-party access for electricity and natural gas networks are observed, then good practice conditions would be considered fulfilled (until 31 December 2003). However, the law, as adopted by parliament, only presumes good practice unless effective competition is hindered by the application of the AA rules. Competition law remains fully applicable. Thus, access conditions can be considered to be abusive under the competition act; the legal presumption is changed. At the same time, the Dusseldorf Court of Appeal in its decisions "Stadtwerke Mainz" and "HEAG" interprets the new law in a way that the "presumption of good practice" in favour of the Associations Agreements almost completely precludes the enforcement of the abuse control provisions of the competition law. In the light of this, juridification of the Agreements may be an uncertain step for competition. Further changes are underway in the light of the latest EU directives. At the end of August 2003, the Ministry of Economics and Labour sent a report to parliament where it announced the introduction of a new regulatory framework and the proposed nomination of RegTP as regulatory authority for electricity and gas by July 2004.

Box 4. The New Directives on Electricity and Gas

The new EU directives on electricity and gas entered into force on 8 August 2003. These directives, Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 and Directive 2003/55/EC of the European Parliament and of the Council Concerning common Rules for the Internal Market in Natural Gas and Repealing Directive 98/30/EC, 26.6.2003, respectively, mark further progress toward electricity and gas market liberalisation in Europe. They include general rules regarding public service obligations, universal service, customer protection, and monitoring security of supply, and set deadlines for liberalisation of all customers (1 July 2004 for commercial customers and 1 July 2007 for household customers). Of particular interest here is the strengthening of the rules regarding unbundling, regulatory bodies, and third-party access.

The separation of system operators is reinforced and separate accounts for supply activities are now required. System operators in electricity and gas, for both transmission and distribution, must be independent in legal form, organisation, and decision-making from activities not related to transmission or distribution, respectively. (Member states may decide not to apply this to distribution systems with fewer than 100,000 customers.) This contrasts with silence on the point in the earlier gas directive, and "management independence" in the earlier electricity directive. Under the new rules, separate accounts must now be kept for supply to "eligible" (free-to-choose) customers and to ineligible customers, for electricity and gas, and for LNG (liquefied natural gas) activities. This cumulates with the earlier directives' requirements to separate accounts for generation, transmission and distribution for electricity companies, and for transmission, distribution and storage activities, for gas companies.

The new rules require that one or more regulatory authorities, meeting certain minimum requirements, be established in each Member State.

- They must be wholly independent from the interests of the electricity or gas industry, respectively.
- They must be responsible for at least ensuring non-discrimination, effective competition and the efficient functioning of the market.
- They must at least monitor: rules and allocations related to interconnections and congestion, timeliness of response to requests for network access and repair, publication of information, effectiveness of accounting separation to ensure no cross-subsidies, and access conditions to those activities they do not regulate, e.g., new network connections and gas storage.
- They must have the competence to fix or approve the tariffs or, at least, the methodologies underlying the calculations of tariffs, before they enter into force, of transmission and distribution for electricity and gas, and of access to LNG facilities. (Member States may also require the regulatory authorities to submit the tariffs or methodologies for formal decision to the relevant body in the Member State.)
- They must have the power to order, if necessary, companies to modify their access terms to ensure that the terms are proportionate and applied in a non-discriminatory manner.

This contrasts with the earlier directives that required the Member States to create “appropriate and efficient mechanisms for regulation, control and transparency so as to avoid any abuse of a dominant position, in particular to the detriment of consumers, and any predatory behaviour.” Where access was negotiated (Germany) only “an indicative range of prices for use of the transmission and distribution systems” had to be published for electricity, and the “main commercial conditions for the use of the system” had to be published for gas.

Third party access changes fundamentally under the new rules. The responsibilities of the regulatory authority (or authorities) combined with its powers over access tariffs mean that the regulatory authority cannot approve tariffs that, e.g., provide subsidies to incumbents or that constitute unnecessary barriers to entry, since the first would be discriminatory and the second would hinder effective competition and the efficient functioning of the market. Negotiation does not necessarily go away entirely, for two reasons. First, the inputs into the approved tariff-calculating methodologies could in principle be negotiated. Second, the approved tariff-calculating methodologies do not necessarily yield a single value.

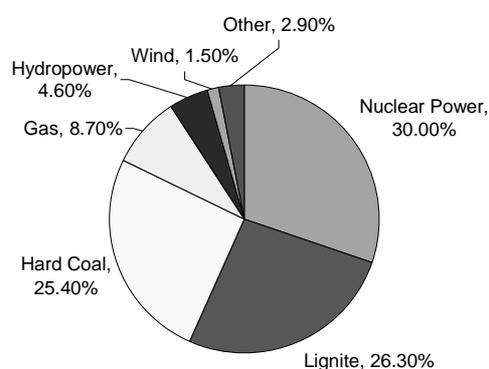
2. *Description of the Electricity and Gas Sectors*

2.1. *Electricity*

2.1.1. Generation

In 2003, nuclear, lignite and hard coal dominated the electricity production in Germany. Domestic production totalled 494 TWh, according to preliminary estimates. Net exports were about 1 percent, though on a multiyear basis average about nil. Nuclear and coal provide baseload generation. Gross domestic production capacity totalled 120856 MW.

Figure 1. Net electricity production in Germany in 2003



Source: VDEW 2004a.

Generation in Germany is highly concentrated, and approaches a structure of *de facto* regional vertically integrated monopolies. In 2002 two utilities, E.ON and RWE, produced more than 60% of total generation, and the largest four utilities produced more than 80%. About 10% of electricity is generated by regional utilities, which are largely at least partly integrated with the large utilities. About 14% of generating capacity is owned by autoproducers. The regionalisation is marked: Distribution territories of the big utilities are not interspersed and most power is taken out of the system less than 70 km from where it was put in. [Pérez-Arriaga et al 2002, p. 70]

Concentration is often used as a first indication of market power, *i.e.*, the ability to sustain price above long-term marginal cost. However, measuring concentration in generation as a whole is not a particularly useful first indication of market power. In fact, the wide variety of supply and demand conditions that appear over time mean that there is no single electric power market for a given area. Instead, more important than overall concentration in assessing market power is the concentration in various segments of the supply curve. The data on concentration in generation in various segments of the supply curve seems not to be publicly available for Germany. If this data were available, then it would probably show greater concentration along the supply curve. This is because much of the generation that is not supplied by the big four utilities is supplied by those for whom electricity is a by-product--autoproducers and CHP—which tends to only rarely, if at all, be marginal, price-setting generation. In almost every electricity market studied, there is little potential for market power during the low demand periods. But in many electricity markets, there is significant potential for market power during peak periods. This is due to the exhaustion of generation (and, in many markets, transmission) capacity by potential competitors, leaving the price-setting part of the market—the capacity that is at the margin during peak periods—to just a few dominant firms. [Borenstein, Bushnell, and Knittle 1998] In sum, even the high concentration shown in Table 2 below probably understates the market power concerns in German electricity generation.

Table 2. Generation and Capacity in Germany in 2000

Electricity Producers	Net Output 2000 (national share)	Installed Capacities 2000 (national share)
RWE	34%	26%
E.ON	27%	28%
VEAG	12%	10%
EnBW	6%	7%
4-Firm Concentration	79%	71%

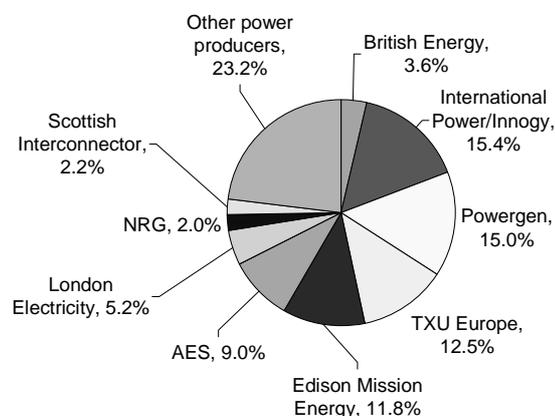
Source: VDEW

While net exports were about one percent, imports totalled about 46 TWh and exports about 54 TWh in 2003. Both imports and exports have been growing over the past decade.

Electricity markets do not often coincide with national territories. Hence, it is not straightforward to compare the concentration of generation markets to supply users located in Germany with concentration elsewhere. Generation in England and Wales is substantially less concentrated, as Chart 4 shows. On the other hand, generation in France is more concentrated. Table 3 shows the three-firm concentration ratios for generation in European Union Member States. Interpretation should take account of the small size, relative to minimum efficient scale of a generating company, of demand in some countries and the different levels of integration with other countries.

Figure 2. Generation Capacity in England and Wales (Non-Nuclear)

(based on capacities in 2000 but reflecting sales through 2001)



Source: Electricity Association 2001, p. 35.

Table 3. Three-Firm Concentration Ratios in European Union Countries

	Companies with at least 5% share of installed capacity (2001 data)	Top 3 share (% installed capacity) 2001 data	Installed capacity (GW)
Germany	4	72%	109
France	1	95%	112
UK	6	40%	80
Italy	5	80%	80
Spain	4	82%	56
Sweden	3	79%	27
Netherlands	4	67%	20
Austria	5	63%	17
Finland	4	44%	14
Belgium	2	95%	16
Denmark	2	76%	8
Portugal	3	82%	11
Greece	1	97%	10
Ireland	2	95%	5
Luxembourg	n.a.	n.a.	1.2

Source: European Commission 2004a, Table 3, p. 17, citing Eurostat: Competition Indicators in Electricity Market, ETSO, UCTE, and survey responses.

2.1.1.1. Entry

Incumbent generators are building new capacity but are withdrawing a larger quantity of old capacity. In 2000, about 4 GW of capacity was under construction. About 1.8 GW was lignite-fired, constructed pursuant to an agreement to ensure lignite production and use. The rest was equally divided between gas and hydropower. Also, a pumped storage facility (1,056 MW) came on line in 2002. Meanwhile, older generation capacity is being withdrawn—4.9 GW by E.ON mostly in 2000-2001 and 5.0 GW by RWE over 2000-2004. [E.ON 2001 and RWE 2001]

Looking forward, the German government estimates that total generation capacity will increase from 121 GW at the end of 2000 to 130 GW by 2010. About two-thirds of the increase is expected to be coal-fired capacity and one third gas-fired capacity. New capacity based on renewables is estimated at 0.9 GW. Looking yet further ahead, the phase-out of nuclear power, now accounting for 30% of total generation and half of baseload generation, implies a need for replacement generating capacity. According to the plan, nuclear power stations with annual electricity generation of about 8 TWh will cease operations by 2005, an additional 19 TWh between 2006 and 2010, 87 TWh between 2011 and 2020, and the remaining annual production, 46 TWh, will cease by 2025, at the latest. [IEA 2002a]

Despite the 1998 legislative changes that liberalised generation, there have been no new entrants of significant scale to date. (Small scale entry, e.g., of wind generators, has occurred.) Typically, in other liberalised countries, new generation entrants who, necessarily in developed countries, are independent power producers (IPPs), rely on CCGT (combined-cycle gas turbines). Gas, then, is an essential input for IPPs. Two new potential entrants into generation, Fortum and Dynergy, withdrew in 2001 after developing advanced IPP plans, both citing problems with gas supply contracts and high gas prices as major

contributing factors to their withdrawal. Entry by IPPs is also discouraged by the special tax of about €0.184/kWhtherm on natural gas, including gas used for electricity generation. Exemption from this tax under the Mineral Oil Taxation Act (*Mineralölsteuergesetz*) is only available to CCGT generating plants that come on stream before 1 April 2007 (subject to the final decision of the European Commission concerning state aid) and that meet a thermal efficiency threshold. According to a survey of market players by the European Commission, the problems raised most frequently, in order of importance, were level of unbundling, insufficient regulation and delays in handling complaints, problems related to cross-border transmission and the level of network access tariffs. [IEA 2002a] New entrants would find these to be even greater difficulties than do the market participants.

Concord Power, sometimes identified as a new entrant, would be the first to build a “utility-sized” CCGT plant (1200 MW) at Lubmin, which meets the mineral oil tax exemption requirements, and plans to build a 250 km gas pipeline to feed it. [Liebe-Dóczy 2002a, p. 5; Concord Power 2000] However, the entity was founded by a Vattenfall subsidiary and is now also owned, in part, by EnBW and E.ON. Thus, Concord Power does not face the same difficulties as a new entrant would face, nor will it provide the competitive force that a new entrant would have provided.

There has been small entry by generators powered by wind, combustible renewables and waste, and solar energy. Wind, by far the largest of these, accounted for 2.8% of electricity generated in 2002. Each of these technologies generates electricity independent of market conditions. Thus, these types of generators cannot behave strategically. In strategic terms, these types of generators simply shift the demand faced by strategic players. Thus, entry or expansion of these generators has essentially no effect on competition in electricity markets.

In summary, incumbent generators are withdrawing capacity faster than they are adding to it, and the only independent entry has been small wind and other green generators. Both of the two independent potential entrants who had appeared on the German scene have withdrawn citing gas supply problems. Ending the gas tax exemption will further raise entry barriers. Thus, new entry is unlikely to significantly increase competition over the medium term.

2.1.2. Electricity Transmission and System Operation

The four major electric utilities own geographically distinct parts of the transmission grid in Germany and are the transmission system operators (TSOs) for their respective areas. As part of their responsibility to ensure reliable supplies, the TSOs purchase various services such as balancing energy and coordinate network expansion.

Transmission is not congested within Germany, even during peak periods. This reflects obligations in Section 4(1) of the Energy Industry Act in conjunction with Section 1 of the Act on electricity supply companies to operate their networks in such a way as to ensure that demand for electricity is covered at all times by supplies. The lack of congestion is also a reflection of the failure of new entrants to find customers. A common phenomenon in countries where competition in electricity has developed is for transmission to be used in a different pattern, often creating congestion that did not previously exist.

There is congestion on transmission across national borders. While the capacity at the Dutch interface has recently been increased, resolving these constraints involves larger transmission planning issues. The connection to Denmark and Sweden (and Norway) is greatly affected by the transmission expansion needs caused by onshore wind power in Northern Germany. The interfaces to Poland and the Czech Republic are greatly affected by the developments in those countries and further afield. Planning and building new transmission lines takes roughly 10 years.

The transmission grid transports about 75% of the electricity produced in Germany. (The remaining quarter is produced and distributed without recourse to transmission.) Further, since generation was built near major load-centers, most power is “transported” less than 70 km. [Pérez-Arriaga et al 2002, p. 70]

There is no nation-wide system operator responsible for co-ordinated dispatch. Instead, the Deutsche Verbundgesellschaft is a co-ordinating association of the large TSOs. Under the electricity directive, dispatch must be non-discriminatory, although it allows limited environmental or supply security exceptions. Discrimination in dispatch can be difficult to detect, however, as experience in other countries, notably the United States where there are a number of IPPs, shows. Reducing incentives to discriminate is one reason to make the area of a TSO much larger than the area of transmission owned by any given utility. A second reason is to promote the coordination or even integration of dispatch with the spot market, which in Germany covers the whole of the country.

TSOs and DSOs (distribution system operators) are responsible for planning and implementing expansions of the transmission grid (extra high voltage) and the distribution grid (all lower voltages). The Association of Network Operators (VDN e.V., Berlin) discusses transmission-grid expansion issues.

The pricing of balancing energy has frequently raised concerns about possible abuse of dominance. The price of this energy doubled during 2002, without apparent cause. Consequently, the Bundeskartellamt initiated abuse proceedings against E.ON and RWE on account of excessive fees for balancing energy. As electricity cannot be stored, the difference between planned and actual energy demanded must be balanced moment-by-moment. This is balancing or regulating energy. High prices for balancing energy raise the barriers to entry for electricity trading and retailing. Usually, larger generating companies have an advantage over smaller suppliers because the demand from the clientele of the smaller supplier is more unpredictable than that of the larger suppliers. In addition, the larger supplier is more likely to be able to provide balancing energy because only large plants (over 30 MW) are qualified to bid. (However, groups of smaller generators may form in order to bid to provide balancing energy.) It is estimated that, within their respective balancing areas, RWE and E.ON generally supply between 70 % and 100 % of balancing energy. [BKartA 2003c] Thus, smaller suppliers bear a greater burden for high-priced balancing energy than do larger suppliers. One condition for the approval of the RWE and E.ON mergers was that they would procure control energy through tendering. In October 2001, the Bundeskartellamt initiated abuse proceedings against EnBW and the German members of the Vattenfall group, Bewag, HEW, and Veag, suspecting them of charging their competitors inappropriate and in some cases fictitious fees for balancing energy. In return for the Bundeskartellamt discontinuing the proceedings, all four firms agreed to introduce a tender system for the procurement of balancing energy. [Bundeskartellamt 2002b, 2002c] However, the large electric utilities are frequently the only bidders, and they seem to forbear from bidding outside their traditional service territories.

2.1.3. Markets

Germany has one power exchange with both day-ahead physical markets and futures markets. In 2003, about 10% of German electricity consumption was traded in the day-ahead market of the exchange, EEX (European Energy Exchange) in Leipzig, seven times as much as in the futures market. This bourse was formed from the merger of EEX in Frankfurt/Main and LPX in Leipzig in early 2002.

EEX has divided Germany into six bid areas, where the bid areas correspond to those controlled by the TSOs RWE, EnBW, E.ON, and Vattenfall. Due to the absence of internal transmission constraints, prices are identical in the bid areas.

EEX has not seen evidence of anticompetitive conduct in the exchange. However, in August 2002, the MVV Energie AG as well as several electricity traders pointed out to the Bundeskartellamt price spikes in December 2001 and July 2002. The companies did not lodge official complaints. The Bundeskartellamt examined the issue and found that the events in December and July each were one-off price increases. The Bundeskartellamt found no sufficient indication for anti-competitive behaviour. Proceedings were not initiated.

In 2003, EEX traded a total volume of 391 TWh on its day-ahead (49 TWh) and futures (342 TWh) markets. This was a two-fold increase on 2002, itself a three-fold increase on 2001 (43 TWh). [European Energy Exchange 2003, EEX 2004] The volume of trade on the spot market is about 10% of German power consumption. For comparison, Nord Pool estimates that the trade in 2003 in the Nordic Power Exchange's spot market is approximately 31% of the total annual Nordic power consumption. Total annual trade in financial contracts is estimated at 3,800 TWh (about ten times Nordic annual generation/consumption). [Nord Pool 2003, p. 14; Nord Pool 2004] In other words, the NordPool spot and futures market play much larger roles in the Nordic countries than the EEX plays in Germany. This is perhaps a reflection of EEX's relative youth, being founded in 2000 versus NordPool's foundation in 1993.

In addition to the day-ahead and futures markets operated by EEX, there is substantial bilateral trading amongst the four main utilities. In 2001, for example, E.ON procured 57% of the electricity it sold, i.e., 327.6 bn kWh. Of this, 17.5 bn kWh was from power stations where it has an interest of 50% or less, 168.3 bn kWh from other utilities, of which 5.2 bn was from Scandinavian utilities and 22.8 bn kWh was from VEAG to supply eastern German consumers. [E.ON 2001] In 2001, RWE procured 53% of the electricity it sold. [RWE 2001] These bilateral trades dwarf the trades on the EEX markets.

2.1.4. Electricity Distribution and Supply

Distribution is effected through numerous regional and local utilities, which are usually the dominant supplier over defined territories. Local utilities, *Stadtwerke*, number about 840 companies of various sizes and regional utilities about 50. As noted above, many of these distribution utilities are partly or wholly owned by the major utilities. Others are owned by large foreign utilities, e.g., Dutch Essent (*Stadtwerke Bremen*), Belgian Electrabel (*Stadtwerke Saarbrücken* and majority holding in power stations and *Energieversorgung Gera*), the United States TXU Corp. (*Stadtwerke Kiel* and majority holding in *Braunschweiger Versorgungs-AG*). In addition to the *Stadtwerke* supplying to consumers, a large number of companies engage in electricity dealing and supply. These include some notably large foreign companies such as Vattenfall, EDF, Electrabel, ENEL, large banks such as Deutsche Bank, and large consumers such as DB Energie.

In addition to prices as a measure of the effectiveness of liberalisation, the share of households that actually does switch suppliers offers an indication of the health of competition to supply small consumers. In particular, it indicates the relationship between the cost of switching suppliers, including not just the monetary cost but also the effort, and the benefit of switching, e.g., the extent to which supplier offer differing bundles of services or prices. At the household level, competition to supply has not resulted in much consumer switching in Germany. According to RWE, by 2001, only 3.7% of German households have opted for a different supplier since the electricity market was deregulated in 1998. (The European Commission reports 5% of small commercial and domestic consumers, combined, switched electricity supplier in 2002. [European Commission 2004a, p. 9] According to the industry's association VDEW, slightly more than 4% of households had switched supplier by Autumn 2002, and 28% of households modified their agreement with their existing supplier, so as to obtain improved conditions. (The European Commission reports 10-20% switched or renegotiated for small commercial and domestic consumers, combined. EC 2002d, pp. 6-7) For large industrial consumers, the figures are 20-30% and over 50%,

respectively. [ibid.]⁷ According to estimates by the industry associations, 35% of industrial consumers have changed supplier and the other 65% have renegotiated their contracts with their traditional supplier. The low rate of consumer switching could reflect the relatively high fraction of fixed costs—network charges and taxes—in the total cost to supply a typical household. Figure 5 on the electricity bill for a typical three-person household separates out the tax component. Within the non-tax portion, about two-thirds are fixed charges. Given that competing suppliers can only “compete” over the variable portion, the switching costs must be very low indeed in order to induce switching. An alternative strategy is for suppliers to bundle the electricity with other services.

It is noteworthy that only a small fraction of small consumers have changed electricity supplier in the five years since it has been legally permitted. A number of actions have been taken to reduce the costs of switching for small consumers. The “double contract model,” according to which consumers who wished to switch from the incumbent supplier had to sign separate network use contracts, has been eliminated. Likewise, the “transfer fee” deterred consumer switching; until the Supreme Court makes a decision, these have been suspended. A third deterrent to switching is that the high fraction of fixed costs means that there is only a small part of the consumer’s bill for competitors to “compete” over. These fixed costs include the high cost of network access, from high-voltage down to low-voltage, the cost of socialised services such as balancing energy, and the high level of taxation. When a consumer considers competing offers, these costs do not vary from one competitor to another. If it is costly for a consumer to compare offerings, then having only a limited scope for competition discourages switching.⁸

2.2. Gas

2.2.1. The European Context

Germany is the largest consumer of gas in mainland Europe and as such is fundamentally affected by the structure and practices of gas supply *to* and the structure and practices of gas trading *within* mainland Europe. While some gas fields are exploited in mainland Europe, most gas consumed is imported by pipeline from further afield. A small but increasing quantity of gas is imported in the form of liquefied natural gas (LNG) and then regasified at LNG terminals and released into the network.

Gas supply to the Europe Union is concentrated. Domestically, significant quantities of gas are produced in the Netherlands and the United Kingdom. Currently, the countries that principally supply imported gas to the EU are Russia (17% of total EU gas demand), Norway (11%) and Algeria (12%). On the basis of already contracted supplies, their shares will increase to 38%, 34% and 23% respectively by 2020, subject to new supply contracts. [European Commission 2002e, p. 29]

Gas production within those countries that supply to mainland Europe is highly concentrated.

- Gazprom produces 94% of all gas in Russia and is the sole legal exporter of gas.
- Sonatrach, the Algerian state oil company, produces 100% of the gas in Algeria. [Energy Information Administration 2003]
- Statoil markets two-thirds of the total Norwegian gas output. [Statoil 2001, IEA 2001, p. 95]

- Gasunie (Netherlands) owns all gas transport and storage infrastructure in the Netherlands. While gas procurement is no longer a statutory monopoly, gas export prices are controlled by the Dutch government and “it appears that, in general, the Netherlands government would not give its approval on the price of an export contract of Dutch gas if this price were below the Gasunie “net-back” price...(Norm Inkoop Prijs)...” [European Commission 1999] The split of Gasunie into two supply/trading companies and one state-owned transport company could change some of this.

While gas production in the United Kingdom is less concentrated, and indeed the producers engage in competition, their ability to compete to supply mainland Europe is constrained by the capacity of the Interconnector linking the UK to the mainland.

LNG might be seen as one way to reduce the concentration in gas supply to mainland Europe. After all, Malaysia, Indonesia and Brunei all supply LNG to Japan and Algeria, Qatar, Nigeria, and other countries supply Europe. However, the import price of LNG into Japan has been persistently higher than the import price of LNG into the European Union, and the latter prices have not been much higher than the prices of gas imported via pipeline. [IEA 2002b] This pricing pattern is more suggestive of pipeline-delivered gas constraining LNG prices in Europe than *vice versa*. Further, the usual practice is to sell LNG under long-term contracts. In 2001, only 8% of total worldwide LNG trade was short-term trading, and only one-third of that was imports into the EU. [IEA 2002c, pp. 108-109] In other words, the liquidity that would allow LNG to be a significant competitive force in spot markets has not yet developed. Finally, Sonatrach, who reportedly has a major cost advantage in supplying LNG to Europe compared to regional competitors [Energy Information Administration 2003] and is the world’s second largest LNG exporter—at 19% of the total—is already a major supplier to Europe, including by pipeline.

The supply of gas to mainland Europe is demonstrably not competitive. All major gas suppliers to Europe apply the same pricing methodology, pricing gas on the price of oil or oil products.⁹ This practice shows that oil or oil products are the next best substitute for gas users, and that the next best substitute is not an alternative gas supplier.¹⁰ That is, there is not gas-on-gas competition. Indeed, in a broad discussion on diversification of energy supplied from outside the EU, contributors said, “One goal should be the reduction in the power of cartels.” [European Commission 2002f, p. 14]

The initiation of gas-on-gas competition in Europe has a number of hurdles to overcome. Both gas production and transport require large sunk costs. Further, developing gas fields and constructing transport infrastructure require several years, years in which incumbents can respond to the easily foreseen competition with price cuts to those customers most able to switch suppliers (or indeed pipeline capacity increases with the addition of compressors). Foreseeing this reaction, the potential entrant is unlikely to make the necessary investments. Adding to these difficulties, the low growth prospects (1% per annum in Germany) mean that entrants may not be able to reach minimum efficient scale unless they can partly displace incumbents, but the take-or-pay nature of the long-term contracts makes that displacement very difficult. The long-term nature of the contracts all the way downstream to large users means that only a small fraction of demand is potentially open for competition in any given year.

Once the gas lands in continental Europe, there are additional contractual or regulatory barriers to trade within Europe. These trade barriers reduce competition. The European Commission has cited three kinds of contractual barriers in its ongoing investigations of competition in the gas sector. One type prevents the European customer from reselling the gas outside an agreed territory. A second type prevents the buyer from using the gas for purposes other than those agreed upon. The third type obliges the buyer to share with the producer profits made when re-selling the gas outside its national borders or to a customer using the gas for a different purpose than that agreed upon. [European Commission 2002b, 2002a]

The European Commission is taking steps to eliminate these practices, and thus reduce barriers to the development of gas-on-gas competition. In December 2002, the Nigerian gas company Nigeria LNG Ltd agreed with the Commission to delete a territorial sales restriction, and undertook not to introduce territorial restriction clauses or use restrictions into future gas supply contracts. Gazprom had already informed the Commission that it would not introduce territorial restriction clauses in its future gas supply contracts and that it is currently negotiating the outstanding issues for existing contracts. In July 2002, the Commission reached agreement that Statoil and Norsk Hydro would sell their gas individually—rather than jointly market it as they had been—reserve significant quantities of gas for new customers, and not introduce territorial or use restrictions in gas supply contracts. [European Commission 2002b, 2002a]

Despite these laudable steps, current long-term ‘take or pay’ contracts leave only 10% of predicted European demand unsatisfied by 2010, offering little scope for new entrants to introduce competition to destabilize the oligopoly. [Finon and Locatelli 2002]

Trading hubs are both locations for gas-on-gas competition and means to discover competitive gas prices for use in other locations. Europe’s largest hub for natural gas trading is in the United Kingdom, where gas-on-gas competition is well developed. This hub, NBP, drives the continent’s gas hub at the continental end of the Interconnector, Zeebrugge in Belgium. Zeebrugge is also where the Norwegian Zeepipe lands and the site of a LNG terminal. The scope for arbitrage, or for competition from the United Kingdom, is limited by the capacity of the Interconnector. Currently, a trading hub for natural gas is being established in the region Bunde/Emden, close to the gas delivery point for Dutch and Norwegian gas in Germany. Shareholders of the HubCo (North West European Hub Service Company) which was founded in 2002 are Ruhrgas, BEB Erdgas und Erdöl, Statoil Deutschland and, since 2003, also Wingas. Liquidity at this hub is impeded by the continued domination of the German and Dutch markets by the incumbent suppliers and the related difficulty of other firms’ gaining access to the gas network and storage. The high share of long-term contracts in Europe also limits the scope for arbitrage.

2.2.2. Structure in Germany

Germany is more dependent on imports than is the European Union as a whole. Indeed, it imports about 81% of the gas it consumes. Russia (45%), the Netherlands (22%), and Norway (27%) are its main foreign sources of gas, and other countries provide 5%.

The traditional description of the structure of the German gas sector is three tiered. The top tier consists of the six large supra-regional companies that import gas, transport it over high-capacity transmission pipelines and supply the next tier. The few domestic gas producers are included here, as well.¹¹ The middle tier consists of the regional gas distribution/suppliers that distribute gas in defined territories and supply the next tier. The lowest tier consists of roughly 700 local and municipal gas distribution/suppliers that operate distribution grids in defined territories and supply smaller industrial consumers and households. Most local distribution companies also provide other network or public services, such as electricity generation and distribution, heat and water supply, and public transport. These complicated supply chains, involving gas changing hands many times, and regional monopolies formed the basis of high profits for many gas companies. [Wintershall AG 2003] While in an engineering sense these tiers remain, in an economic sense the tiers are merging into one through the vertical integration described above.

Ruhrgas dominates the German gas sector. Ruhrgas imports 60% of gas consumed in Germany. As Table 5 on major pipelines indicates, Ruhrgas controls almost all gas imports into Germany, the high-pressure transmission pipelines within Germany, and about one-quarter of all storage facilities. Further, a significant amount of gas for the European Union as a whole flows through Ruhrgas's pipeline. As noted earlier, Ruhrgas has other significant gas interests upstream (a share of Gazprom) and downstream.

Wingas is the other important economic actor in the German gas sector. Wingas is a 35%-65% joint venture between BASF and Gazprom, which built a gas pipeline parallel to Ruhrgas's—and indeed this is the only pipeline-on-pipeline competition in Germany—that permitted a very big if not the largest gas consumer in Germany to bypass Ruhrgas. Wingas, with about one-third of the storage capacity, owns the other significant gas storage in Germany. (BEB, the other larger gas entity in Germany, was dissolved by its parents, ExxonMobil and Shell in 2003.)

A number of elements may have dulled Wingas's competitive instincts since it entered the market. First, Ruhrgas purchased 6.5% of Gazprom, one of Wingas's parents. Second, Wingas has almost reached the capacity of its current investment; expanding market share would require another lump of investment. [European Commission 1999, para. 239] Third, as part of their purchase deal, Ruhrgas and Gazprom concluded a new long term take-or-pay contract that includes a provision by which Ruhrgas is discharged from its purchase obligations in so far as Gazprom/Gazexport sell gas in Germany in competition with Ruhrgas. [*ibid.*, para. 242] In other words, if Gazprom sells an additional cubic meter through Wingas, then it foregoes the profits it would have made by selling a cubic meter to Ruhrgas. This substantially reduces the profitability of any expansion of Wingas for Gazprom. At the time of a European Commission investigation into these markets, the Commission stated that, “On the basis of internal documents from the parties, it is clear that the market was attaining stabilisation and that Wingas was already on the way to becoming established.” [*ibid.*, para 242]

Competition among Ruhrgas, BEB and Thyssengas (two other supra-regional gas companies) may be dampened by a number of links. First, they buy in common a substantial part of their imported gas. This, results in symmetry of costs “at the border.” Second, they transport a substantial part of their gas via commonly owned pipelines, providing yet more symmetry of cost. [*ibid.*, para. 234]. Third, if a large consumer did change supplier, these three companies would each know immediately and would know to whom the consumer switched. [*ibid.*, para. 235] Fourth, there are arrangements, including “parallel sales letters,” that have the effect of rendering unprofitable the displacement of one of these firms by another of these firms in sales to customers. [*ibid.* para. 245] Evidence from elsewhere, such as British Gas in the early stages of liberalisation in the United Kingdom, shows that integrated gas utilities can swiftly respond to consumer switching with an undercutting offer. Thus, conditions are ripe for market participants being able to maintain the *status quo* rather than falling into a more competitive interaction.

The other two companies listed as “main gas import and transmission companies” are not competitively significant. VNG is largely owned by its rivals and has neither high pressure transmission nor storage outside of its core area. [*ibid.*, para. 236] EWE does not re-sell imported gas, but only imports and transports gas from the Netherlands, without any infrastructure beyond that needed for its own supply. [*ibid.*, para. 193] In late 2003, E.ON sold its stake in VNG to EWE and some German cities, giving EWE a 49% stake in VNG.

In 1999, the European Commission summed up the situation as: “In the light of the uncompetitive nature of the market as discussed above, the limited growth of the market and the limited sensitivity of demand to price movements, the Commission considers that there is already pre-merger an oligopolistic dominant position between at least Ruhrgas, BEB and Thyssengas on the German long-distance wholesale transmission market.” [*ibid.*, para. 248]

Tables 4 and 5 show the ownership of high-pressure gas transmission capacity and gas storage capacity. The competitive significance of gas storage is that, due to daily and seasonal fluctuations in gas demand, suppliers of gas require a way to arbitrate between fluctuating demand and relatively smooth production. The pipeline system can help, but storage is needed for any significant smoothing. There were 42 gas storage facilities in Germany in 2000, about half of which are owned by Ruhrgas or Wingas. Any gas supplier would need access to storage on reasonable terms, or to own its own storage.

Table 4. Main Gas Import and Transmission Companies

Name	Ultimate Parent	Gas supplied (bcm)	Transmission (High-Pressure km)	Storage (bcm)
Ruhrgas AG	E.ON	50.6	10,750	< 5
BEB Erdgas und Erdöl**	ExxonMobil (50%) Shell (50%)	16.4	3,439	>2.7
Verbundnetz Gas AG (VNG)	EWE (47.90) BASF (through Wintershall Erdgas Beteiligungs GmbH 15.79%) Gazprom (through ZGG-Zarubezhgas-Erdgashandel-Gesellschaft mbH 5.26%) Gaz de France (through EEG-Erdgas Transport GmbH 5.26%) Twelve municipalities in East Germany (25.79%).	15.8	7,300	>2
Wingas GmbH	BASF (65%) Gazprom (35%)	11.8	1,836	4.2
Thyssengas GmbH	RWE AG (100%)	6.7	2,500	>0.3
EWE	Administrative districts and towns in the Weser-Ems region, Administrative districts and towns in the Weser-Elbe region	4	3,870	>1.1

Note: Ownership shown as from late 2003; physical data from 2000. **BEB was dissolved in 2003.

The major pipelines for domestic transport, transit and import are described in Table 5. Currently, Ruhrgas is planning to build new pipelines mainly in the southern and southeastern parts of Germany and Wingas is extending the JAGAL pipeline which imports Russian gas to the eastern part of Germany. In 2000, there were 42 gas storage facilities with a total working capacity of 18.6 bcm. The capacity is expected to expand to 23 bcm within the next few years.

Table 5. Major Pipelines

Ownership	Pipeline	Commissioned	Capacity
Ruhrgas 50%, GDF 43%, OMV 5%, Stichting Megal 2%	Megal (Czech Republic – France)	1980	22 bcm
Ruhrgas 51%, Snam International 49%	Tenp (Netherlands – Switzerland)	1974	14.4 bcm
Ruhrgas 41.7%, BEB 29.6%, Statoil 21.5%, Norsk Hydro 7.2%	Netra (Ettel – Bernau)	1994	19.8
Wingas 100%	Midal (Emden – Ludwigshafen)	1993	13 bcm
Wingas 100%	Stegal (Saxony-Thuringia)	1992	10 bcm
Wingas 100%	Wedal (Belgium-Midal)	1998	10 bcm
Wingas 100%	Jagal I/II (Malnow-Stegal)	1996/1999	24 bcm

Source: BMWi

At the furthest downstream level of the gas sector, in supply, the liberalisation has not resulted in either large industrial or small consumers switching suppliers. According to the European Commission, less than 2% of either type of consumer has switched gas supplier over the four years, 1998-2001. [European Commission 2002d, pp. 6-7] This bears out the assessment of the European Commission in 1999 that the gas industry is “very stable” [European Commission 1999, para. 231]

Box 5. Security of Supply—What does it mean?

Security of supply is an objective of many countries’ energy policies, but what does it mean? According to the International Energy Agency, “Security of supply refers to the likelihood that energy will be supplied without disruption. Note that economic variables such as price levels and price volatility are excluded from the definition.” [IEA 2002d]

For electricity, security of supply depends on adequate investment to provide

- Enough generation capacity to meet demand
- An adequate portfolio of technologies to deal with variations in the availability of input fuels
- Adequate transmission and distribution networks to transport electricity.

Energy security requires adequate and timely investment in the energy infrastructure. Electricity prices are key drivers of investment activity. A debate continues as to whether market price signals will stimulate adequate and timely investments in generation, especially of peaking capacity. (Demand side management, such as increasing the share of electricity users subject to real-time prices, can help reduce peak demand.) Energy security also requires diversified energy supply and the regulation of those parts of the infrastructure which remain monopolistic. Ensuring adequate investment in transmission is a challenge for regulators due to site and permit issues, and incumbents may have little incentive to invest, since improved transmission capacity may bring increased competition to the areas under their control. Existing interconnection capacity is insufficient in, among other regions, the European Union. The development of effective electricity markets requires sustained government effort to monitor reliability, adapt policies and regulations to the needs of an open electricity market and, ultimately, ensure energy security.

For the European Commission, which examined energy security from the perspective of all sources of energy used in the economy, the focus is on the uninterrupted physical availability at prices that are affordable for all consumers, private and industrial. It is particularly concerned with imported energy and diversifying the sources of supply by product and geographic region. Indeed, in a paper on the subject the EC identifies the main characteristics of oil, gas, and coal supply in terms of their geographical and geopolitical spread and degree of competition. Of these three products, coal is distinguished for its geographical and geopolitical spread and “absence of price tensions.” Both oil and gas have greater geographic concentrations of sources, and oil is seen as being priced by a worldwide cartel while gas is priced by “regional oligopolies forming functional cartels in which prices are effectively determined by the oil market.” [EC 2002e, p. 21]

The International Energy Agency, in its 2002 review of German energy policies, noted that “[T]he government’s policy is diversification of energy source including imports, especially gas, because excessive dependency on a single or few sources can increase price risks and [supply risks].” Later, in a discussion on coal, the IEA wrote that, “There is no compelling energy security reasons for coal subsidies” to maintain domestic coal production, and instead suggested the development of diverse sources of primary energy through trade, maintaining a diverse fuel mix and actively encouraging the development of a European market in electricity and gas. [IEA 2002a]

2.3. Price Performance—Electricity and Gas

2.3.1. Electricity Prices

Electricity prices fell after liberalisation in 1998 much more so for industrial than household consumers. The competition induced decline in electricity prices, however, was partially offset by government measures (introduction and gradual increase in electricity tax, entry into force of the

Renewable Energies Act and of the Cogeneration Act). After the market liberalization in 1998, industry profited very soon and to a very large extent from declining electricity prices. There were price decreases - in some cases - of up to 50%. According to VDEW, the following picture may be drawn for the industrial sector:

Table 6. Electricity Price Index for Industrial Users

	No electricity tax	Full electricity tax	20% electricity tax
January 1998	100	100	100
Average for 2000	60.3	74.4	63.1
Average for 2001	67.5	84.5	70.9
March 2002	69.4	89.2	73.3

Note: Net electricity prices (incl. added costs from Renewable Energies and Cogeneration Acts, without VAT)

Source: VDEW

For the small-customer sector, these positive results occurred only later and, in addition, to a more modest extent (some 15% before taxes). The latter aspect is the result of the not very pronounced willingness of small customers, particularly households, to switch suppliers (according to the VDEW, some 4% of households have switched suppliers and approximately 28% of them have altered the type of contract with their existing supplier). But the small percentage price-reduction in this market segment is also to be traced back to factors such as the Renewable Energies Act, the Cogeneration Act, the Act on Feeding Electricity from Renewable Energies into the Public Grid, and the high level of concession charges. These last cited factors are not influenced by competition and thus cannot help lower prices. In addition, the small customers are supplied from the more expensive low-voltage distribution network, while industrial customers are supplied from higher voltage networks.

Beyond price effects, new “electricity products” were developed after the liberalization of the electricity market. Thus, there are now a large number of “green electricity products” that, in part, can be voluntarily certified by a neutral entity. There are also combined electricity and gas offers.

Electricity prices stabilised and then increased steadily since August 2000. [Platts European Power Daily, “German Users Bemoan High Prices,” 25.09.2002] A number of explanations have been put forward or debunked for the price rise. RWE attributed the rising wholesale prices to “higher fuel costs, announcements of power plant decommissioning plans and a sales policy geared more closely to returns again by most of the market players.” [RWE 2001] Since approximately half of RWE’s generation is lignite-fired, and most lignite comes from mines owned by utilities and does not have a market price, [IEA 2002b, p. 155] and another 30% of its generation is nuclear, it would seem that the latter two causes—falling capacity and changed pricing strategies--would seem to have predominated. While the *Bund der Energieverbraucher*, a users group, report that their research shows that the green tax and costs of building new generating plant have not caused the price hikes, in fact tax increases have been largely responsible.

Compared with other IEA countries, the price of electricity for industry in Germany is about the median price, but the price for electricity for households is high.

Figure 3. Electricity sold to households with and without taxes, 2001

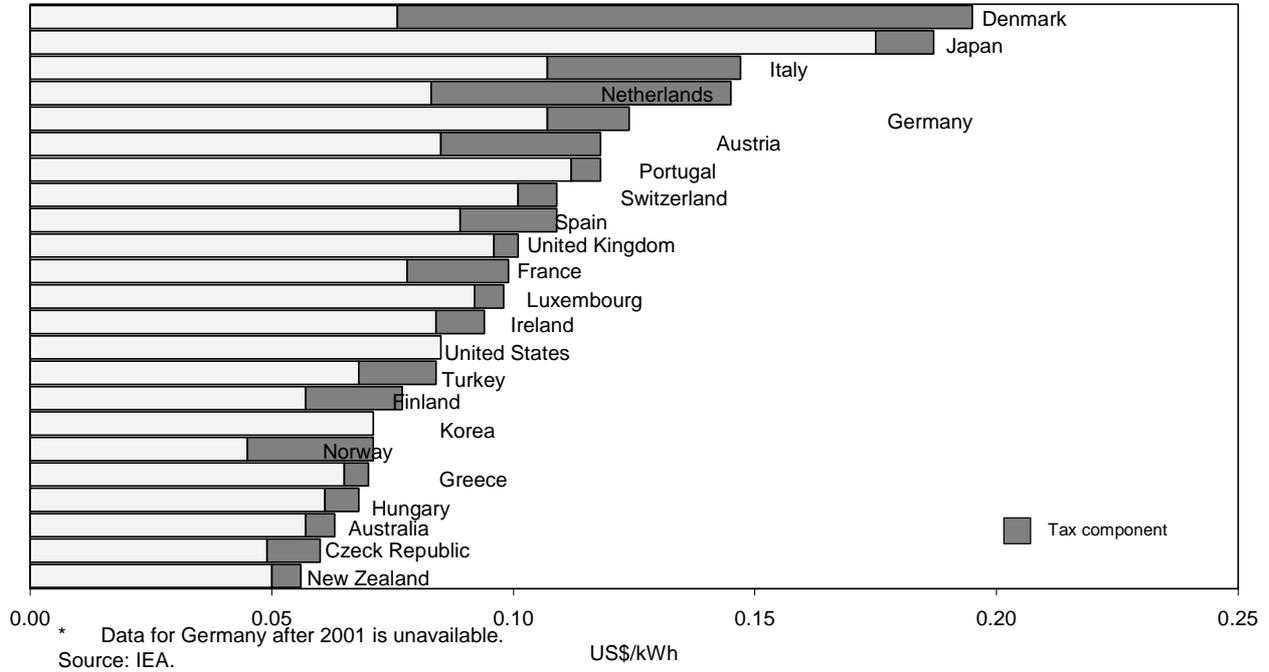


Figure 4. Electricity sold to industry with and without taxes, 2001

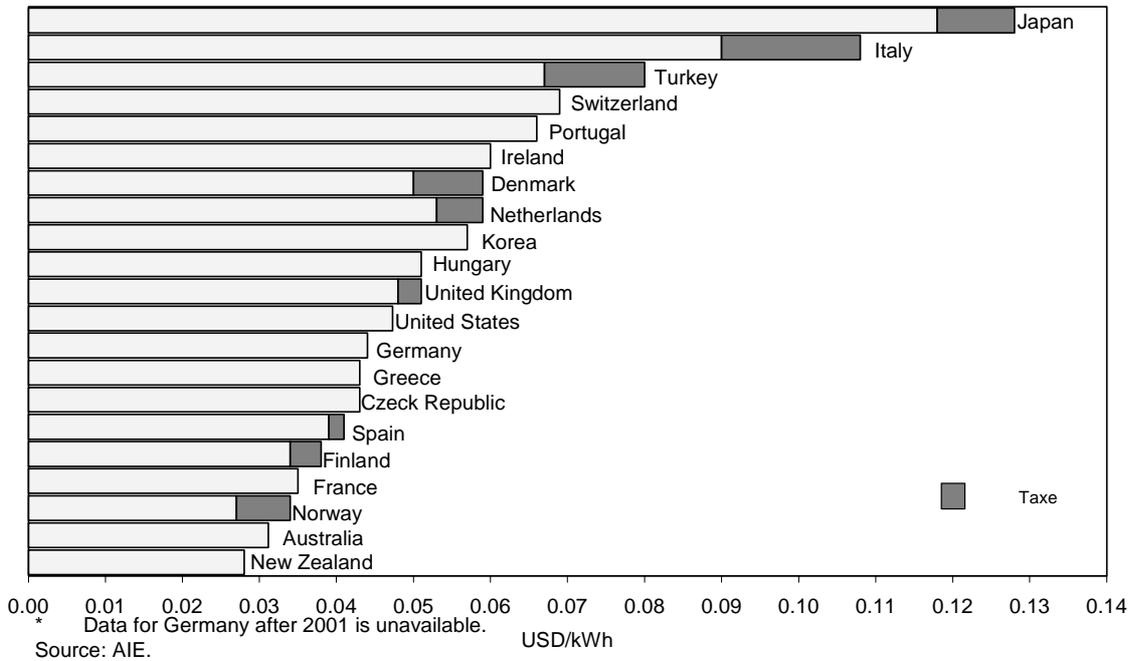


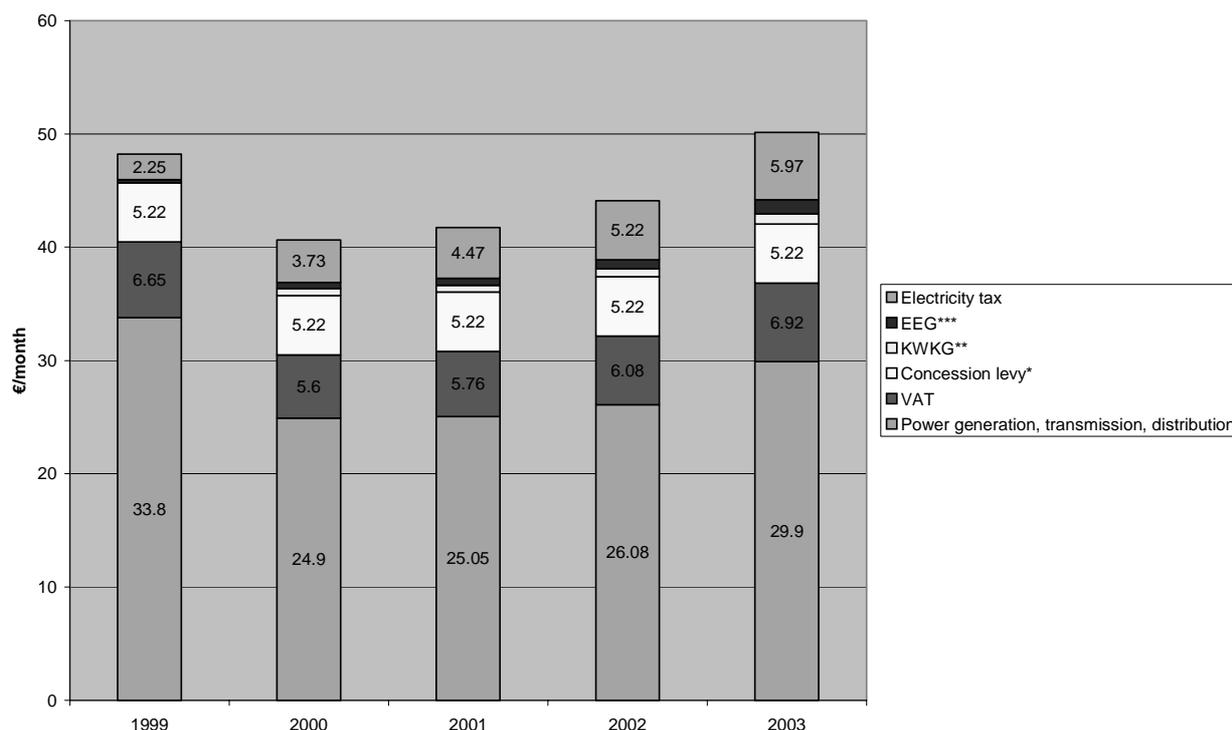
Table 7. Average earnings (€-cent /kWh) of the general electricity supply companies, excluding VAT but including other taxes and fees

Year	Industry	Households
1996	6.62	12.06
1997	6.37	12.29
1998	6.05	12.34
1999	5.34	12.28
2000	4.40	11.29

Source: "Die Elektrizitätswirtschaft in der Bundesrepublik Deutschland," published annually by VVEW Energieverlag, Frankfurt/Main, various years.

“Average receipts in electricity sales” rose in the two years prior to liberalisation in 1998, but fell in the two years after liberalisation, according to the Federal Statistical Office.¹² Deutsche Bank research says that, “[I]t would be wrong to interpret this decline entirely as a result of liberalisation, since power generation costs fell noticeably during the period under review.” [Deutsche Bank Research 2002] The VDEW data show that the electricity bill of a three-person household in Germany that consumes an average 3,500 kWh per year fell from 1999 to 2000 by nearly 20%. However, by 2002 half those gains had been lost.

Figure 5. Electricity Bill for Three-person Household



Basis: 3,500 kWh consumption per year

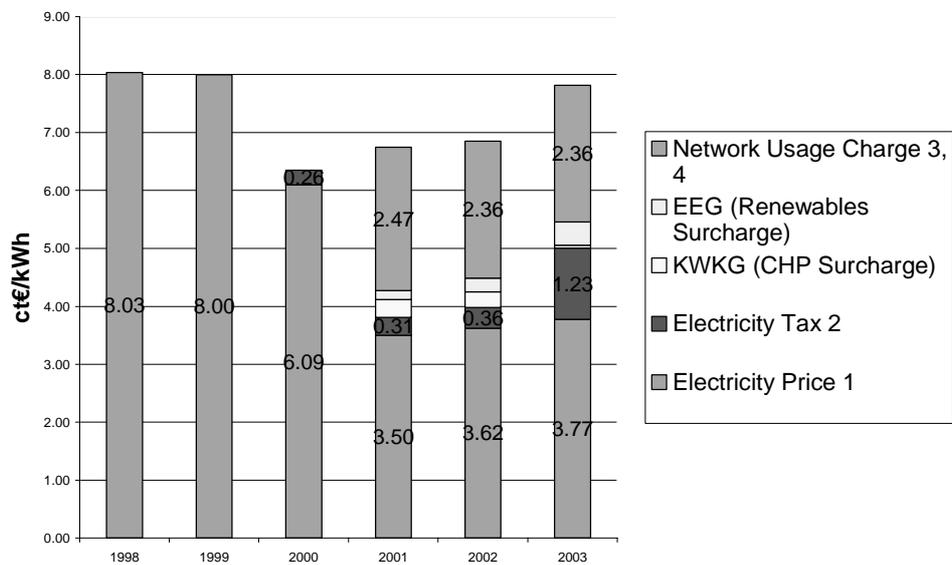
* Depending on municipality size, 1.33 to 2.40 ct/kWh

** For 2002, according to cabinet decision for KWKG (Combined Heat and Power Generation Act), from Aug 14, 2001

*** Until Mar 2000, Stromeinspeisungsgesetz (Renewable Energy Sources Act)

Source: VDEW.

Figure 6. Average electricity prices for medium-voltage industrial customer

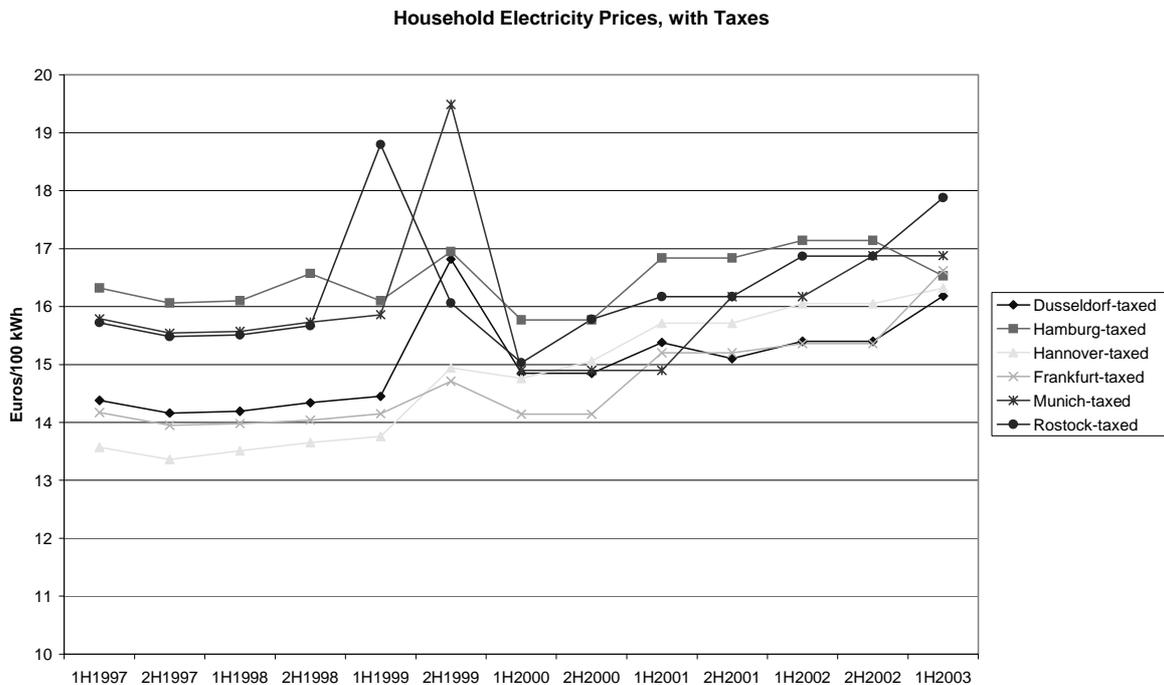


Notes:

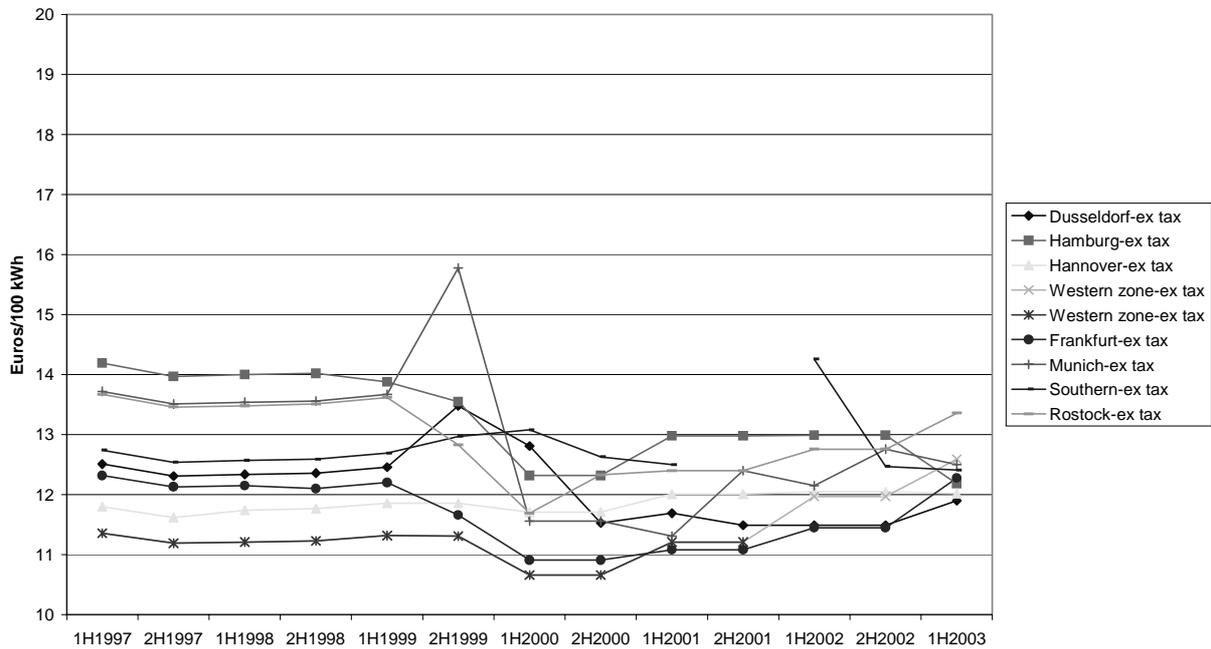
- 1 Average price without multiyear contract, 13 data points
- 2 Electricity tax for undertaking
- 3 Average price for medium-voltage customers, 6 data points
- 4 VIK Network usage price first estimated September 2000

Source: VIK

Figure 7. Electricity sold to households with and without taxes, selected locations

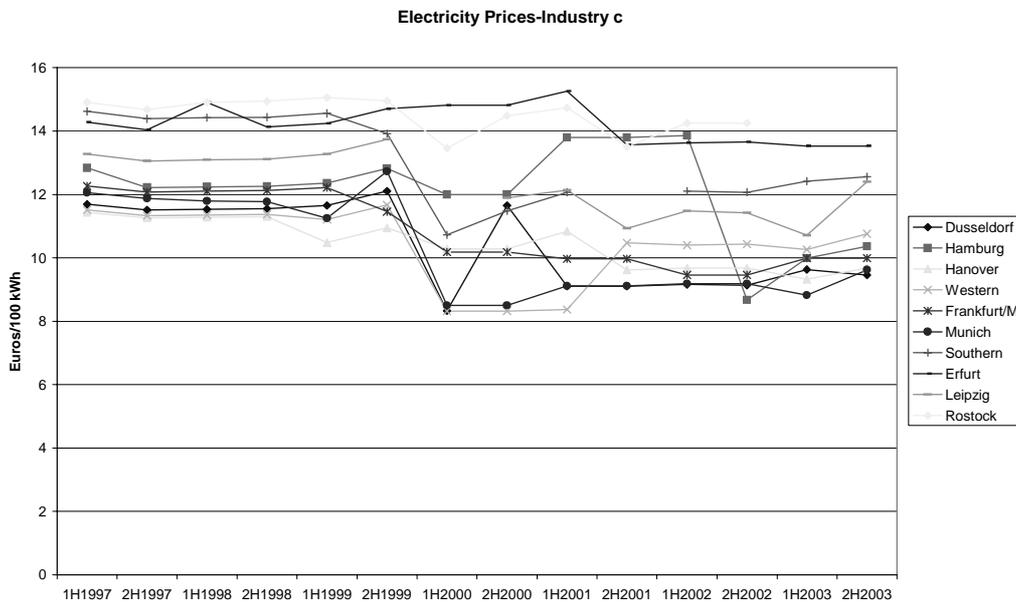


Household Electricity Prices, without Taxes

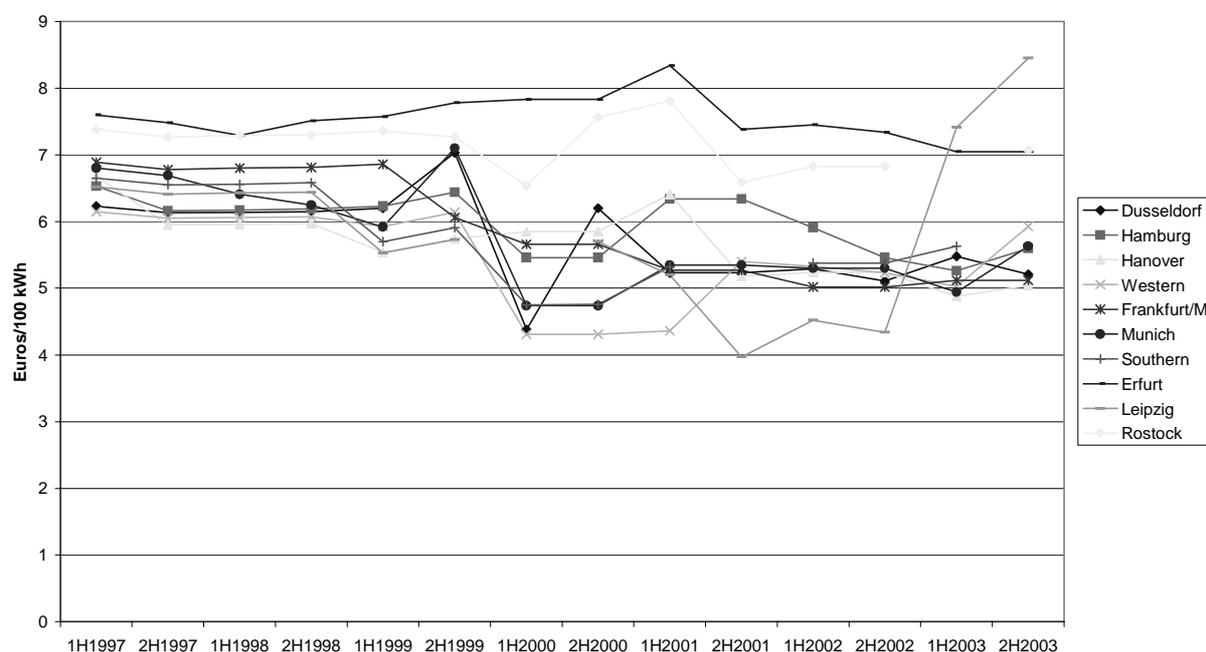


Source: Eurostat, various issues.

Figure 8. Electricity sold to industry, without taxes, selected locations



Electricity Prices--Industry g



Notes: Industry c has annual consumption of 160,000 kWh, maximum demand of 100 kW, annual utilisation 1,600 hours.
 Industry g has annual consumption of 24,000,000 kWh, maximum demand of 4,000 kW, annual utilisation 6,000 hours
 Source: Eurostat, various issues.

Neither electricity nor gas pricing is simple. The commodities are sold in complex contracts that reflect various risk allocations. The high sunk costs and relatively low variable costs, combined with demand that depends *inter alia* on weather and economic growth, spurred the development of pricing that allows for complex risk allocation. As a result, electricity or gas can be simultaneously changing hands at a variety of prices. Hence, exchange-traded power prices, over-the-counter and forward rates discovered by pricing services as well as large industrial rate indexes, experienced big drops in mid-2000 to cash cost levels of 5-6 pfennigs/kWh. But the trading volumes at the EEX show that, at that time, less than 7% of German production was traded openly on the exchanges. The great majority of electricity was still sold via bilateral agreements at twice the 5-6 pf/kWh level. [Platts] One academic group at the University of Bonn has monitored prices at the EEX. Until the beginning of 2002, prices at EEX were approximately equal to marginal cost. Since then, prices have been higher.

An important component of electricity prices is the price of network access. Germany has unusually high maximum charges for access to medium and low-voltage electricity networks, as compared with other European Union Member States. [European Commission 2002d] A recent study for the European Commission compares transmission and distribution tariffs¹³ for many EU Member States. This study shows the unusually high distribution charges in Germany, and the relatively middle-ranking charges in transmission, while noting that transmission charges vary a lot within Germany. Thus, as compared with the EU averages, in Germany smaller consumers pay much more for access to the networks, since they must pay for relatively expensive distribution access, and the average large consumer pays a bit less than the median level. Comparable data was not available for the non-European countries.

Table 8. Transmission Tariffs for Selected Examples

	Case A 8760 h Tariff (€/MWh)	Case B 4200 h Tariff (€/MWh)	Case C 3760 h Tariff (€/MWh)
Austria	6.11	7.13	7.34
Belgium	5.7	8.84	9.54
Denmark (East)	8.12	10.28	9.7
Denmark (East, without regulatory charges)	4.37	6.53	5.94
Denmark (West)	8.6	8.95	8.88
Denmark (West, without regulatory charges)	4.84	5.2	5.12
England & Wales	4.96	8.09	8.75
Finland	3.01	3.72	3.6
France	5.85	8.32	8.87
Germany	5.88	7.8	8.26
Germany (without regulatory charges)	3.28	5.2	5.66
Greece			
Ireland	5.18	6.63	6.94
Italy	9.8	13.86	14.61
Italy (without regulatory charges)	5.63	7.82	8.18
Luxembourg			
Netherlands	5.75	6.42	6.99
Netherlands (without regulatory charges)	3.55	4.22	4.79
Norway	2.3	4.38	4.82
Portugal	5.51	7.98	8.5
Spain	9.08	12.9	13.62
Spain (after application of publicly available coefficients to remove regulatory charges)	7.32	10.36	10.93
Sweden	1.99	2.97	3.09
Switzerland			

Germany: The values of transmission tariffs in Germany show a large variation among the different TSOs, ranging from 3.1 to 9.5 €/MWh. Representative intermediate values have been selected here.

Portugal: Surplus costs arisen by renewables and cogenerators, which amount to approximately 0.3 €/MWh are included.

Spain: These administrative coefficients are only used for economic settlement purposes and they grossly underestimate the regulatory component in the network access charges.

Source: Reproduced from Pérez-Arriaga et al 2002 Chart 26, p. 116.

Table 9. Distribution Tariffs for Selected Examples

	Case A 110 kV	Case B 110 kV	Case B 50 kV	Case C 50 kV	Case B 15 kV	Case C 15 kV
Austria	7.41	10.67	10.67	11.36	20.86	21.89
Finland	4.3	4.73	13.71	14.86	13.71	14.86
France (without Regulatory Charges)	5.8	9.49	14.44	20.04	14.44	20.04
Germany	9.02	13.64	23.02	24.64	23.02	24.64
Ireland	0	0	8.99	10.89	15.25	16.33
Luxembourg	5.45	0	8.05	0	0	0
Netherlands	3.81	5.98	8.82	9.78	13.38	18.01
Norway	2.94	5.06	5.06	5.55	9.82	10.76
Portugal	4.75	6.8	9.36	8.72	22.38	20.49
Spain (without RC)	8.1	11.17	12.45	13.36	13.84	14.83
Sweden	3.77	5.68	8.8	10.15	9.94	11.97

Source: Reproduced from Pérez-Arriaga et al 2002 Chart 10, p. 53.

2.3.2. Gas Prices

Gas prices for both industry and households rose substantially in the first two years after liberalisation, in step with higher worldwide prices for gas. Overall, there is probably less leeway for price reductions in the gas sector than in the electricity sector owing to less liquidity and to import dependence. Compared with other IEA countries, the price of natural gas in Germany, both for industry and for households, is high.

Figure 9. Gas sold to households with and without taxes

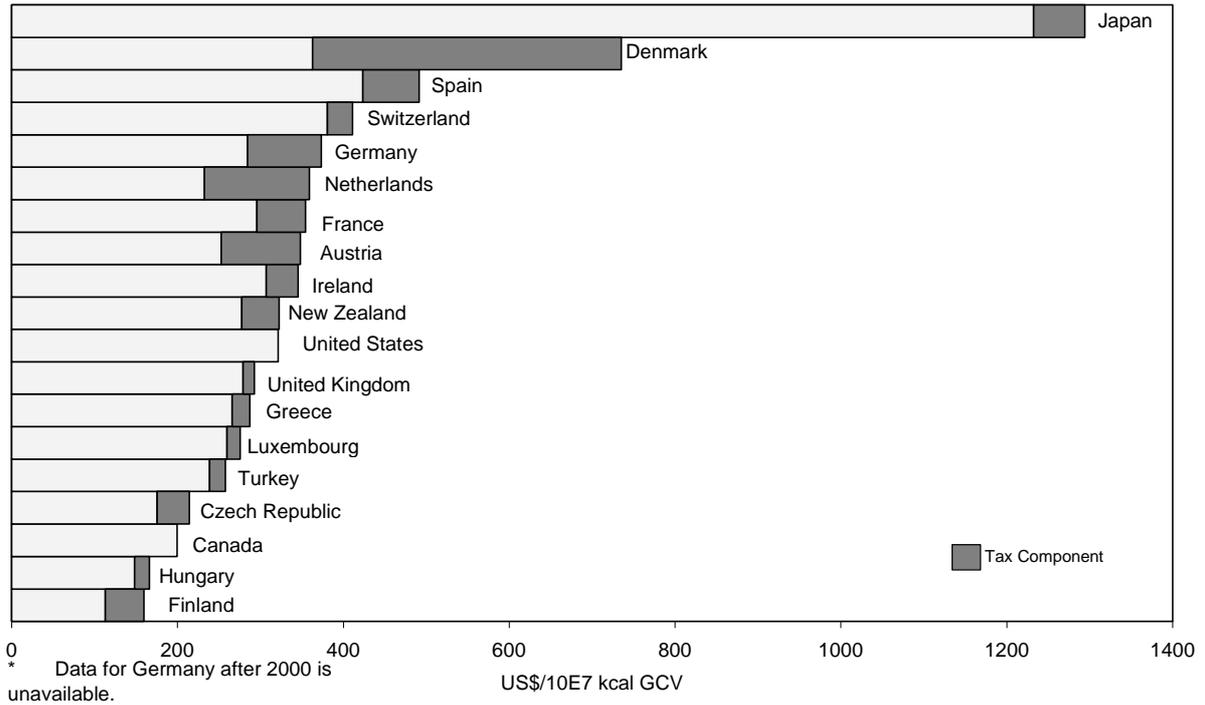
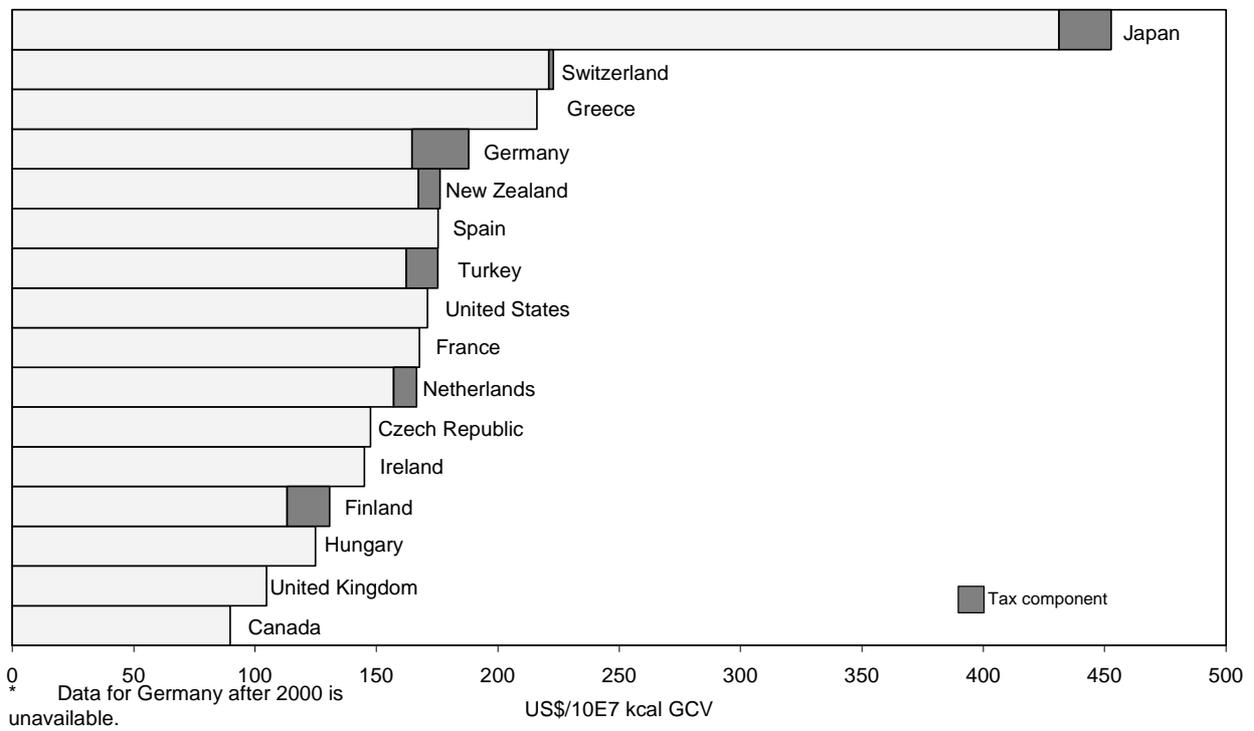
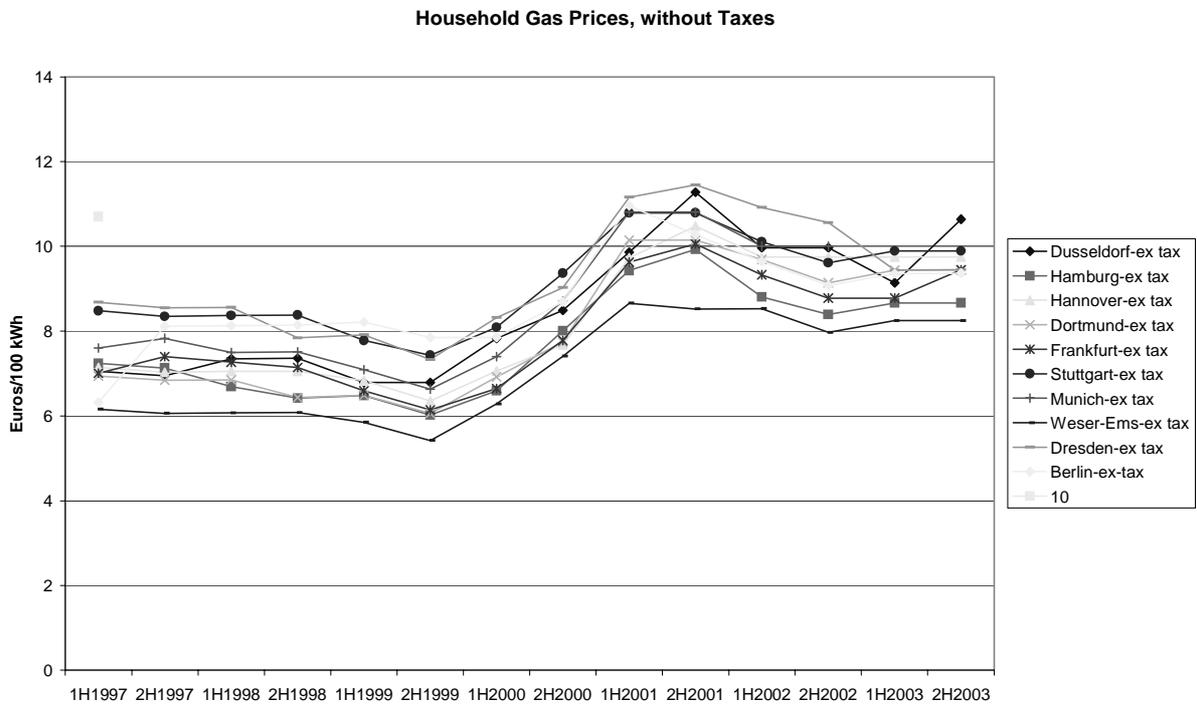
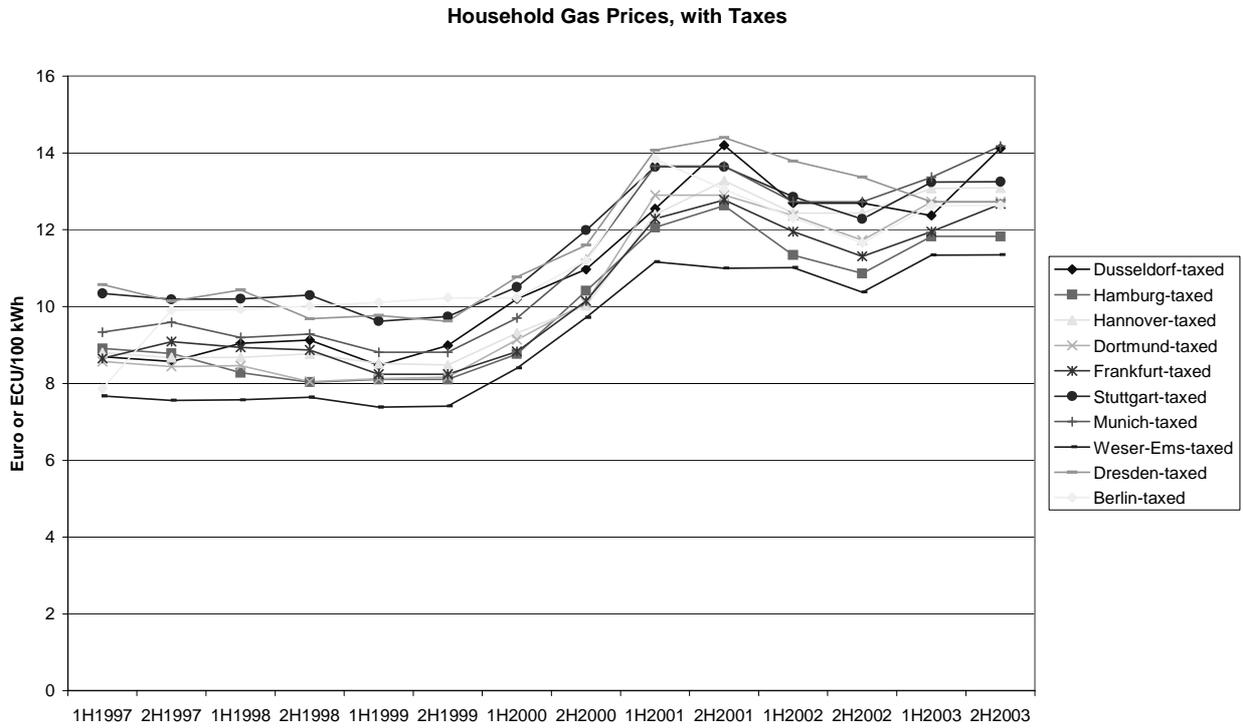


Figure 10. Gas sold to industry with and without taxes (IEA data)



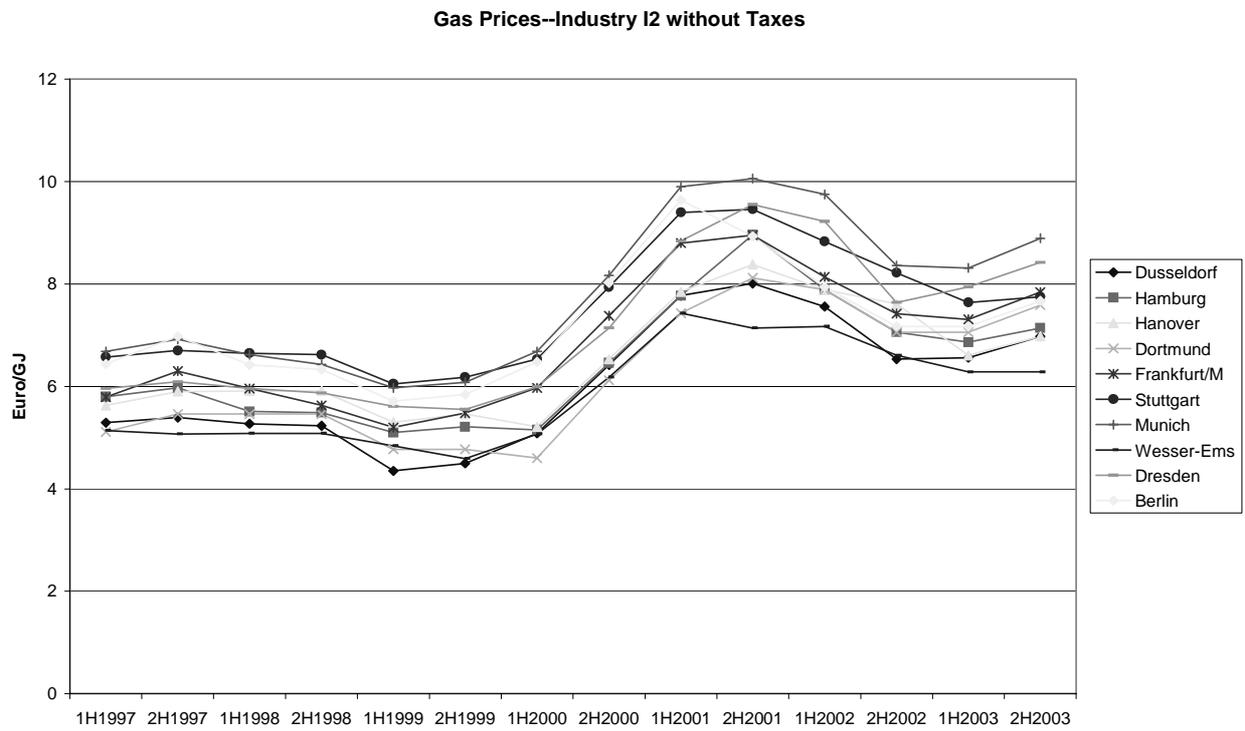
Source: IEA

Figure 11. Gas sold to households with and without taxes, selected locations



Source: Eurostat, various issues

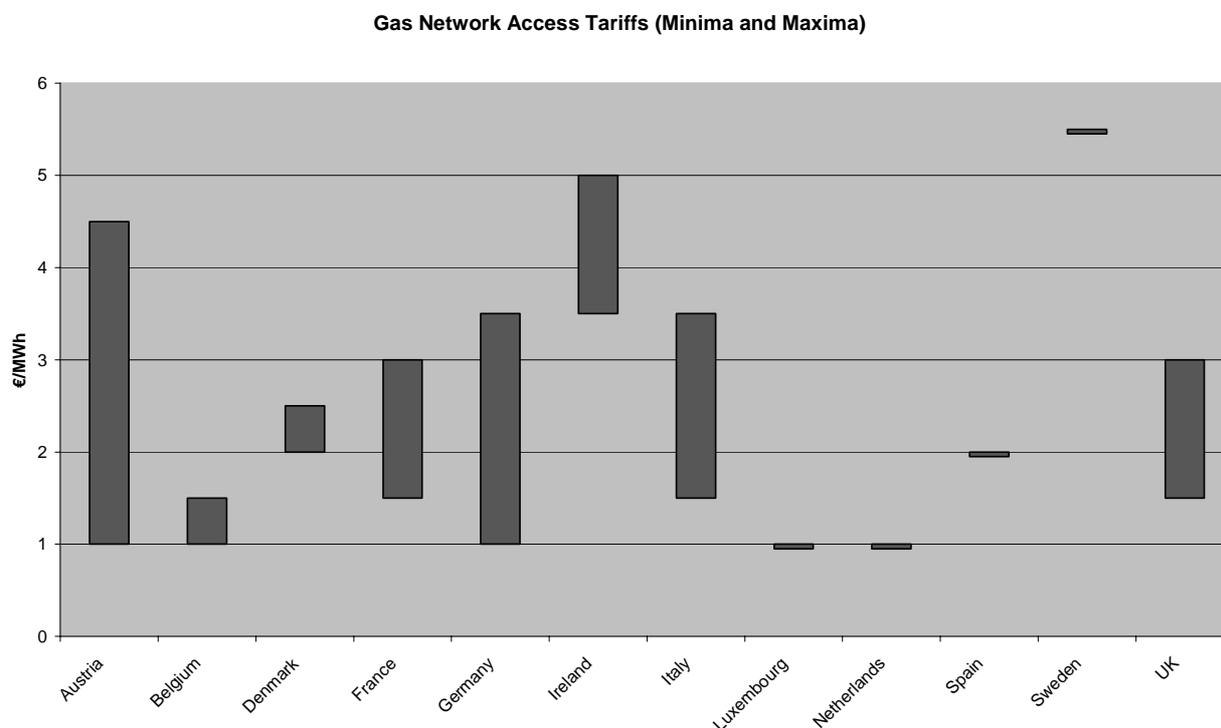
Figure 12. Gas sold to industry, without taxes, selected locations



Note: Industry I2 uses 4,186 GJ (1,163GWh) with a modulation 200 days

Source: Eurostat, various issues

Figure 13. Gas Network Tariffs for Large Users



Source data is from: European Commission 2004a; citing their own survey responses and DG Tren analysis.

Rounded to nearest €0.5/MWh

Notes: large user = annual consumption 25mm³, daily peak 100,000m³, hourly peak 4100m³;

small business user = annual consumption 100,000m³, daily peak 800m³, hourly peak 33m³;

domestic user = annual consumption 2000m³, daily peak 30m³, hourly peak 1.2m³

BE: Minimum: assumes 100km transmission, 50km regional transmission on 500mm pipe,

Maximum: assumed 300km transmission, 100km regional transmission on 300mm pipe

DK: Data provided in DONG transmission and distribution tariff. Postalised tariff

FR: Minimum assumes entry at Taisnières, exit at region Paris, plus regional distribution NTAR =1, plus local distribution NTAD =2.

Maximum assumes entry at Taisnières, exit at Toulouse Ouest, regional distribution NTAR =6, plus local distribution NTAD =2.

DE: Minimum assumes 100km transport at 900mm pipe plus 50km at 350-500mm pipe plus local distribution prices from VV2 anlage 3.

Maximum assumes 300km transport in 900mm pipe plus 100km in <350mm pipe plus local distribution prices from VV2 anlage 3

IR: Minimum: assumes entry at Inch, postalised exit tariff

Maximum: entry via UK interconnector, postalised exit tariff

IT: Minimum assumes Entry Point: Passo Gries, Exit Point F, plus regional distribution on rete gas network, no local distribution.

Maximum assumes Entry point: Mazara del Valo, Exit Point P, regional distribution on edison network, no local distribution.

LX: Data provided in SOTEG transmission and distribution tariff. Postalised tariff

NL: Minimum, based on Groningen to Ommen (G gas) plus postalised regional transmission, Dr = 1

Maximum; based on Groningen to Zeeland (G gas) plus postalised regional transmission Dr = 1

ES: Minimum: assumes customer connected at >60 bar

Maximum: assumes connection at 4-60 bar

UK: Minimum based on entry at Bacton: average of highest 50% of bids for Oct 01 to Mar 02, 1st-5th tranche = 0.0013p/KWh, exit zone NE1 plus postalised LDZ charges.

Maximum based on entry at St Fergus: average of highest 50% of bids for Oct 01 to Mar 02, 1st-5th tranche = 0.0520p/KWh, exit zone SW3 plus postalised LDZ charges.

In sum, the liberalisation was followed by a period price competition in electricity. Prices for industry fell very significantly, but so also did prices for households. Since mid-2000, though, the degree of competition in electricity lessened as utilities changed to less competitive strategies and even began reducing generating capacity. This has resulted in price rises. In gas, by contrast, liberalisation seems to have had a less important impact than changes in oil prices.

3. *The Regulatory Framework for Electricity and Gas*

The two main pillars of the regulatory framework for the electricity and gas sectors are the Energy Industry Act and the Act against Restraints of Competition. The 1998 amendments of these two acts¹⁴ fundamentally changed the regulatory framework. These two acts were further amended in 2003. The two other elements of the regulatory framework are the Associations' Agreement II-plus in electricity and the Associations' Agreement II in gas.

3.1. *Energy Industry Act*

The 1998 amendments to the Energy Industry Act (Energiewirtschaftsgesetz or EnWG) reduced entry barriers, introduced provisions to promote non-discriminatory access to the electricity supply system, and increased accounting transparency in the electricity sector with the aim to reduce the scope for anticompetitive cross-subsidy. It retained provisions to protect small electricity consumers and introduced provisions to promote renewable energies through ensuring demand for them. However, the EnWG has substantially less coverage of the gas than of the electricity sector, does not mention the Associations' Agreements, and does not establish a regulatory authority.

Two specific changes reduced barriers to entry. First, the amendment removed legal monopolies for the supply of electricity and gas for all consumers, regardless of size. This went further and faster than the minimum requirements under the European directives. Second, the amendment eliminated special licensing requirements for electricity generation (except those for nuclear generation), and minimized licensing requirements for supplying third parties. Before this change, there was a complicated system of approvals that meant, in effect, that the incumbents could prevent the entry of new, competing generators. Under the present law, no authorisation is required to feed energy into the system of an energy utility or for autogeneration. Authorisation may be refused only if the applicant does not have the personnel, technical or commercial capabilities to supply energy in the long term, or if the commencement of supply for which authorisation is sought would result in less favourable supply conditions for the customers to be supplied or for the remaining area covered by the previous supplier.

Several provisions aim to ensure non-discriminatory access to the electricity supply system.

- TSOs (Transmission System Operators) must publish minimum technical requirements to be connected to the system.
- TSOs and DSOs (Distribution System Operators) must stipulate, apply without discrimination, and publish objective criteria for the feeding in of electricity from generation facilities and for the use of transmission circuits.

- TSOs and DSOs must make them available to other companies to carry electricity at conditions which are not less favourable than those they actually or implicitly charge in comparable cases for services within their company or to affiliated or associated companies. This requirement does not apply where the TSO/DSO demonstrates that third-party access is impossible or unreasonable for him for operational or other reasons.
- Under certain conditions (see Box below) Federal Ministry of Economics may by ordinance and with the approval of the Bundesrat regulate the terms of the contracts for third-party use of the supply system and stipulate criteria for the setting of prices for third-party access. (This option has not been exercised.)
- TSOs and DSOs must publish annually an indicative range of prices for third party access, based since 2001 on the average price negotiated.
- In 2003, the Federal Ministry of Economics must report to the Bundestag about the impact on competition of the rules on negotiated access to the system and alternative access to the system (a version of “single buyer”). This will feed into a decision on whether changes are needed to the access rules.
- The transmission system must be managed separately from generation, distribution, and other unrelated activities.

Box 6. Energy Industry Law Provisions on Negotiated Third-Party Access

Section 5: Access to the electricity supply system

- Except as provided in section 7, access to the electricity supply system shall be in accordance with the system of negotiated access to the system.

Section 6: Negotiated access to the system

- (1) Operators of electricity supply systems must make the supply system available to other companies to carry electricity at conditions which are not less favourable than those they actually or implicitly charge in comparable cases for services within their company or to affiliated or associated companies. This shall not apply where the operator demonstrates that third-party access is impossible or unreasonable for him for operational or other reasons, bearing in mind the objectives listed in section 1. The refusal must be justified in writing. This shall be without prejudice to section 19 paragraph 4 and section 20 paragraphs 1 and 2 of the Act against Restraints of Competition (*Gesetz gegen Wettbewerbsbeschränkungen*).
- (2) Where necessary to achieve the objectives listed in section 1 and to ensure effective competition, the Federal Ministry of Economics may by ordinance and with the approval of the Bundesrat regulate the terms of the contracts pursuant to paragraph 1 and stipulate criteria for the setting of prices for third-party access.
- (3) When assessing whether third-party access is unreasonable pursuant to paragraph 1 sentence 2, particular attention shall be paid to the extent to which such access would displace electricity from the district-heating-oriented, environmentally friendly, resource-friendly and technically and economically sensible use of facilities to produce combined heat and power or from facilities using renewable energies and would impede the economic operation of these facilities, whereby possibilities to sell this electricity to third parties must be utilised.
- (4) The operators of the electricity supply system shall publish annually, as of 2000, an indicative range of prices for third-party access. In the following years, the indicative figures shall be based on the average price agreed in negotiations in the previous 12-month period. [i.e., not self-dealing prices]

Section 7: Alternative access to the system

- (1) The Authority shall issue an approval to electricity utilities for the supply of final consumers which overrides section 5. For this approval to be given, there must be access to the system in line with paragraphs 2 to 5 and it must be expected that this access will lead to equivalent economic results and hence to a directly comparable level of opening-up of markets and to a directly comparable degree of access to electricity markets. Approval may only be given uniformly for the whole area in which the electricity utility is providing a general supply, or for all the areas of a municipality supplied by it.
- (2) In cases covered by paragraph 1, the electricity utility is required to purchase the electricity which a final consumer resident in the area to which the approval pursuant to paragraph 1 applies has bought from another electricity utility. Section 6 paragraph 1 sentences 2 to 4 and paragraph 3 shall apply *mutatis mutandis*.
- (3) The price for electricity to be purchased pursuant to paragraph 2 must at least equate to the sale price to be paid by the final consumer to the supplying electricity utility minus the tariff for the use of the supply system. Section 6 paragraph 1 sentence 1 shall apply *mutatis mutandis*. This tariff must be authorised by the Authority and shall be published by the electricity utility.
- (4) The activities of the electricity utility pursuant to paragraphs 2 and 3 shall be administered separately from the generation and distribution activities. No information may be passed between the activities pursuant to paragraphs 2 and 3 and the generation and distribution activities, unless this information is necessary in order to fulfil tasks pursuant to paragraphs 2 and 3.
- (5) Where necessary to achieve the objectives listed in section 1 and to ensure effective competition, the Federal Ministry of Economics may by ordinance and with the approval of the Bundesrat stipulate substantive details of the regulations provided in paragraphs 1 to 4.

Section 8: Review of rules on access to the system

- The Federal Ministry of Economics shall report to the German Bundestag in 2003 about the experience with the impact on competition of the rules on negotiated access to the system and alternative access to the system. Once this experience and the relevant court rulings have been evaluated, a decision shall be taken as to whether, in order to achieve the objectives listed in section 1 and to ensure effective competition, changes are needed to the rules on access to the system, so that equivalent economic results, and particularly a directly comparable level of opening-up of the markets and a directly comparable level of access to electricity markets, can be achieved. If no other arrangement is made in the context of this review, the approvals issued pursuant to section 7 paragraph 1 shall expire at the latest on 31 December 2005.

Other provisions in the Act may help to identify cross-subsidies. Separation of accounts, required auditing of accounts, and either publication (if required by law) or availability for inspection at headquarters (if publication is not required by law) aim to increase accounting transparency. In addition, major transactions with affiliated or associated companies or with companies owned by the same shareholders must be separately listed in the accounts. The separate accounts, auditing and publication or availability for inspection also form part of the minimum requirements specified in the European directives. The electricity companies must at least split their accounts into generation, transmission, distribution, and non-electric businesses. The Directive required the Member State to be able to oversee the accounts; the amendments to the Energy Industry Act did not introduce additional regulatory oversight over the accounts.

The consumer protection provisions in the electricity sector were retained in the Energy Industry Act. The “general suppliers” remained obligated to connect and supply consumers in low-voltage and low-pressure areas. The maximum price regulation for small electricity consumers was also retained. In practice, this regulation acts as more of a safeguard, since actual prices charged tend to be lower than the maximum allowed. [Brunekreeft, p. 3; E.ON 2002, p. 42] To the extent that the supervisory authorities

delve into the cost justifications, this regulation also implicitly regulates the maximum cumulative electricity network access charges, since access charges are included in these tariffs. The government's standardization of electricity and gas supply agreements for small consumers was also retained.

Until 31 December 2006, electricity utilities are entitled to refuse access for electricity to be supplied from abroad to the extent that a similar customer located there could not also be supplied by third parties.

The Act on Renewable Energies (EEG, Erneuerbare-Energien-Gesetz) has provisions to promote renewable energies. It requires all "general supply" electric utilities to buy electricity generated from renewable energies in their supply area and to pay a specified price, a price differentiated by energy source (water, wind, etc.).

It is important to point out what the Energy Industry Act does not do. It does not impose the terms and conditions for access to the electricity sector. It has substantially less coverage of the gas than the electricity sector, though this was expected to change after the 2003 amendments. . It does not mention the Associations' Agreements (though this changed with the 2003 amendments), and it does not establish any new regulatory authority. Deliberately or negligently failing to obey an order or to provide information, or providing incomplete, incorrect or tardy information is an administrative offence, punishable by a fine up to € 100,000 per offence.

The May 2003 amendment to the Energy Industry Act introduced similar access rules for the gas sector, notably third party right of access to the pipelines and storage and a requirement of separate accounts, though not of management, for the different activities.. There is no statutory requirement to publish indicative access prices.

The May 2003 amendment of the Energy Industry Act provided for "juridification" of the Associations' Agreements. This will likely make it more difficult to prove abuse of dominance, as it introduced a presumption that if the Associations' Agreements on third-party access for electricity and natural gas networks were observed, then good practice conditions would be considered fulfilled. The 2003 decision of the Dusseldorf Court of Appeal seems to confirm this difficulty. At the same time, however, "juridification" shifts the burden of proof to any operator who does not fulfil the conditions set out in the Associations' Agreement. "Juridification" of the private Associations' Agreement had been the subject of debate. The Working Group on Competition Law, a meeting at the *Bundeskartellamt* of university professors dealing with competition issues, opposed the so-called juridification of the Associations' Agreement. They noted that the "juridification of the Associations' Agreement would make it considerably more difficult to further develop and enforce effective competition in the network-based energy industry." [Bundeskartellamt 2002e] Presumably, this was because juridification would raise the cartel authorities' burden of proof.

Finally, as required by the earlier amendment to the Energy Industry Act, the Ministry of Economics and Labour sent a Monitoring Report to parliament at the end of August 2003 about experience with the negotiated access system for competition. It concludes that the Associations Agreements in the electricity sector have developed a workable access system, although improvements are required. The report notes that similar progress in the gas sector has been lacking so far. The report also provides an outlook of the basic features of the future government regulation of the German electricity and gas markets.

3.2. Act against Restraints of Competition

The Act against Restraints of Competition (ARC) is central to the oversight of the electricity and gas sectors. The ARC contains provisions against cartels, anticompetitive mergers and both exploitative and exclusionary abuse of dominance (chapter 3 gives more details). The primary control over terms and conditions for network use is *post hoc* supervision of abuse under antitrust law.

The ARC was amended in two key ways to prepare for the liberalisation of the electricity and gas sectors. First, as mentioned above, the exemption of agreements in the electricity and gas sectors were removed. This meant that the demarcation agreements, long-term exclusive concessions between municipal governments and utilities, resale price maintenance agreements, and interconnection agreements that restricted access to transmission lines and defined supply areas, supply conditions and prices, all lost their exemption and became subject to competition evaluation under the ARC. (The abuse of dominance provisions of the ARC had always applied to these sectors. The Bundeskartellamt dealt with its first network access case in the electricity and gas sectors in 1992, with the Wingas-VNG pipeline access case. Earlier abuse of dominance cases concerned, e.g., the level of tariffs in the gas sector.) Second, a provision was introduced to require access to “essential infrastructure facilities” except where the infrastructure operator can demonstrate such access “is impossible or cannot reasonably be expected.” The provision on access to essential infrastructure facilities is intended to control abusive denial of access, or granting access only under abusive terms and conditions, to infrastructure such as electricity transmission and distribution networks and gas transmission, distribution, and storage.

Box 7. Abuse of Dominance in the Act against Restraints of Competition

Section 19 Abuse of a Dominant Position prohibits “abusive exploitation of a dominant position by one or several undertakings.” After defining dominance, the law goes on to define abuse:

“(4) An abuse exists in particular if a dominant undertaking, as a supplier or purchaser of certain kinds of goods or commercial services,

“1. impairs the ability to compete of other undertakings in a manner affecting competition in the market and without any objective justification;

“2. demands payment or other business terms which differ from those which would very likely arise if effective competition existed; in this context, particularly the conduct of undertakings in comparable markets where effective competition prevails shall be taken into account;

“3. demands less favourable payment or other business terms than the dominant undertaking itself demands from similar purchasers in comparable markets, unless there is an objective justification for such differentiation;

“4. refuses to allow another undertaking access to its own networks or other infrastructure facilities, against adequate remuneration, provided that without such concurrent use the other undertaking is unable for legal or factual reasons to operate as a competitor of the dominant undertaking on the upstream or downstream market; this shall not apply if the dominant undertaking demonstrates that for operational or other reasons such concurrent use is impossible or cannot reasonably be expected.”

3.3. Associations' Agreements

The crucial supervision of network access of competitors to electric wires or gas pipelines was entrusted to a body of private agreements called the Associations' Agreements (*Verbändevereinbarung*).¹⁵ These agreements among associations of energy companies, autogenerators, and businesses set out frameworks for negotiated contractual agreements among companies on the use of electricity and gas

infrastructure. The Associations' Agreements are one means by which the legal claim to third party access, provided in the Energy Industry Act, are implemented.

The Associations' Agreements are the results of negotiation among the most important market partners, and as such are seen by Germany as taking equal account of the interests of the electricity and gas industries (in the case of electricity represented by the associations VDEW, VKU, ARE, VDN, and in the case of gas by the associations BGW and VKU), on the one hand, and the network users and consumers (BDI, VIK), on the other. But the objectives of the Agreements both suggest that the interests of non-industrial consumers were not important.¹⁶ The agreements were reached under threat of imposition of independent regulation.¹⁷ It is unclear how the Associations' Agreements will adapt to the independent regulation agreed in the new EU directives.

The Associations' Agreements establish, among other things, voluntary methods and criteria for determining charges. However, under the ARC, the Agreements may not restrain competition and thus, in particular, may not set any prices. In this connection, the annexes in which the Associations agreed on pricing principles (costs and revenues assumed for costing purposes, annual financial statements and, in electricity, transmission and distribution prices of structurally comparable system operators) and on rates of return (6.5% on equity in electricity, 7.8% in gas) raise concerns of whether all that stands between the pricing principles and prices is a pocket calculator. In other words, the Associations' Agreements provide such a complete framework for calculating access prices that if utilities apply the voluntary framework then they have little scope for independent choice in access pricing. The Bundeskartellamt has expressed concern that the Agreements could facilitate agreement on prices. Indeed, the *Landesgericht* (state court) of Berlin ruled that the talks between gas industry associations about self-regulation are unlawful cartels. [NERA 2003] In fact, there is scope for choice, e.g., in depreciation and valuation of some assets. There is, though, little incentive to choose lower access fees. For example, the rates of return on equity seem rather high when the long-term riskless rate of return is about 2.5 % and long-term return on equity is about 5.5 % (geometric average).¹⁸ In 2001 and 2002, long-term German government bonds were yielding 4.8 %. Recall that the 6.5% and 7.8% are rates of return to network assets, not more risky business such as electricity trading. The new EU directives, however, imply that the new independent regulator should evaluate main cost items such as the value of the capital stock, appropriate rate of return on that capital, and an appropriate depreciation rate. [EC 2004b]

Box 8. Overview of the Association Agreements

A. Associations' Agreement on Criteria to Determine Use-of-System Charges for Electric Energy and on Principles of System Use, 13 December 2001

The first Associations' Agreement on electricity was agreed in May 1998. Under this Agreement, access charges were based on a contract-path principle. It was considered cumbersome, non-transparent and, by leaving too much discretion in the hands of the incumbent transmission owners, insufficiently promoting of competition. The second agreement replaced contract-path with postage stamp pricing.

The current agreement, called *Verbändevereinbarung II+*, is effective from 1 January 2002 to 31 December 2003. Table 10 describes the parties to this agreement. The agreement sets the framework rules for contractual agreements on system use (negotiated third party access or "NTPA") under the Energy Industry Law. In fulfilling European and national objectives, this Agreement aims to promote competition between electric power utilities in the supply of electricity to end-users, and to attain competitive prices for German industry and commerce.

This agreement is a framework agreed among associations. To use the system, users must enter contracts with the respective system operators at the feed-in and extraction points. Thus, there are two stages of negotiations, the first amongst associations to set the framework, and the second between the party that wishes to use the system and the system operator(s).

The main principles are that access is to be non-discriminatory and that access charges are to be cost-based and transaction-independent. The costs of necessary system services are allocated to users at the voltages in which these services are used. Balancing groups may be set up to minimize use-of-system charges.

Pricing is based on the following three elements:

- a) Costs and revenues assumed for costing purposes
- b) Annual financial statements prepared according to commercial law.
- c) Transmission and distribution prices of structurally comparable system operators.

If a system user challenges the appropriateness of the use-of-system charge, then the third element is used to evaluate the charges and the efficiency of system operation. If a system operator's charges are among the highest 30 % of all use-of-system charges recorded in a structural category, then it must prove that its charges are appropriate. Structural categories are defined on the basis of such criteria as population and consumption densities, the percentage of cable which is underground, and whether the system operator is located in the old Länder or the new.

The Associations' Agreement contains guidance on depreciation, the valuation of tangible and intangible assets, the treatment of interest-free capital and of building and construction costs, and specifies maximum equity ratios. The Associations' Agreement sets the interest rate of the imputed return on equity at 6.5 %.

The associations will set up an Arbitration Tribunal, on a case-by-case basis, to settle by mutual consent differences of opinion related to the interpretation of this Agreement. To resolve other disputes, e.g. concerning the appropriateness of the use-of-system charges, the parties shall agree on a settlement body independent of the Associations. The options to resort to legal action or take other steps are unaffected.

There are a number of other rules. For example, system operators must respond within two weeks to requests to use of system. All of the costs of setting up a new direct system connection for feed-in/extraction or expanding an existing connection at a suitable point of connection are borne by the party seeking connection. The rules, parameters and prices for determining use-of-system charges were to have been published within three months after the Agreement entered into force.

B. Associations' Agreement on Third Party Access for Natural Gas, 3 May 2002

The first Associations' Agreement on gas (Verbändevereinbarung Gas) was signed July 2000. It was amended twice, first to add commercial access to storage facilities and the second time to provide for access for small customers and a dispute settlement mechanism. The current agreement, called Verbändevereinbarung Gas II, is effective from 1 October 2002 to 30 September 2003, although further negotiations, since broken down, were envisaged. Table 10 describes the parties to this agreement. The agreement sets the framework rules for contractual agreements for negotiated third party access as provided for under the EU Directive on common rules for the internal market in natural gas, the Act against Restraints of Competition and the Act to Reform the Energy Industry Law. This Agreement is intended to promote competition in accordance with the objectives of these Acts and the Directive.

As with the electricity Associations' Agreement, this agreement is a framework agreed among associations. Parties who wish to use the system must enter into contracts.

The main principles are that access to pipelines is to be granted on objective, transparent and non-discriminatory bases. Access to supra-regional and regional pipelines is treated differently from access to local distribution pipelines. At the supra-regional and regional level, access is charged as capacity reserved for specific transactions on actual sections of pipeline. Fees are not cost-based, but rather are based on international and national benchmarks, not further specified in the Agreement. While, "as a general rule," access contracts shall have terms of a whole year, or multiples of whole years, and begin on 1 October or 1 April, access can be agreed for shorter periods or for other times of year.

By contrast, access to local distribution pipelines is charged in the form of a postage stamp fee. The fee is based on:

- a) Costs and revenues assumed for costing purposes
- b) Annual financial statements prepared according to commercial law.

Users negotiate commercial access to spare storage with the individual owners of the storage. If the BDI and VIK do not find the resulting fees to be reasonable, then there will be new negotiations to determine reasonable fees.

As in the electricity Associations' Agreement, the gas Associations' Agreement contains guidance on depreciation, the valuation of tangible and intangible assets, the treatment of interest-free capital and of building and construction costs, and specifies maximum equity ratios. The gas Associations' Agreement sets the interest rate of the imputed return on equity at 7.8 %.

Arbitration is like that for electricity, save that there is not provision for arbitration on the level of access fees.

The AA-electricity provides a convenient way to approach the heterogeneity of distribution. Electricity system operators publish the structural parameters, such as population density, consumption density and the percentage of underground cable, which are considered to have important cost effects. These structural parameters imply the structural category to which each network operator belongs. Then, the VDN is to survey the 900 electricity network operators to establish a mean value of the use-of-system charges applied to classes of customers. The individual network operators' average use-of-system charges have been published by VDN, as yet incompletely, i.e. not for all operators. Due to as yet unresolved methodological errors, the categorisation of the VDN has been of no relevance to the Bundeskartellamt in investigations of alleged abusively high prices.

The AA-gas uses different methods for transmission from distribution access. It contains a convenient example of how to calculate distribution fees Annex 3. For gas transmission, the gas transmission companies will set the access prices. (The pricing is carefully clothed in terms of "pricing on the basis of an international and national benchmark" and "not exceed the reference market-based fees for the pipelines subject to pipeline-to-pipeline competition." However, it does not take much for the few gas transmission companies to see the advantage of influencing the national benchmark by their own behaviour and, as argued above, there's very little scope for competition in the one stretch of parallel transmission pipeline.) The price of access to gas transmission pipeline is emphatically not related to costs but to "benchmarks"; this was one issue on which negotiations broke down in April 2002. Since gas pipeline contracts should "as a general rule" have terms of one year or multiples of one year, beginning on 1 April or 1 October, then gas cannot be fed into the system on a short-term basis. This hinders the development of gas trading. (Nevertheless, some gas companies are trying to establish a spot market at the hub Bunde/Emden.)

The observance of the Agreements is overseen by clearing offices set up by the associations. These aim to fulfil the obligations in the European directives to establish a dispute settlement body, independent of the parties. As of late 2002, the clearing entity had dealt with four disputes. If disputes arise, the legal claim to network access is enforceable with the aid of the cartel authorities and/or civil courts. The AAs do not provide penalties for non-compliance. Indeed, some 80-90 electricity distribution companies have yet to publish their access charges, despite the expiration of the deadline agreed by the associations of which the companies are members.

The agreements have evolved. The first electricity agreement, reached in May 1998, was heavily criticised for favouring incumbents and introducing a fee for electricity crossing an internal border. The second electricity agreement, effective from 1 January 2000, was seen as an improvement by simplification of pricing, reducing barriers to households switching suppliers, and creating conditions for electricity trading. However, new entrants pointed out that many of the new rules still await implementation or are not fully respected. [Eberlein p. 371] Entrants also point out that some provisions remain discriminatory. In gas, the second agreement moved toward pricing distribution on more of a postage-stamp principle, the idea being to reduce the costs of transaction-by-transaction negotiation, at least for distribution.

As Table 10 shows, most of the Associations who are party to the agreements have as their members predominantly companies on the supply side of the markets. The VIK, the association of industrial consumers and autoproducers, represents the largest consumers. The BDI, the broad association of German industry, represents both demand and supply sides of the markets. It includes as its members electricity and gas consumers from the very largest to quite small, as well as the electricity, gas, lignite mining, and coal mining companies. The consumers association, VZBZ, 80% government-funded, was invited to the negotiations for the Associations' Agreement in electricity II-plus after the re-negotiations had begun so felt it was not in a position to agree to an outcome. As VZBZ represents household consumers, its members have different interests and are charged different prices from those consumers who are members of BDI. BNE, representing new entrants into electricity, were not invited to the negotiations.

Table 10. Associations in the Associations' Agreements

Associations Representing		Associations' Agreement Electricity II-plus		Associations' Agreement Gas II	
		Suppliers	End-users/Consumers	Suppliers	End-users/Consumers
BDI	German industry	yes	yes	yes	yes
VIK	Industrial consumers and autoproducers		yes (large only)		yes (large only)
VDEW	Electricity industry	yes			
VDN	Network operators (within VDEW)	yes			
ARE	Regional energy utilities	yes			
VKU	Municipal utilities	yes		yes	
BGW	Gas, water, sewerage utilities			yes	

3.4. Institutions

Germany's federal structure and style of state-society relations are decisive factors in the institutional structure. The **Federal Ministry of Economics and Labour** (BMWA = *Bundesministerium für Wirtschaft und Arbeit*) is the lead agency responsible for energy policy. A Third Party Access Task Force was established in the BMWA in April 2001. This office was aimed more at disputes where one party is a small consumer, rather than disputes between energy companies which are resolved in the first instance within the framework of the Associations' Agreements. The Task Force has reduced the costs of small consumers switching suppliers.

The **Bundeskartellamt**¹⁹ (**Federal Cartel Office**) has primary responsibility for the practical implementation and enforcement of the Act against Restraints of Competition at the federal level, i.e., involving more than one *Land*. It therefore plays an integral part in the implementation of the negotiated access regime in Germany. It also is responsible for the review of the competition effects of mergers and for the prohibition of cartels. The Bundeskartellamt does not decide policy.

Individual states have energy sector supervisory agencies that implement federal law, including maximum electricity prices to small consumers. The states also have cartel offices that are responsible for competition cases restricted to a single state.

The **Monopoly Commission**²⁰ advises the government on antitrust and competition issues, makes recommendations on major merger and acquisition cases if a ministerial authorisation is requested, and comments on topical antitrust policy matters. It also compiles a major biannual report on these issues.

There is no **sector-specific regulator** of the electricity or gas sectors. This makes Germany unique among the Member States in the European Union. Each of the other fourteen Member States has at least an access regulator for both sectors. [European Commission 2002d, p. 3] Among OECD/IEA countries, only

New Zealand, with a state-owned electricity sector, joins Germany in applying negotiated access and pricing in electricity and having only light-handed ministerial oversight of electricity. [IEA 2001b] Rather, following the tradition of state-society relations, the Associations' Agreements provide the voluntary framework for access to electricity and gas infrastructure (excluding storage), and voluntary arbitration of access disputes. Implementation of the 2003 EU directives will require the designation of one or more regulatory authorities which are wholly independent of the interests of the electricity and gas industries. In August 2003, the Ministry of Economics and Labour proposed to parliament that, from July 2004, federal energy regulatory authority be vested in RegTP, which was already responsible for federal telecommunications regulation.

4. Selected Regulation Issues and Recommendations

4.1. The Structure of the Sectors

Much of the difficulty of promoting competition in the electricity and gas sectors stem from its structure. It does no good to cry over the spilled milk of consolidation in the 1990s and early 2000s but rather going forward it will be important to reduce barriers to entry to try to promote competition in the future. The starting point is not propitious. As the Monopolkommission writes, "Competition from a foreign electricity generator is only possible to a very limited extent, because of the limited transmission capacities of the coupling points across the national frontiers. It is hardly likely that new competitors will enter the market because there are high barriers to market access." [Monopolkommission 2003, para. 69*] The vertical integration these sectors, and of the two sectors, increased barriers to entry. This is the primary topic of this section.

The vertical integration of the electricity sector, and the gas sector, and now of gas with electricity, constitutes a barrier to entry by new electricity generators. Gas, which would be the fuel of choice for independent power producers, now must be purchased from a company which would be a competitor in electricity generation. The section on entry has shown that, even before this latest vertical integration, there has not been generation entry (other than small scale renewables) and that the primary complaints of the actual potential entrants—who chose not to enter—concerned gas supplies.

The vertical integration of the potentially competitive parts with the natural monopoly parts of these sectors creates barriers to entry and hampers competition. One way entry and competition are harmed is through high network access prices. Prices that exceed costs enable the vertically integrated utility to cross-subsidise their energy sales and charge energy prices that are lower than their costs. This drives unintegrated suppliers out of the market and even prevents more efficient generators or gas suppliers from entering.²¹ (The same mechanism is at work when the TSO procures high-priced balancing energy and other ancillary services that can only be provided by the incumbent but are paid for by all generators or all consumers.) Another way entry and competition are harmed is through discriminatory conduct. In the case of transmission and generation, this discrimination can be subtle, involving issues of information and timing, and thus difficult for an adjudicator to establish liability. While TSOs are exhorted in the Associations' Agreements to behave non-discriminatorily, discrimination is reported to persist. Both of these issues are discussed below.

The problems of vertical integration have been recognised, including by the Working Group on Competition Law in October 2002. Participants agreed that, from a competition policy point of view, a maximum degree of separation between network and supply should be achieved. A majority thought ownership separation would be desirable. [Bundeskartellamt 2002e]

Ownership separation is probably not achievable, and involuntary ownership separation would not be achievable for constitutional reasons, though lesser forms of separation could help. Without the option of ownership separation, it is unlikely that *incentives* to discriminate against unintegrated rivals, such as entrants would be, can be reduced. However, Germany has not yet made use of all the tools available to reduce the *ability* of integrated utilities to discriminate. Foremost among these is better accounting information to identify cross-subsidies. Hand in hand with this is having the supervisory capacity to detect cross-subsidies in the mass of accounting data. The third tool is greater separation of the networks from the potentially competitive activities so as to make cross-subsidies easier to detect and improper information flows more difficult. Separating transmission and supply businesses, both of electricity and of gas, would have the intention of reducing the flow of commercially sensitive information. Experience elsewhere shows the dangers to competition when commercially sensitive information about a customer, which is needed by the gas or electricity transmission provider, could become available to the rival supplier through communication internal to a firm.

The accounting rules in the Associations' Agreements are inadequate to establish the cost basis for access charges, or to ensure that there is not cross-subsidy of competitive or potentially competitive activities of generation and supply by the monopoly activities of transmission and distribution. The AAs explicitly state that pricing is based on *inter alia* "Annual financial statements according to commercial law, related to transmission and distribution activities." But, as a group of European telecommunications regulators point out, "Financial information prepared and published for regulatory purposes often differs significantly from other financial information prepared by companies for statutory or other purposes." They go on to say, "This information [regulatory accounts] will assist a [national regulatory authority] in carrying out its regulatory duties and functions as well as disclosing relevant information to a range of stakeholders (e.g. other industry operators, consumers, government, investors)." [Independent Regulators Group 2002, p. 4]

Box 9. Regulatory Accounting Guidelines

According to the Independent Regulators Group, a group of European telecommunications regulators, "The basis on which regulatory accounts are prepared require special regulatory rules as well as the application of generally accepted accounting practices."

"Regulatory accounting guidelines will normally refer to the following:

1. Regulatory accounting principles

These principles establish the key doctrines to be applied in the preparation of regulatory accounting information. They should include, *inter alia*, the principles of cost causality, objectivity, transparency and consistency.

2. Methods for attributing costs, revenues, assets and liabilities

A description of the attribution methodologies used to fully allocate revenues, costs, assets and liabilities.

3. Basis for transfer charging

A description of the basis used to transfer charge between disaggregated regulatory entities as required under accounting separation obligations. Typically this will prescribe methodologies for ensuring an operator charges itself on the same basis as other operators for similar services where there is a regulatory requirement to do so.

4. Accounting policies

These policies are those that follow the form used for the preparation of standard statutory accounts and will include, for example, details of fixed asset depreciation periods and the treatment of research and development costs. Where the regulatory accounts are prepared on a current cost basis then the basis on which assets are valued will be included as accounting policies.

5. Long run incremental cost methodologies

If LRIC applies, a description of the methodologies used to prepare long run incremental cost information. This description would also include details of the identification and treatment of shared or common costs as well as combinatorial tests.”

“Normally the preparer of the regulatory accounts would arrange the procurement of an independent audit opinion. The audit opinion and accompanying report has potentially high value in enhancing the quality, objectivity and credibility of the information presented. Users confidence and understanding of the financial statements is significantly enhanced by the presence of an independent audit.”

Source: Independent Regulators Group 2002.

Recommendation: The legal prohibition of cross-subsidy between network and non-network activities should be reinforced through separation of generation, transmission, distribution and supply—and for gas into transmission, distribution, storage, and supply— into separate companies with separate management, and active oversight by supervisory authorities who have no ownership interests. Regulatory accounting should be introduced within a reasonable time period.

Non-discriminatory network access and lack of cross-subsidy from the networks are not, however, sufficient for the development of effective competition. If network access or ancillary electricity services are not priced essentially at cost, then they impede competition and entry. This issue is addressed below.

The widespread vertical integration in the electricity and gas sectors dampens competition in the transactions between the local utility and their sources of electricity or gas supply. Consumers, particularly household consumers, are rarely switching away from their traditional supplier. Hence, the procurement choices made by the municipal utility largely determine which generation will supply households in the municipality’s territory.

- Partial or complete ownership by an upstream firm reduces incentives to purchase from a different, competing upstream firm.
 - If the upstream firm exercises control, then it has an incentive to, as it were, “buy from itself” even if it does not the lowest-priced offer to the local utility. It has this incentive because it will receive the rents both from the upstream and the downstream activities, whereas if the local utility bought from a different, competing upstream firm, then it would receive only the rents from the downstream activities.
 - If the upstream firm does not exercise control, the incentives remain similar. However, in this case, it must offer a price that at least meets the offer of any competitor. The upstream firm would have information advantages over its competitors, particularly if its board member(s) has information about characteristics of the local utility that influence the cost to supply, bid evaluation methodologies or competing bids.
- Partial or complete ownership by an upstream firm reduces incentives to compete to supply small and medium sized customers.
 - So long as the upstream firm exercises control of at least several local utilities, then it dampens competition with other local utilities in which it owns a stake, whether or not it exercises control. It has this incentive because less competition downstream is more profitable for the local utilities, increasing the benefits of ownership.

Some observers have already seen a negative effect on competition in gas and electricity of this widespread partial integration. In early 2003, the Chairman of the Board of Wintershall said that Wingas (the 65-35 Wintershall-Gazprom subsidiary) “has found that scarcely any privatised or partially privatised utilities are in the market as new customers.” [Wintershall AG 2003] This is the parallel of the critical view held by the Bundeskartellamt with respect to electricity. According to the Bundeskartellamt, “The pressure to compete for end customer business has fallen off considerably. ... [T]he increasing participation of large energy providers in municipal utilities prevents the development of a well-functioning competition structure in the electricity sector.” [Bundeskartellamt 2002a]

Whereas the Bundeskartellamt formerly assumed that 20% of ownership is the level below which decisive influence is not exercisable, the Bundeskartellamt has changed its policy on transactions which involve less than 20% of the shares. Even acquisitions of less than 20% will be examined by the Bundeskartellamt if one undertaking directly or indirectly exercises a competitively significant influence on the other undertaking. This is a welcome change. Especially in the energy sector with its growing vertical integration, even transactions below the threshold of 20% can strengthen a dominant position. One particular means by which the acquisition of holdings below 20% has had a competitively significant influence has been in procurement behaviour. There are reasons to expect that incentives to change procurement conduct, even at low levels of ownership, are strong. The absence of competition at the distribution level means that any excess cost can be largely passed onto consumers, and the profitability of procuring from the partly vertically integrated parent mean that the municipal utility will face incentives to buy from its partial parent. This withdraws demand, particularly that of small consumers, from the competitive market. Widely practiced, it reduces incentives to enter generation and supply in the electricity market, or supply in the gas sector, in turn reducing future competition directly as well as, immediately, liquidity. The Monopolkommission had earlier criticised partial vertical integration in the gas and electricity sectors, viewing such shareholdings as “classical means of securing sales over the long term; they involve advantageous information and have a discouraging effect on competitors.” The Commission recommends examining the vertical mergers not in isolation but as part of an overall strategy to discourage potential entrants. The Commission writes that, “In the view of the Monopolies Commission the doubt regarding competition raised by the holdings of association companies or their subsidiaries in downstream distribution companies are relevant for holdings below 20% as well.” [Monopolkommission 2003, para. 70*]

Recommendation: The Bundeskartellamt should continue to keep under review its lower limit on “decisive control” in light of the strong incentives of a vertically integrated utility to influence a partly-owned municipal utility to procure power or gas from its partial parent. It may be the case that “decisive control” would take on a different definition in the context of procurement of electricity or gas by a municipal utility than in other contexts.

Recommendation: The extent to which vertical integration, whether full or partial, may be undermining the efforts to create competitive markets should reviewed. If it is found that vertical integration is impeding the development of competitive markets, the Government should take steps to bring about the ownership separation of potentially competitive activities from natural monopoly activities.

4.2. Competition Effects of Access to Networks

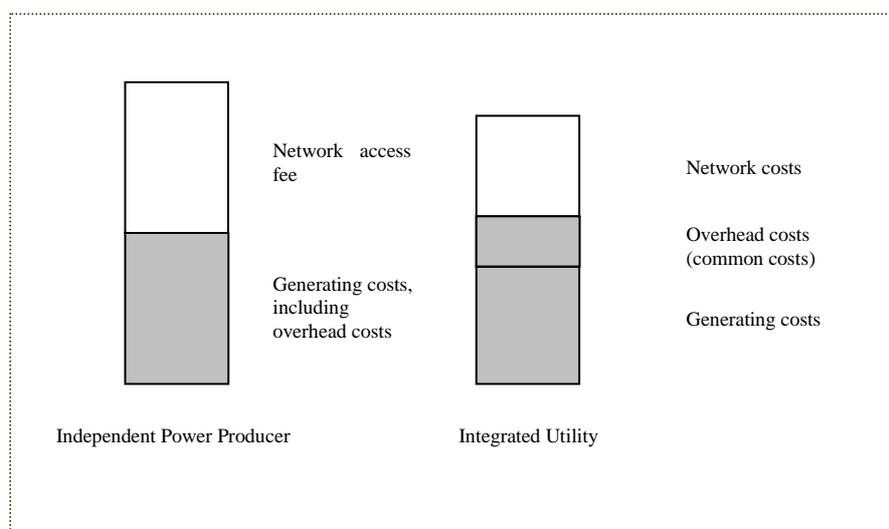
In Germany, high access fees have impeded competition. In August 2002, the President of the Bundeskartellamt said that “[F]ees for network use...currently constitute the main obstacle to effective competition in the electricity markets.” [BKartA 2002i] Competition is impeded in two ways. The first way is more important at the small consumer level. In Germany, network access fees and taxes constitute much

of the total electricity bill. Rival energy suppliers can differentiate themselves only over the non-network, non-tax portion of the bill. To the extent that consumers compare the fixed costs of switching suppliers to the fraction of the total energy bill, rather than to the value of potential savings, the high network fees and taxes reduce consumer switching. The second way in which competition is impeded is to discourage entry by generators.

Where incumbents are vertically integrated and entrants are not, as would be the case in Germany if there were entry, charging a high but non-discriminatory access fee keeps out efficient new competitors. Even if access fees are cost-based, attributing common costs to the monopoly part of a vertically-integrated business keeps out efficient competitors.

Figure 14 illustrates how, even if network access fees are cost-based, they can exclude lower-cost generators if the integrated utilities are able to attribute common costs to the monopoly (the grids). In this illustrative diagram, the unintegrated generator is assumed to have lower costs. But if the integrated generator can attribute to the grid those of its costs that are common both to generation and to the grid, then the access fee that the unintegrated generator must pay is high, and eliminates its cost advantage in generation.

Figure 14



High access fees, even when uniform, constitute a barrier to entry for unintegrated generators. If utilities each charge each other high prices, then the net effect for the integrated firms is close to a wash, but unintegrated entrants would pay the high prices. Further, the structure of uniformly charged access fees can be discriminatory. One study of transmission pricing in Germany showed that the pricing methodology in the AA is biased against customers who take power at the 110-kV level (i.e., small customers), against generators who must transmit energy over long distances or who do not have a large portfolio of generating plant, and against short-term or off-peak transactions. [aa, pp. 6-7]

Competition is also impeded by discriminatory access. Providing preferential access to the vertically integrated utility has the same effect as charging high access fees, making access less economically attractive and thus hindering or suppressing competition using the network. “Non-discrimination” is a key concept for the regulatory system. However, some market participants complain that “discrimination” is not clearly-defined. There is a perception that the Associations’ Agreements do not now ensure neutrality of the networks. Discrimination in Germany includes not confirming requests for network access, frequently changing communication procedures, and requiring customers whose demand exceeds

30 000 kWh/yr to use quarter-hour metering only if they change suppliers (but not for such customers who do not change suppliers). Another form of discrimination is slow communication at the supply level: consumer switching is impaired if they do not know, for two to three months, who their supplier is and if new suppliers do not have timely access to meter-reading data.

EnBW cites both fees and access as barriers to effective market competition. EnBW says that “[E]xcessive transmission charges and other network access conditions continue to hinder free competition.” [EnBW p. 29] Further, “EnBW has shown that, notwithstanding the legal requirement of complete opening of the market, significant competitive obstacles remain. This applies both to the opening of the network access and to network user charges. EnBW supports binding network access regulations and appropriate network user charges.” [*ibid.* p. 30] EnBW notes that, “As a competitive company, this deficiency [of a non-neutralised network] continued to be detrimental for EnBW in 2001.... An improvement is essential, if a standstill of competitive activities in Germany is to be avoided.” [*ibid.*, p. 14]

In addition to network access as such, there are a number of other natural monopolies in the electricity sector related to system operation. The Associations’ Agreement does not clearly specify how the costs and payments for certain ancillary services that are necessary for high-quality electricity services are to be determined. In addition, the way to allocate the cost of transmission losses is vague, “socialised” into the annual use of system charge.

Recommendation: Ensure that the prices of ancillary services reflect only the cost of efficient provision. While requiring competitive tenders is a good start, ensuring that they are truly competitive, with a number of participants, is also necessary. If the number of potential suppliers is too low, then economic regulation will be needed.

4.3. Negotiated Access versus Regulation

4.3.1. The German Position

The question of whether the energy policy objectives of secure, acceptably priced, and environmentally friendly electricity and gas supplies are better served by negotiated access to the infrastructure under the Associations’ Agreements, or by an independent regulatory agency, is perhaps the most important of this review of these sectors. The Associations’ Agreements have been the subject of much debate within Germany. The German Government and much of German industry believe that the question of regulated TPA versus negotiated TPA cannot be answered dogmatically. Energy security and environmental protection are not substantially affected by the access conditions.²² Hence, the focus is on which regulatory system allows market liberalization and effective competition to be achieved most efficiently, taking into account the learning and flexibility that can lead to ongoing improvement of the system. Particular indicators of market liberalisation and effective competition are the price of electricity and gas, the price of network access in electricity and gas, the number of third-party access agreements in electricity and gas, the level of entry by new competitors, and the readiness of consumers to switch suppliers. Indicators of effectiveness of regulation are the speed and comprehensiveness of the safeguards and whether those most likely to be harmed by ineffective regulation are content with the system.

Germany believes that the large number of legally distinct network operators in Germany renders *ex ante* and case-oriented regulation of, for example access charges, hardly possible from an organizational perspective. Consequently, the Bundeskartellamt disapproves of a sector-specific regulator. The BKartA is concerned that comprehensive state regulation of hundreds of electricity network operators would create an unwieldy and expensive bureaucracy, handicapped by an informational disadvantage relative to market than market participants. Instead, the BKartA favours negotiated network access supported by effective abuse control under competition law. [Bundeskartellamt 2002d]

The Associations' Agreements, with their voluntary rules on network access terms and conditions, form just two parts of the supervisory system. Other parts of the system include the federal and state cartel authorities, who have opened a few tens of investigations into pricing for network access and for other system operations-related services over the past two years. These investigations end if the fees are found not to be abusive or if the network operators have lowered their fees sufficiently, or the authorities may proceed with a prosecution for abuse of dominance. The cartel offices could also find other forms of conduct, beyond pricing, to be abusive, and parties who feel discriminated against can bring private suits under the ARC. Moreover, the competitive impacts of this system are reviewed on an ongoing basis by the Federal Ministry of Economics and Labour, including on the basis of comparing Germany's system with the competitive results of regulated systems.

Germany believes that a combination of sectoral self-regulation by means of the Associations' Agreement and case-related supervision by the cartel authorities and energy supervisory authorities, supplemented by TPA applicants' enforcement possibilities through the civil courts, is in keeping with the highly fragmented structure of the networks.

4.3.2. Prices, Network Access, Entry and Consumer Switching

As we have seen above, the price of natural gas in Germany for both industry and gas is relatively high. The price for electricity for industry is about the modal price among IEA countries, but for households is high.

Electricity network access fees are high and have not fallen much post-liberalisation. Tables 8 and 9 above show that access fees for distribution in Germany are very high as compared with those in other European countries, but for transmission are about in the middle amongst the other European countries. One estimate is that electricity access fees are about 30% too high. There seems not to be an estimate of how much higher are gas access fees than cost, but in 1998 the IEA wrote that, "The absence of competitive pressure in gas distribution means that costs, profits and prices to end users in continental Europe are likely to be higher than necessary." [IEA 1998b] Four years later, the IEA reports that, "The new entrants consider that the access tariffs are still too high." [IEA 2002a]

Only a very few third-party gas access contracts have been signed. In November 2002, there were about 170 separate contracts to supply gas in Germany. Usually, three or four contracts are required to supply each customer, so these 170 contracts represent at most 50 customers. (A different source provided an estimate of 230 separate contracts.) According to a survey carried out by the consulting company DRI-WEFA for the European Commission, the new entrants have experienced access difficulties. They consider the process to be too complex and access charges too high. They criticised both the system of negotiated third-party access and the absence of a regulator. [IEA 2002a] Critics of the gas Associations' Agreement include one of Germany's most successful new trading-suppliers, Potsdam-based natGAS. An official said that "[I]t will be almost impossible for industrial users to get a serious delivery offer for the coming gas year through the incumbent German network." [Platts 2002b]

As noted above, there has been no new entry—beyond renewables—into electricity generation since liberalisation. This might be due to excess capacity. However, this is correlated with relatively limited imports of electricity into Germany, when more would have been expected given the relatively high prices paid by households.

Consumers, as noted earlier, have switched suppliers at very low rates, both absolutely and as compared with consumers in other European Union Member States.

4.3.3. The Safeguards

The safeguards for the electricity and gas systems are slow and incomplete. It takes a long time for network access fees to be reduced under the current system. For example, the Bundeskartellamt initiated an investigation into 22 network companies charging abusively high network access fees in late September 2001 [BKartA 2001b]. While some of these utilities reduced their access fees by up to 20 per cent, the transition to the next stage, starting abuse proceedings against twelve of them, took place in late January 2002 [BKartA 2002g]. In May 2002, the Düsseldorf Higher Regional Court (OLG) issued a preliminary decision confirming that one of these companies was indeed obliged to hand over documents relating to network fee calculations to the BKartA. [BKartA 2002h] In late August 2002, the Bundeskartellamt warned the first of the ten utilities that it intended to prohibit it from demanding abusively high network access fees. [BKartA 2002i] In mid-December 2002, the Bundeskartellamt gave a similar warning to the second of the ten utilities. [BKartA 2002j] In February, the Bundeskartellamt formally decided that this utility, Thüringer Energie AG (TEAG) which belongs to the E.ON group of companies, charged abusively excessive fees for network use and ordered TEAG to reduce its network use fees to reduce its corresponding revenues approximately 10 %. The Bundeskartellamt declared this decision immediately enforceable. The decision is the first ruling on abusive practices issued by the Bundeskartellamt within the context of the ten formal abuse proceedings relating to excessive fees for network use initiated at the end of January 2002, and it was the first case in which the Bundeskartellamt used cost calculation to examine the company concerned. [BKartA 2003b] If a competition authority's decision on network use is appealed, the implementation of the authority's decision is suspended until the appeal is heard, a process that can take months or even years. For an electricity supplier, multiple years is too long to wait for the abusively high price of a key input to be reduced. By contrast, *ex ante* regulation would by definition be in place and be applied during the period of investigation, decision, appeal and final resolution. However, the April 2003 amendment of the Energy Industry Act and the Act against Restraints of Competition introduces important changes to the system such as legally determined immediate enforceability of the Bundeskartellamt's decisions. Other measures such as *ex ante* competences to determine methodologies used to calculate, e.g., network access fees will possibly be taken soon, when the new energy directives are implemented. Thereby, changes are being made or are in sight that are designed to significantly speed up the *ex post* system.

In the Associations' Agreements themselves, there are no effective sanctions for non-compliance. Under the current system, government pressure has been used to reach the Associations' Agreement. But government pressure may have neither the expertise to identify nor the capacity to focus its powers of persuasion on the underlying causes of individual undesirable outcomes within the AA framework.

4.3.4. Competition Dampening Provisions in the Associations' Agreements

The Associations' Agreements contain provisions that dampen competition. Among these are the requirement to avoid new transmission, the pricing frameworks including rates of return, and the term and timing limits on gas transmission contracts.

Fulfilment of the objective to avoid constructing new transmission wherever possible [Provision 1.8] will impede competition in the longer run. Competitive electricity markets require more transmission capacity than do highly-regulated electricity sectors because they use the grid in a new pattern. Even an unloaded transmission line can affect competition by making credible the threat of competition. At present, supply from abroad is unlikely due to the congestion on the international transmission connections. If the objective is to eliminate inefficient bypass, e.g., a large user constructing a direct line to the higher voltage network to avoid paying access charges for a lower voltage network, then the provision as written is too broad for this specific objective.

Recommendation: Modify the objective of avoiding new transmission lines in the Associations' Agreement to limit it to instances of inefficient by-pass. Transmission capacity is key for competition among generators, both domestically and internationally. It may be the case that, even without the AA-electricity's discouragement of new lines, transmission is difficult to get through the approval process. Measures should be taken to ease that process, which protecting sensitive environmental areas, so as to broaden the geographic scope for competition. This would be particularly important across national borders given the already existing foreign generating capacity.

The Associations' Agreement annexes appear to allow co-ordination of pricing, which would keep access fees high. As noted above, they specify pricing principles and rates of return, though to the extent that the accounting standards allow flexibility, they do not specify what would be called the regulatory rate base. Despite attempts to find the source of the rates of return specified in the AAs, they do not seem to be justified by any study of the rate of return on equity in German investments, nor a study of the riskiness of the businesses of electricity or gas transmission and distribution.²³ As noted earlier, the levels are high as compared with long-term returns on equity. If risk characteristics of network businesses are taken into account, the levels are yet higher on a risk-adjusted basis. As noted earlier, the independent regulator(s) should, under the EU directives, engage in a certain degree of ex ante evaluation of the value of the capital stock, an appropriate rate of return on that capital, taking into account the low risk nature of a regulated business, and an appropriate depreciation rate.

Recommendation: Whether the Associations' Agreements persist or not, ensure that the rates of return on equity reflect the rates obtainable in financial markets, adjusted for the risk of the network businesses.

In gas, competition is impeded by the very rules of the Associations' Agreement. Potential new entrants are obliged to purchase transport in a contract for a fixed flat volume during a year. However the customers being supplied will not have a flat demand profile. Indeed the difference between peak demand and the average is often considerable. This means that access to storage or a flexibility instrument is usually a necessary condition for new entrants to obtain effective network access. In addition, the policy of TSOs relating to balancing of the network over shorter periods is an important part of the conditions for network access. The Madrid Guidelines for Good Practice require TSOs to offer "short-term on-demand" services. The gas Association' Agreement rule that gas transport capacity be contracted for one year or multiples of one year, and to begin on one of two days each year, means that a new entrant cannot switch between gas sources and can contract with new customers only twice per year.

Recommendation: Ensure that flexible contracts for gas supply are feasible. Such flexible supply contracts are necessary both to enable consumer switching—a key aspect of a competitive market—and to enable “hubs” or markets to get established.

4.3.5. Are There Too Many Utilities to Regulate?

The key concern that has been expressed is that there are too many utilities to regulate. Three other G-7 countries never nationalised, and thus never consolidated, their electricity sectors, Canada, Japan, and the United States. In both Canada and Japan, there are only about a dozen electric utilities. In the US there are approximately 5000 electric utilities. These are subject to economic regulation of at least their network businesses by independent regulatory authorities at the state level, and certain aspects of the sector are regulated at the federal level. It is indeed feasible to regulate a large number of utilities. In the United States, access terms are negotiated within a framework of Federal Energy Regulatory Commission rules that strongly presume in favour of non-discriminatory access and an institutional structure to police them. At the same time, the Sherman Act threatens ruinous damages, even after discounting for the delay and uncertainty of private litigation, especially against egregious conduct.

Once the feasibility is established, one question is whether the direct cost of regulating hundreds of networks is more expensive than the cost of negotiating access among hundreds of networks, plus the efficiency cost of charging monopoly access fees rather than economically efficient access fees. Leaving aside, for now, the latter cost, any supplier has to negotiate network access with each of the networks in which the supplier has a customer taking power off the grid. Negotiation is neither costless nor instant. In other words, the direct costs of regulation may well be lower than the direct costs of negotiation. Despite the importance of this comparison of direct costs to the German debate, there does not appear to have been a study of the direct costs of negotiating access.

Added to the direct costs of negotiated or imposed access terms must be the cost of efficiency losses when access fees do not reflect costs but instead reflect market power. If there are distributional objectives in economic policies, the distributional effects of high access fees paid by small consumers need to be added as well. In other words, if a regulatory authority would impose a lower access fee than users and network owners negotiate, then at least the welfare gain (or, conceivable, loss) due to the lower price needs to be weighed in the comparison of systems and perhaps the transfers from consumers to monopoly as well.

4.3.6. The Evaluation of Regulatory Systems

Economic theory provides a framework for assessing the choice of how to regulate a sector. “[A]ny analysis of the choice of regulatory instruments begins with the assumption that the overlap between private incentives and social goals is incomplete.” [Conglianese and Lazer 2002, p. 13] Beyond the obvious point that enterprises with market power seek their own profits rather than “social goods,” they also have no incentives to reveal their superior knowledge. The choice of regulatory instrument depends on which instrument achieves societal objectives, taking into account the transactions costs of the alternative instruments. Transaction costs in this context means the costs to the government and to the enterprises of selecting and implementing an effective rule, such as the costs of research, analysis, monitoring, and enforcement. The key question is whether government can take advantage of the lower relative costs that private actors face so that the net social benefits would be higher than under alternative regulatory approaches.

The Australian Office of Regulation Review published a checklist to help identify when self-regulation, while companies remain subject to the competition law, would be appropriate.

Box 10. Commonwealth Office of Regulation Review's Regulatory Impact Statement checklist

Self-regulation should be considered where:

- there is no strong public interest concern, in particular, no major public health and safety concern;
- the problem is a low risk event, of low impact/significance, in other words the consequences of self-regulation failing to resolve a specific problem are small; and
- the problem can be fixed by the market itself, in other words there is an incentive for individuals and groups to develop and comply with self-regulatory arrangements (e.g. for industry survival, or to gain a market advantage).

In addition, for self-regulatory industry schemes, the checklist determines success factors to include:

- presence of a viable industry association;
- adequate coverage of the industry by the industry association;
- cohesive industry with like minded/motivated participants committed to achieving the goals;
- voluntary participation - effective sanctions and incentives can be applied, with low scope for the benefits being shared with non-participants; and
- cost advantages from tailor-made solutions and less formal mechanisms such as access to quick complaints handling and redress mechanisms

Source: Office of Regulation Review (Australia) 1998.

Several of these points indicate that the German electricity and gas sectors would be unsuitable candidates for self regulation.²⁴ With respect to the first two points, since several million Euros are affected by the regulation of the German electricity and gas, then self-regulation would not be considered to be appropriate. With respect to the third point, since interests are not aligned—consumers want lower prices and sellers higher prices—this also means self-regulation would not be appropriate under this checklist. (The sense of the checklist is that incentives to develop and comply with the self-regulatory arrangements may be sufficient if the market would disappear absent regulation.)

The Bundeskartellamt has already taken on some of the characteristics of an independent regulatory authority, but with insufficient powers to fulfil that role.

- It has the right to demand cost information.²⁵
- It decides which costs are allowed.²⁶
- The Bundeskartellamt cannot demand information other than within the course of an investigation. Thus, the cost information for “well-behaved” utilities is not available except on a voluntary basis. Further, the comparisons are necessarily limited to only one or a few utilities, rather than to a statistically significant sample of utilities.
- After the RWE-VEW, VEBA-VIAG into E.ON, and E.ON-Ruhrgas mergers, the scope for the Bundeskartellamt to bargain, that is, to use its power to credibly threaten to block dominance-creating or –strengthening mergers in return for regulatory improvements seems to have been exhausted.

Box 11. Is Australia an Example for Germany?

Australia is sometimes cited as an example where there is self-regulation of the electricity and gas sectors. However, the contrasts with the German regulatory structure are greater than the similarities. In Australia, there is significant self-regulation in the electricity, gas, and telecommunications sectors. However, in contrast to the German system, the Australian Competition and Consumer Commission has an active role, sufficiently so that the regime is called "co-regulation." There is a National Electricity Code and a National Gas Code, both developed with active participation by the ACCC, consumer groups, and the industry. (Small users came in late to the negotiating process, but the ACCC approved a mechanism to fund user groups to hire consultants and therefore become informed and active participants. The funding mechanism is essentially a tax on electricity.) In electricity, the ACCC accepts the access code, which governs access, including price principles,²⁷ to transmission grids and distribution networks, under Part IIIA of the Trade Practices Act, authorises the market rules under Part VII of the Act, and regulates network pricing for the transmission businesses. In gas, the ACCC is the regulator for gas transmission pipelines in all of Australia (except one state) and for transmission and distribution pipelines in one territory. As the regulator, the ACCC *inter alia* assesses proposed pipeline access arrangements; monitors and enforces reference tariffs, ring-fencing, incentive regulation and other access arrangement provisions; and arbitrates access disputes. The ACCC also regulates both industries through the general merger, anti-competitive conduct and consumer protection provisions of the Trade Practices Act. Indeed, the ACCC has found that, while in certain circumstances, industry can be left alone to regulate behaviour, "it is important that the appropriate regulator is both seen to be and actually underwriting compliance with the codes through necessary enforcement action." [Australian Competition and Consumer Commission 2000, p. 21.]

The key formal arrangement for self-regulatory schemes under the Australian competition act is authorisation, but the ACCC also engages in regular review of self-regulation arrangements, has its own staff on code-related bodies, and requires regular monitoring and reporting. In addition, where there is blatant disregard or systematic breaches of the competition act, then the ACCC is willing to use its enforcement powers. [ibid., p. 22]

A number of voices in Germany have called for the establishment of an independent regulatory authority for electricity and gas.

The Monopoly Commission (*Monopolkommission*) sees a need to set up a multi-sector regulatory body to provide *ex ante* regulation of access for network-based industries such as telecommunications, postal services, electricity, gas and railways. In its 2002 report on the state of competition in Germany, "Network Competition Through Regulation," the Monopoly Commission highlighted the continuing lack of competition in many industry sectors, but in particular in network-based industries. The Commission said that experience had shown that providing access to networks was the decisive factor in creating competition in markets where monopoly conditions once prevailed. The chairman of the Monopoly Commission argued that it is of little use to companies to be guaranteed network access if it is left up to the monopolists to decide at what prices access is provided. "It has become apparent that we are dealing with natural monopolies," he said, explaining that it would make no economic sense for parallel networks to be developed. [Handelsblatt 2002b] The Monopoly Commission finds that "fixing sectoral tariffs, as in the electricity and gas association agreements, does not lead to a solution that is compatible with competition either." [Monopolkommission 2003, para. 122*] The Commission goes on to express a preference for *ex ante* regulation of network access to abuse control, since the problems of network access determine whether competition can function in the entire sector. [ibid., paras. 124*-125*]

In addition, EnBW has called for an independent regulatory authority for electricity and gas. It cites the need for the network to be operated neutrally and the risk that competition would come to a standstill. However, the system of negotiated third party access is favoured by the other incumbents.

4.3.7. An Independent Regulator

The existing regulatory system has been in place since 1998. Many indicators show that competition is not developing, despite its promising start—in electricity at least—in 1999. It is time to adapt the German system to the new circumstances, to create an environment where competition will more readily develop. The adaptation of the system will not resolve all these problems overnight. It will be costly both for the industry and the administration to adjust to a new system and to work out its kinks.

The various economic regulators in the United Kingdom provide examples of how Germany might adapt its system. They are each independent from the sectors they regulate, have obligations to promote efficiency and competition, and protect the interests of consumers (meaning here both natural persons and commercial consumers) and of the suppliers. A summary is provided in the table below. Of particular interest in the German context is how each of these are “independent regulators” but their objectives and powers differ.

Table 11. The Statutory Duties of Economic Regulators of the United Kingdom

	OFTEL	OFWAT	OFEGEM (gas)	OFGEM (electricity)
Consumer interests	Promote the interests of consumers, purchasers and other users of telecommunication services	Act in a manner best calculated to ensure that the interests of every person who is a customer or potential customer of a company are protected as respects the fixing and recovery of water and drainage charges, and other terms and quality of services	Protect the interests of consumers in relation to gas conveyed through pipes	Protect the interests of consumers in relation to electricity conveyed by distribution systems
Financing activities	Secure that providers of telecommunication services are able to finance those services	Act in a manner that the Director considers is best calculated to ensure that companies can finance the proper carrying out of the functions of water undertakers	Secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under (the Act)	Secure that licence holders are able to finance the activities which are the subject of obligations imposed by or under (the Act)
Effective competition	Maintain and promote effective competition between persons engaged in commercial activities connected with telecommunications	Act in a manner best calculated to facilitate effective competition between persons holding or seeking appointments	Promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas so conveyed	Promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission, distribution or supply of electricity

	OFTEL	OFWAT	OFEGEM (gas)	OFEGEM (electricity)
Efficiency	Promote efficiency and economy on the part of persons (engaged in commercial activities connected with telecommunications)	Act in a manner best calculated to promote economy and efficiency on the part of any such company in the carrying out of the functions of a relevant undertaker	Promote efficiency and economy on the part of persons authorised by licences or exemptions to carry on any activity, and the efficient use of gas conveyed through pipes	Promote efficiency and economy on the part of persons authorised by licences or exemptions to transmit, distribute or supply electricity and the efficient use of electricity conveyed by distribution systems
Universal supply/coverage	Secure the provision throughout the United Kingdom of telecommunication services which satisfy all reasonable demands	Act in a manner best calculated to ensure that the functions of a water undertaker and of a sewerage undertaker are properly carried out as respects every area of England and Wales	Secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met	Secure that all reasonable demands for electricity are met

Source: National Audit Office (2002).

Recommendation: An independent regulatory authority, at least for electricity and gas, should be established. It should reflect the good practices that have been established amongst regulatory authorities, including independence, adequate resources, adequate powers, clear objectives, and accountable to the legislature. *The regulator should have the power to inspect regulatory accounts upon request, and not only in the context of a specific case. Given the incentives of regulated firms to exaggerate costs, as contrasted with the independent regulator's incentive to gain status as a professional and politically neutral player, the burden of proof on cost calculations and justification of costs for a network should be reversed. The regulator should be sufficiently well-provisioned to ensure adherence to the law. The regulator should be funded directly from the federal budget so as to ensure that there are no conflicts of interest between ownership and regulation.*

The introduction of an independent regulator would still permit substantial input and even negotiation by the energy industry. In many countries, where a monopoly is expected to persist, economic regulation by government is imposed to reduce prices below the monopoly level. Typically, the regulatory agency periodically collects information and opinions from all those affected, or who believe they are affected, in public hearings and in response to public requests for information. Then the regulatory agency renders a reasoned decision about how the economic regulation will be applied over the next period. Obviously, those persons who have a greater economic interest in the decisions of the regulatory agency put more resources into participating in the public processes than do those persons who have a smaller economic interest. Nevertheless, even those with a small economic interest can participate in the public process. A regulatory agency, operating transparently to fulfil objectives established by statute, independent of the parties being regulated and insulated from day-to-day political pressures, and adequately resourced to gather information independently of the parties being regulated, is seen in many countries as the best way to preserve the rights of all and to render regulation that promotes the objectives set out by Parliament.

Recommendation: Access to the electricity and gas infrastructure, and prices of related monopolies, should be subject to cost-based price-cap regulation by an independent regulatory authority.

Recommendation: If the Associations' Agreement approach persists, ensure that the consumers' organizations can strongly participate, while at the same time not reduce their rights to sue under the Act against Restraints of Competition. Facing monopolists, consumers do not have a strong bargaining position. Information, including access to independent expert advice and studies of German and foreign electricity and gas sectors, can provide consumers with arguments to make the German markets more competitive and the outcomes more favourable for consumers. Thus, ensure that consumers organisations have the funding they need to participate in a well-informed, timely manner. This may require a fee, acting as a tax, on small electricity and gas consumers. The fundamentally weak bargaining position of the consumers' organisation vis-à-vis monopolists cannot be addressed with information.

Box 12. Where Should the Independent Regulator be Placed and Single- v. Multi-Sector?

The choice about whether access regulation is better performed by a competition agency or by a sector regulator is not clear. The answer depends on a complex mix of comparative advantage and synergy issues. It is also heavily influenced by a country's general legal framework and regulatory history. Hence the "optimal" solution could certainly vary from country to country and even across industries within the same country.

The objective of access regulation is to promote as well as protect competition in certain situations where access to a portion of a vertically integrated incumbent firm's assets is vital to the development of a satisfactory level of competition. On the one hand, because of experience with abuse of dominance cases, competition agencies are more suited to performing this task than are sector regulators. On the other hand, ensuring a level playing field requires processing a large volume of cost data in order to set access terms, and then following up with continuous monitoring to ensure compliance with those terms. These are functions that seem more in tune with what sector regulators normally do.

Although both sector-specific regulators and competition agencies should presumably be able to hire appropriate expertise, the experience and institutional cultural differences between them are not so quickly and easily eradicated. Moreover there is a significant risk that trying to change or mix institutional cultures could compromise abilities to perform core functions. Five aspects of experience and institutional culture seem particularly important. First, sector regulators are often charged with attenuating the effects of market power, whereas competition agencies basically focus on reducing such power. This tends to produce quite different views on the extent to which market power can be managed for the public good. Second, sector regulators typically impose and monitor various behavioural conditions whereas competition agencies are more likely to opt for structural remedies. Third, sector regulators generally apply an *ex ante* prescriptive approach while competition offices, except in merger review, apply an *ex post* enforcement approach. Fourth, sector regulators typically intervene more frequently and require a continual flow of information from regulated entities, while competition offices rely more on complaints and gather information only when necessary in connection with possible enforcement action. Finally, sector regulators are typically assigned a considerably broader range of goals than competition agencies are asked to pursue, so they may become more adept at trading off conflicting goals.

Assigning competition protection to competition agencies and economic regulation to sector regulators, as static comparative advantage considerations might suggest, means that important synergies might be lost. Synergies exist between competition protection and economic regulation and also between both of those functions and access regulation. They arise largely because the same staff expertise can be applied to a number of related problems, and because combining several policy instruments in the same agency increases the chances that they will always be used in tandem rather than sometimes at cross purposes.

General, economy-wide agencies are more immune to regulatory capture than sector-specific regulators. The desire to avoid distorting competition through subjecting competitors to very different regulatory regimes also works in favour of general as opposed to sector-specific agencies, as does a closely related legal certainty argument. Wherever there is sector-specific regulation there will be a need to define jurisdictional boundaries among regulators and this will create legal expenses, delay and uncertainty. None of these problems arise where regulation is carried out either by a general competition agency or a multi-sector regulator. It can be noted in this context that the Monopolkommission has endorsed a multi-sector regulatory authority.

Source: Adapted from OECD 1999.

4.4. The Enforcement of the Act against Restraints of Competition

The enforcement of the ARC in the electricity and gas sectors has been non-stop. Things were slow to get started, with the first enforcement action against denial of network access in the energy sector (Wingas wanted access to VNG's gas pipeline) only in 1992. There had been earlier abuse of dominance cases concerning, e.g., the level of tariffs in the gas sector. The pace has stepped up considerably, an acceleration that may be attributed to the establishment, in summer 2001, of a new Decision Unit for the electricity sector. A second decision unit for gas is planned.

The Bundeskartellamt has been commendably open about its learning from experience, notably modifying its doctrines as it has observed how the German electricity and gas markets actually work in practice. One example of this is updating its views on the competitive role of a third vertically integrated utility. In 2000, the creation of what is now Vattenfall Europe was expected to provide competitive pressure on E.ON and RWE. But, in early 2002, the Bundeskartellamt president would say, "Until now no companies which could be expected to effectively limit RWE's and E.ON's scope of action have been able to establish themselves in the electricity markets. Today we must therefore assume that RWE and E.ON occupy a joint dominant position in the German electricity markets." [Bundeskartellamt 2002a] A second but related revision of doctrine was the changing geographic scope of markets for wholesale and retail electricity. After the 1998 liberalisation, both were viewed as national in scope. Subsequent, post-liberalisation observation has prompted a return to using regional markets for retail electricity. Both of these are examples of marrying empirical observation with theory to provide a rational basis for enforcement.

Recommendation: Ensure that the authorities with responsibilities for the electricity and gas sectors have sufficient resources to fund empirical studies of the sectors. The Bundeskartellamt has demonstrated the value of empirical studies. To date, the Bundeskartellamt has been dependent on the Federal Ministry for Economics and Labour for funding studies. Such a financial dependency could reduce the independence of the authority.

4.4.1. Abuse of Dominance

Enforcement in these sectors focuses on abuse of dominance and mergers. The Bundeskartellamt has addressed abusive denial of access in both gas (Wingas-VNG) and electricity (Bewag). However, outright denial of access is uncommon. Most abuse proceedings have centred on abusively high prices for electricity network access, balancing energy and metering services, and others on discounting and long-term contracts.

In mid-2001, the cartel offices in three *Länder* had open investigations in the electricity sector, and formal abuse proceedings had begun in one case in a fourth *Land*. Simultaneously, the Bundeskartellamt announced it had opened investigations against 22 electricity network operators on suspicion of their charging abusively excessive fees for network use and of impeding other electricity providers. [Bundeskartellamt 2001b] Of these 22, abuse proceedings were initiated in 2002 against twelve. In 2001, the Bundeskartellamt initiated abuse proceedings against four electricity network operators on suspicion of their charging abusive fees for balancing energy. After the utilities concerned had committed themselves to introducing a tender system for procuring balancing energy, these proceedings were discontinued. [Bundeskartellamt 2001c] However, in the meantime the Bundeskartellamt has initiated new abuse proceedings against E.ON and RWE on account of excessive fees for balancing energy. Other proceedings have involved suspicions that three utilities were charging excessive fees for metering and billing to load profiled customers. [Bundeskartellamt 2002f] In February 2003, the Bundeskartellamt took a formal decision that the fees RWE Net AG charged for metering and billing services abusively excessive. Under the decision, RWE had to lower its charges by 36.4 % to 48 %, depending on the service. [Bundeskartellamt 2003a].

The legal criteria for assessing network use fees and other barriers to network access were defined in a 2001 report by a working group composed of the Bundeskartellamt and the Länder cartel authorities [Arbeitsgruppe Netznutzung Strom der Kartellbehörden des Bundes und der Länder 2001]. The report, intended to facilitate law enforcement in the electricity sector, was a response to the repetitive disputes as to whether practices are compatible with the energy and cartel laws.

Current enforcement practice to determine whether prices are abusively high is to compare prices in one (high-priced) market with prices in a market that is similar in the relevant dimensions. Under the law, the comparison is to the price (or other business terms) “which would very likely arise if effective competition existed; in this context, particularly the conduct of undertakings in comparable markets where effective competition prevails shall be taken into account.” The “effective competition” requirement is very important. Imagine that the comparand market is served by a private, unregulated monopoly. Its prices would be distinctly higher than those prevailing under effective competition, as pricing above the competitive level is profitable. Comparing the prices of two private, unregulated monopolies (in two separate markets, of course) reveals the effect of differences in corporate governance, information, accounting methods, costs, demand characteristics, and all the other elements that go into making pricing decisions. But the differences revealed do not include difference due to monopoly rather than competition.²⁸

There are no transmission or distribution services markets with effective competition. It is conceivable that franchise competition could reveal information about competitive pricing in transmission or distribution, but such franchise competitions have not been held.

The comparable market methodology is intended to identify the level prices would be if a dominant firm were to behave “as if” it were in a competitive market by looking at an actual competitive market. But this methodology breaks down when the comparand market is monopolised, or market participants in the compared market influence the comparand market. In the case of German electricity and gas, both of these sources of failure are present. The networks are monopolies over any given area. The small number of independent network owners and the Associations’ Agreements eliminate the independence of the network access markets. Thus, the comparable market methodology breaks down in the context of German electricity and gas network access markets. The Monopoly Commission has noted, “It became evident in the course of these investigations [of 22 network operators in 2001] that the comparable market concept primarily used by the Bundeskartellamt to check charges for the use of networks has its limits and needs to be supplemented by cost-oriented price control.” [Monopolkommission 2003, para. 62*]

In 2002, the Düsseldorf Higher Regional Court expressly confirmed (in WuW DE-R 914 “Netznutzungsentgelte”) that the Bundeskartellamt may also apply cost control in addition to the comparative market concept. The Bundeskartellamt applied cost control in its decision against excessive network access fees in February 2003. While in principle this improves the competition authorities’ instruments of investigation and establishing evidence, the practical implications are less clear given staffing levels and information constraints. Citation of the decision:

While the Bundeskartellamt has been asked to address discriminatory conduct in electricity or gas network access, and has examined these cases, it has not initiated any formal proceedings.

4.4.2. Mergers

The Bundeskartellamt frequently negotiates remedies to competition problems created by mergers in the electricity and gas sectors. The Bundeskartellamt has seen the purchase of regional and municipal suppliers by E.ON and RWE (strategy which is paralleled by EnBW and to lesser extent Vattenfall) as increasing E.ON and RWE's dominance. The BKartA position is that these mergers are anticompetitive unless other measures are taken. Examples of such measures are selling off other interests in regional suppliers, releasing access to networks for long-term customers, and opening up networks for foreign producers or suppliers. Another approach has been to limit the share of the capital purchased to below 20%, where it is much more difficult to show "substantial influence."

Box 13. The E.ON/Ruhrgas Saga

The **takeover** of Ruhrgas by E.ON was characterised by Handelsblatt as "one of the most controversial deals in Germany's corporate history." [Handelsblatt 2002a]

The E.ON-Ruhrgas merger was a series of transactions by which E.ON bought out other companies' stakes in Ruhrgas.

- E.ON swaps Veba Oel for BP's 25.5% stake in Ruhrgas; approved by the Bundeskartellamt 20 December 2001, subject to some divestitures related to oil refining, petrol stations and jet fuel sales.
- E.ON buys ThyssenKrupp's 4.7% stake in Ruhrgas; approved by the Bundeskartellamt on 21 January 2002.
- E.ON agrees to buy Vodafone and RWE's shares of Bergemann GmbH's 59.76% share of Ruhrgas on 14 November 2001. This was rejected by the Bundeskartellamt on 17 January 2002, and again on 26 February 2002, but over-ridden by the Ministry.
- In May 2002 E.ON and RAG Aktiengesellschaft agreed a transaction in which E.ON would get RAG's 18.4% stake in Ruhrgas and RAG would get a majority shareholding in Degussa, a chemical company. This transaction, along with the earlier transactions, gave E.ON a majority stake in Ruhrgas.
- On 3 July 2002, E.ON announced its purchase of the outstanding 40% of Ruhrgas held indirectly by ExxonMobil, Shell and Preussag.

The **Bundeskartellamt** rejected the proposed merger in January and February 2002, concerned about the anti-competitive effects of the vertical integration of Ruhrgas's gas import contracts and high-pressure pipelines with E.ON's regional and municipal gas distribution and electricity generation and grid businesses. The Bundeskartellamt estimated that 20% of gas sales could be foreclosed. The Bundeskartellamt feared that the merged firm would discriminate against new entrants in the electricity generation and supply markets, by offering anticompetitive terms for gas transport and supply. In addition, the Bundeskartellamt feared that competition would be directly harmed where E.ON affiliates and Ruhrgas affiliates compete directly, such as Hannover (for final consumers), and Ruhrgas's and VNG transmission areas (large gas consumers and municipal utilities). In addition, the Bundeskartellamt feared that competition would be directly harmed where E.ON affiliates and Ruhrgas affiliates compete directly for final customers, large gas consumers and municipal utilities, e.g. where Ruhrgas' transmission areas and E.ON's areas of supply overlap.

The **Minister for Consumer Affairs** warned that the takeover would harm consumers.

Monopoly Commission was asked to make a recommendation to the German Economics Minister. The Commission recommended that ministerial clearance be refused. The commission warned that the deal would have significant effects on competition, and that it "could endanger the success of liberalization and therefore oppose the government's aim of a working, competitive market." The Commission rejected E.ON's arguments that the harm to competition would be outweighed by:

- increasing security of supply through creation of a national champion
- improving international competitiveness of E.ON-Ruhrgas
- creating and safeguarding employment in the sector
- support in attaining environmental goals.

The Monopoly Commission questioned whether security of supply would be enhanced by reducing diversity of supply.

The **German Economics Minister's override** was exercised. Controversially, the override was exercised by a secretary of state because the Minister was too closely connected to one of the parties. After holding hearings, from which consumer interests groups were excluded, despite applying to be heard and pointing out their estimates of a 10% gas price increase as a result of the merger, because the Ministry did not view them as sufficiently affected parties- which was later confirmed by Court decision-, the Ministry found E.ON's arguments for a "national champion" for supply security and for improving international competitiveness persuasive. The decision acknowledges that the negative effect on competition is immediate whereas security of supply and international competitiveness are *future* concerns that *might* arise if certain market developments occur.

Conditions were imposed. Five major assets must be sold: (1) E.ON and Ruhrgas' stakes (totalling 42.1%) in Verbundnetz Gas AG in eastern Germany, (2) E.ON's 27.4% stake in EWE, (3) E.ON's 80.5% stake in gas and water utility Gelsenwasser AG; (4) E.ON and Ruhrgas' stakes of 33.3% in Stadtwerke Bremen and (5) E.ON and Ruhrgas' stakes of 44.02% in Bayerngas. Bayerngas supplies about 66% of Bavaria's gas demand. [Handelsblatt 2002a] Ruhrgas also had to auction off 7.5-bil cu m/yr to competitors (about 2.6% of annual German gas sales), and allow regional distributors to reduce their purchases to 80% of their total gas requirements. Ruhrgas had to engage in some legal unbundling. Finally, the Ministry imposed the condition that E.ON must sell its stake in Ruhrgas if (1) another company gets a majority of voting rights or capital in E.ON and (2) there is reason to think that such a move would be "contrary to Germany's energy policies." (This poison pill will help protect against hostile takeovers.) E.ON could keep its share in Thuga and Heingas, strong retailers.

The **Düsseldorf Higher Regional Court** blocked, on 13 July 2002, E.ON's takeover of Ruhrgas, saying it had "serious doubts" as to whether the Economics Ministry had the power to approve the deal. E.ON reached out-of-court settlements with nine complainants just before a court ruling in February 2003.

The **Bundeskartellamt** began investigations of those out-of-court settlements, centring on asset swaps agreed with EnBW and Finnish group Fortum, in February 2003.

4.4.3. Review of the Associations' Agreements

The Bundeskartellamt has also reviewed the Associations' Agreements in electricity and gas. The Bundeskartellamt issued a letter regarding the first Associations' Agreement in electricity, saying the BKartA had reservations but would suspend them. AA-II was the subject of another letter from the BKartA which could be interpreted as approved, and a letter from the European Commission indicated AA-II was not contrary to competition law. No letter has yet been received regarding AA-II-plus, but the Bundeskartellamt made it clear that it would tolerate the AAs despite doubts as to the compliance with competition law. However, the AAs cannot exempt companies from competition oversight (especially abuse control) under the ARC.

4.4.4. Resources and Powers

Resources devoted to competition enforcement in the electricity and gas sectors have increased over the past few years, but remain limited. According to the Bundeskartellamt, the 2001 working group report also shows "that a comprehensive assessment of the fees for network use and obstructive practices of the approximately 800 existing network operators is impossible due to the current staffing situation at the

Bundeskartellamt and the Länder authorities. Without staff reinforcements, they have to limit their work to representative proceedings. The situation would be exacerbated if monitoring network-use fees under cartel law made the introduction of cost control indispensable.” [Bundeskartellamt 2001] The electricity Decision Unit, established after this comment, has 10 staff. To these need to be added the staff of the energy supervisory authorities of the Länder who, as noted above, are responsible for the control the prices charged “tariff customers” (those who take power at low voltages or gas at low pressures) and the competition authorities in the Länder, who enforce the Act against Restraints of Competition where the offence is limited to a single Land.

Recommendation: Increase the resources devoted to the regulation and oversight of the electricity and gas sectors.

A significant limit to the effectiveness of the Bundeskartellamt in eliminating abusive pricing in network access is its access to information. The Bundeskartellamt may demand information by means of a formal request for information, and it may make informal enquiries that are non-binding and do not place any obligations on the companies concerned. To make a formal request for information, the Bundeskartellamt must have a concrete suspicion of a violation of the ARC. A request for information constitutes an administrative act. This implies that a Decision Unit must take a formal decision that must contain a statement of reasons and be served upon those concerned together with advice as to the available legal remedies. This contrasts with the information available to a regulatory authority who may demand access to the regulatory accounts of the firms it regulates.

Recommendation: Within the constraints of the German legal system, increase the information and the powers to gather information available to the regulator of the electricity and gas sectors.

Finally, the Bundeskartellamt’s decisions are suspended when they are appealed, until the court has decided or the court makes an interim decision. Recently adopted amendments make the Bundeskartellamt’s decisions immediately enforceable.

4.5. *Environmental Objectives*

The energy sectors have a significant effect on the environment. Regulatory reform and the introduction of competition raise both challenges and opportunities. To fit the new framework, environmental regulation should shift toward being more transparent and incentive-based, rather than a matter of direct control. Here, we will bypass a discussion of taxes, fees and direct subsidies and focus on one main market-related type of environmental economic regulation in Germany, the requirement that any general supply company purchase renewables-generated power at specified prices. Interestingly, the VEAG obligation to use a certain amount of lignite to generate electricity is almost a mirror image of the renewables obligation, so would have a similar economic analysis.

The general supply electricity companies must purchase renewables-generated electricity, in any quantity, at fixed feed-in tariffs. These tariffs are specified in the Act on Renewable Energies, EEG (Erneuerbare-Energien-Gesetz). This implies that, if a firm could generate electricity using renewables at any total cost below the specified price, then it would have incentives to do so. But consider the greater incentives for efficiency if the general supply companies held auctions to supply specified quantities of renewables energy, and that quantity was set equal to the quantity now supplied. Then each potential supplier would have incentives to reduce costs to be among the winners, supplementing their current incentives to reduce costs to become more profitable. Second, this would, in general, mean that the price paid by the general supply companies would fall. Even better would be auctions that extended across all general supply companies, then only the most efficient would become suppliers of renewables generated

electricity. This is precisely what a market in “green” certificates delivers. An economic evaluation of these two means of inducing “green” generation would take into account both this efficiency result and transactions costs.

A “green” certificates market implies that a specified quantity of “green” electricity is generated and consumed, and the tradeable feature means that the most efficient “green” generation is used. Finally, some consumers may be willing to pay extra in order to increase the quantity of “green” electricity generated. This could imply that final consumers, and not only the general supply electricity companies, would be demanders of green certificates.

Recommendation: Germany should review whether alternative arrangements would achieve greater use of renewables generation at lower cost. Several other European countries have implemented alternative arrangements, such as “green” certificates trading, and could be a source of empirical information about arrangements to reduce the cost of “green” generation as well as least cost means of introducing new arrangements.

4.6. *Regulatory Impact Analysis of “Political” Decisions*

Regulatory Impact Analysis (RIA) is a structured means to evaluate the economic impact of policy decisions which has been endorsed by the OECD Council. RIA, or at least a structured benefit-cost analysis, can help identify the most cost-effective means of achieving policy goals. Given the importance of economic efficiency in the triad of policy objectives for the energy sector, along with environmental protection and security of supply, RIA would seem to be an important input into decision-making. Three energy policies may benefit from the application of RIA.

- Domestic hard coal mining receives direct albeit declining subsidies. Coal is subsidised to further energy security as well as social, regional and employment policy objectives. The IEA does not consider the indefinite subsidies necessary for energy security because the international market in hard coal is well-established, offering secure and reliable sources of fuel at prices both now and into the future that German national production is unlikely to be able to match given its high cost.
- Lignite mining does not receive direct subsidies. However, special legislation safeguards lignite mining to ensure demand for lignite in the generation of electricity. First, new entry of power plants in the New Länder was prohibited. Later, in 2001 Vattenfall, who bought the lignite-burning generators, agreed with the federal government to generate 50 TWh/year from lignite until 2011. With that agreement, the government planned to phase out the entry restrictions in 2002. In addition, the Energy Industry Act requires the competition assessment of any refusal to access the electricity system to supply customers in eastern Germany to give particular attention “to the need for a sufficiently high level of power generation from lignite from these Länder.” Further, E.ON is obliged by an undertaking given at the time of the VEBA-VIAG merger to buy a certain minimum of lignite-generated electricity at market prices. In 2002, it bought 21.7 bn kWh from VEAG. [E.ON 2002] Production, which had declined 76% between 1989 and 2000, grew in 2001 by 10.2%. [IEA 2002a, para. 123]

- The phase-out of nuclear generation was the outcome of a democratic consensus. The terms of the phase-out were agreed between the government and the nuclear utilities. Under the agreement, the government incurs no direct cost and the utilities gained some level of certainty on an issue that had been on the political agenda for several years, as well as some flexibility in implementation. However, to the extent that the phase-out causes nuclear plants to be retired before the end of their economic life, there is a cost of premature retirement.

Chapter 2 contains a description of RIA. It can be noted here, though, that criticism of the overly broad form of support to these objectives is not new. The Deregulation Commission said in 1991, “It is also correct that electricity from German power stations is less internationally competitive because expensive domestic coal has to be used in its generation. However, this does not justify special treatment for the electricity industry under competition law. It only justifies that the protection of the coal industry itself, its objectives and economy-wide effects and above all its design, is re-examined.” [Deregulation Commission 1991 Para. 285]

Recommendation: Apply Regulatory Impact Analysis, or other structured benefit-cost analysis, to programmes so as to identify less costly, in terms of the achievement of other policy goals such as environmental protection and lower economic costs, means to achieve social goals. The hard coal, lignite and nuclear programmes all entail both carbon and euro costs. RIA can clarify those costs; applied to alternative programmes, it can help identify lower cost, “cost” here in a multi-dimensional sense, programmes.

5. Conclusions

The German national energy objectives, given equal weight, are secure energy supplies, economic efficiency, and environmental protection. Where there are not natural monopolies, and where there are not other market failures, then vigorous competition can indeed deliver cost-effectiveness. Environmental protection and very specific aspects of security need special regulation, since they may be underprovided in a free market due to “negative externalities,” i.e., negative effects on third parties. Germany has responded to these needs for special regulation in the environmental and security of supply areas.

Germany has taken a number of important steps toward increasing competition in the electricity and gas sectors. The exemption of anticompetitive agreements in these sectors from the competition law was removed and all consumers have the legal right to choose their suppliers. The licensing regime for electricity generators has been modified to greatly reduce its role as a barrier to entry. Non-discriminatory access by third parties to the electricity grids and gas pipelines and storage is enshrined in law. These changes enabled electricity prices to industry and to small consumers to fall significantly as electricity companies exercised their new freedom to compete.

However, these steps are not enough. The German electricity sector is very concentrated. It will be hit-and-miss whether effective competition can be sustained. The only “entry” into electricity generation since liberalisation five years ago has been the purchase of existing generators by other companies. The one greenfield entrant is now 50% and soon 75% owned by incumbents. And the barriers to entry by independent power producers now include having to buy gas from an enterprise with 60% of gas imports who also is the second largest electricity generator. While prices fell in the first year of liberalisation, by mid-2000 the incumbents had learned how to “pursue higher-margin business” and prices had firmed. Given that the four incumbents repeatedly interact, and their predecessors coexisted for decades under the demarcation and other agreements, it is not unexpected that they have developed less competitive ways to interact.

The phase out of nuclear power provides perhaps the last good opportunity for substantial new entry. Seizing this opportunity by reducing all of the barriers to entry so that vigorous new competitors enter would be a market-based way to increase competition in the German electricity market. Failing this, or perhaps supplementing this market-based opportunity, Germany may wish to follow the more interventionist example of the first phase of the England and Wales liberalisation, where deconcentration of the price-setting generation plant from the privatised duopoly led, over the years, to a much more competitive structure and market prices. The bargains that led to this deconcentration, and indeed the parallel and subsequent reforms in the market rules, were based on the powers of a strong and independent regulator who had an objective to promote competition.

The Bundeskartellamt has made a valiant effort to promote competitive outcomes in the electricity and gas sectors, but its bargaining position is not as strong as that held by the array of institutions that moulded the competitive English market. The incumbent power structure has now had five years to make the current system work for the broader economy, but the indicators—prices, entry, rate of switching suppliers—indicate that it is time to introduce an economic regulatory authority for the electricity and gas sectors who can regulate access to the monopoly parts to prevent abuse and ensure that the competitive parts of these sectors can develop effective competition.

The case for economic regulation of access is clear. Pre-1998, the electricity sector—and the gas sector—was subject to the competition law's prohibition of abusively high pricing by dominant firms. Abusively high pricing means not pricing as if a firm were subject to effective competition. And abusively high pricing in the electricity sector was not actively prosecuted pre-1998. (There were such prosecutions in gas.) With the lifting of the law and regulation that prevented competition, electricity prices fell substantially. Hence, electricity firms had not been pricing as though they were subject to effective competition. Given how difficult it is to prove abusively high pricing, it is reasonable to assume that the competition act, alone, will be unlikely to prevent abusively high pricing of network access in future. The competition act needs the assistance of economic regulation.

ANNEX: ACRONYMS

Explanation of Associations' Acronyms

BDI - Bundesverband der Deutschen Industrie e. V., Berlin (Federal Association of German Industry, registered association, Berlin)

VIK - Verband der Industriellen Energie- und Kraftwirtschaft e.V., Essen (Association of the Industrial Energy and Power Industry, registered association, Essen)

VDEW - Verband der Elektrizitätswirtschaft - e.V., Berlin, (Association of the Electricity Industry, registered association, Berlin)

VDN - Verband der Netzbetreiber –beim VDEW e.V., Berlin (Association of System Operators at VDEW, registered association, Berlin)

ARE - Arbeitsgemeinschaft regionaler Energieversorgungs-Unternehmen –e.V. (Federation of regional energy utilities, registered association, Hanover)

VKU - Verband kommunaler Unternehmen –e.V., Köln (Association of municipal utilities, registered association, Cologne)

BGW – Bundesverband der deutschen Gas- und Wasserwirtschaft e.V., Berlin(Federal Association of German Gas and Water Industry, registered association, Berlin)

Other acronyms

AA Associations' Agreements

ARC Act against Restraints of Competition

BMWA (Federal Ministry for Economics and Labour)

BMWi Federal Ministry of Economics and Technology (renamed Federal Ministry for Economics and Labour)

CHP Combined Heat and Power

DSO Distribution System Operator

IPP Independent Power Producers

LNG Liquefied Natural Gas

TSO Transmission System Operator

NOTES

¹ An abuse, under these circumstances, occurred when a company had made use of the exemptions but “its use of the market position it has acquired goes beyond what is necessary for the objectives of the exemption, principally the objective of providing cheap and reliable electricity supplies.” [Deregulation Commission 1991, Table 10]

² Federation of German Industries (BDI), Federal Association of the German Gas and Water Industries (BGW), Association of German Electricity Supply Companies (VDEW), Federation of Industrial Energy Consumers and Self-Producers (VIK).

³ Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity, Official Journal L 027/20-29, 30/01/1997, and Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas, Official Journal L 204/1-12, 21.7.98.

⁴ VEAG is the lignite-using (92%) electric utility in the new *Länder*. It was formed directly after unification and shared out among the western electric utilities who had the responsibility of modernising it. Laubag, engaged in mining lignite for electricity generation in the new *Länder*, is part of the force, as well.

⁵ EnBW is planning to build a new power station in the northeast, which will break the regional pattern as regards generation and supply.

⁶ The European Commission approved the transaction by which Gaz de France and Ruhrgas jointly gained control of Slovenský plynárenský priemysel a.s., which operates transit pipeline system through which about 75% of the Russian gas supplied to Western Europe is transported. The Commission felt that the long-term contracts for use of the pipelines excluded the possibility that Ruhrgas and GDF, once they own the pipeline, could impede Wingas or Gazprom’s use of the pipeline for imports into the EU over the next one to two decades. On the basis of expected increases in parallel transport capacity into the EU by approximately 60% by the years 2006-2010, the Commission concluded that there would be sufficient alternative capacity available for additional exports of Russian gas to the EU in the mid-term. [European Commission 2002c]

⁷ In 2000, about 44% of electricity was consumed by industry, 27% in the residential sector, 24% in the service sector, 3% in transport and 1.6% in agriculture. [IEA 2002a]

⁸ For example, if competitors’ offerings can vary by 5%, then on a total bill of €100/month, a consumer can save €5/month by switching suppliers. But if half of the costs are fixed as network charges, etc., then a consumer can save only €2.50/month. This difference in savings can be enough to discourage consumers from incurring the fixed costs of switching (collecting offers, calculating the most advantageous offer, informing both suppliers, informing the bank regarding automatic bill payments, etc.)

⁹ Around 95% of long-term contracts are priced on an oil price index, and around 70% of European gas supply is determined by long term contract. [Oil’s Energy Value, Commodities Now Online] The practice of pricing gas on the price of a substitute rather than cost was introduced by the Dutch in the 1960s. The practice provided higher revenues and profits to the concession holders and the Dutch State from the Dutch gas fields. Subsequently, other major gas suppliers to Europe adopted the same pricing methodology. The precise price levels negotiated between a gas supplier and a gas intermediary depended on a number of elements. Price depends the proportion of final users supplied by the gas intermediary that are existing gas users, new gas users, or existing oil users without dual-firing capability. That is, the negotiated price reflected the weights of the types of final users between which price discrimination could be practiced. The price also reflects the different prices of the oil products in different countries. [Kingma, Lijesen and Mulder 2002, IEA 1998, pp. 31-43.] According to Norsk Hydro, “Pricing under such contracts is generally based on a market principle whereby the natural gas price is indexed to oil product prices in the end user market, mainly gas oil and low sulfur fuel oil.” [Norsk Hydro 2001]

In France, “a large share of the gas sold is priced in relation to the main competing fuels - most often gas oil and heavy fuel oil.” For example, for large industrial customers with an annual consumption of over 5 GWh, with whom prices are negotiated, prices “are set in relation to the price of substituting fuels - mainly distillates or heavy fuel oil.” [IEA 2000, p. 78] The regulation of gas tariffs to, e.g., households does not provide incentives for the gas importing company to “negotiate harder,” as “a cost plus approach is used for end-user tariff calculation.” [ibid., p. 81]

10 It is conceivable that basing the price of gas on the price of oil reflects a less expensive way to proxy the cost of gas. However, much of the cost of delivered gas is sunk. It is difficult to draw a connection between changes in the price of oil and changes in the variable costs of gas production and transport.

11 Domestic production is concentrated: three firms produce 85%. [BMW 2002, p. 97]

12 “Average receipts” reflect household electricity prices excluding VAT but including the electricity tax from 1999 and the equalisation levies under the Renewable Energy Sources Act (EEG) and the Combined Heat and Power Generation Act (KWKG) from 2000. One difficulty in interpreting the electricity receipts statistics is their inclusion of power used for heating. The latter’s low price increased over 1998-2000, and accounts for around 15% of the total electricity purchased by households.

13 A simple comparison of access charges can be misleading since, e.g., in some EU Member States the generators also pay a portion of the network costs or the costs for control-energy output are invoiced separately to the electricity suppliers. According to the authors of the study for the European Commission, modifications were made so that the tariffs include the same components of cost: network infrastructure, operation and maintenance, system operation, administrative costs, losses, ancillary services and congestion management. While the study tried to strip out non- transmission related regulatory charges, such as generation stranded costs or promotion of renewable generation, the identification of the pure transmission component was not always possible. So, for example, Germany estimated that 0.26 c€/kWh of transmission costs were due to CHP promotion, Denmark that it bore 50% non-transmission costs, Spain 28% and Italy 20-50%, Netherlands 10%, Portugal 10-20%. [Pérez-Arriaga et al 2002, p. 87]

14 The 1998 Act (“Act revising energy industry legislation” or *Gesetz zur Neuregelung des Energiewirtschaftsrechts*) entered into force on April 29, 1998 (Official Federal Gazette I, p. 730).

15 More formally, these are the “Associations’ Agreement on Criteria to Determine Use-of-System Charges for Electric Energy and on Principles of System Use of 13 December 2001” and the “Associations’ Agreement on Third-Party Access for Natural Gas of 3 May 2002.”

16 For the electricity AA, the objective is “[T]o promote competition...and to attain competitive prices for German industry and commerce.” Other consumers are absent from the list. For gas, “The aim of the [AA] is to define the organisation of contract-based third party access for natural gas in greater detail.” Later, “This Agreement is intended to promote competition in accordance with the objectives of the [Gas Directive and Energy Act].”

17 In April 2002, negotiations on the gas agreement broke down. When the breakdown occurred, the Economics Minister announced that a Task Force for a regulatory authority will be established to prepare recommendations for 1 August. To forestall this outcome, the parties were able to reach agreement in May, known as VVII. The negotiations on a revised VV Gas II which were already provided for in the VV Gas II failed in April 2003.

18 In a major study on the cost of capital, Wright et al (2003) found that, “A common estimate of the equilibrium risk-free rate would be of the order of 2 1/2%.” Later, “Our central estimate of the cost of equity capital, derived from a wide range of markets, is around 5.5% (geometric average), and thus 6.5% to 7.5% (arithmetic average). We cannot, however, be at all confident that these estimates are precisely correct: 95% confidence intervals are, at a conservative estimate, of up to two percentage points either side of the point estimates.”

19 A complete description of the institutional setting and structure of the Bundeskartellamt is in chapter 3.

20 A complete description of the institutional setting and structure of the Monopoly Commission is in chapter 3.

21 The accusation that municipal utilities cross subsidise was denied by the relevant association. According to the association, prices are based on costs, and these are supervised by the *Länder*. If municipal utilities had to unbundle, losing the synergies of integration, then they would have to set up numerous companies with fewer than 50 employees, reducing competitiveness, according to the association. The International Energy Agency says that “[The Stadtwerkes’] profits from the sale of electricity are used to subsidize other services carried out by the municipalities, such as public transportation....[There is] a cross-subsidy whereby public transportation losses can be off set against energy company profits to reduce corporate taxes.” [IEA 2000b] With respect to natural gas, the IEA says, “Besides cross-subsidisation between gas customers, there is often also a form of sectoral cross-subsidisation relating to gas distribution. Where local governments have ownership shares or exert majority control in a local gas distribution company (which by the nature of its supply network is a monopoly), gas tariffs can be regulated in order to maximise the company's income so as to support local community needs. The income is used to subsidise/finance other activities (e.g. water distribution, public transport, etc.). This is often the case with German gas distribution companies which are majority-ruled by local government.” [IEA 1998b]

22 While, e.g., wind generators might be discouraged if they had to pay high access fees, under the current electricity Associations’ Agreement generation does not pay access fees.

23 Clearly, since the rates of return are for the network businesses, it is the risk of those businesses, and not the risk associated with electricity generation or electricity or gas supply, which is relevant.

24 It should be pointed out that in Australia, as in Germany, the competition act fully applies to self-regulatory schemes. According to the Australian Competition and Consumers Commission, “[w]here there is blatant disregard, or systematic breaches, of the [competition law] then the Commission is willing to use its enforcement powers.”

25 The Düsseldorf Higher Regional Court (OLG) confirmed that the competition authorities can establish abusive pricing equally by applying the comparable market concept and comparing costs with revenues. Following from this, companies under investigation for abusive pricing are obliged to surrender, at the request of the competition authorities, documents relating to the calculation of these prices. [BKartA 2002h]

26 In the discussion of the TEAG proceedings, the BKartA says that “[T]he examination has established indications that TEAG allocates unrelated costs to the network which, according to the Bundeskartellamt’s current opinion are not to be borne by the network users. Moreover, several imputed cost items are currently not accepted, even if TEAG uses them as a basis for its calculation in line with the principles on establishing prices provided by the Associations’ Agreement II plus (e.g. risk allowance). With the deduction of these cost items TEAG’s network costs, which form the basis for calculating its fees for network use, are reduced.” [BKartA 2002j]

27 The National Grid Code is fairly prescriptive, aiming to control not just discriminatory fees but also discriminatory conduct.

28 The comparable market methodology bears some resemblance to regulation by yardstick competition. Regulation by yardstick competition was once a darling of regulatory economists. By comparing one regulated firm’s revenues with other regulated firms’ costs, the regulated firm would have incentives to reduce costs and consumers would be protected from abusively high prices. This good incentive effect breaks down, of course, when the regulated firms are all the same firm wearing different hats. And the good incentive effects breaks down if the comparison is to prices, rather than to costs, and regulated firms reach an understanding of how to price. So long as the firms can all manage to “price high,” none will be subject to tight regulation.

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