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# Market report | 2004

→ Editorial

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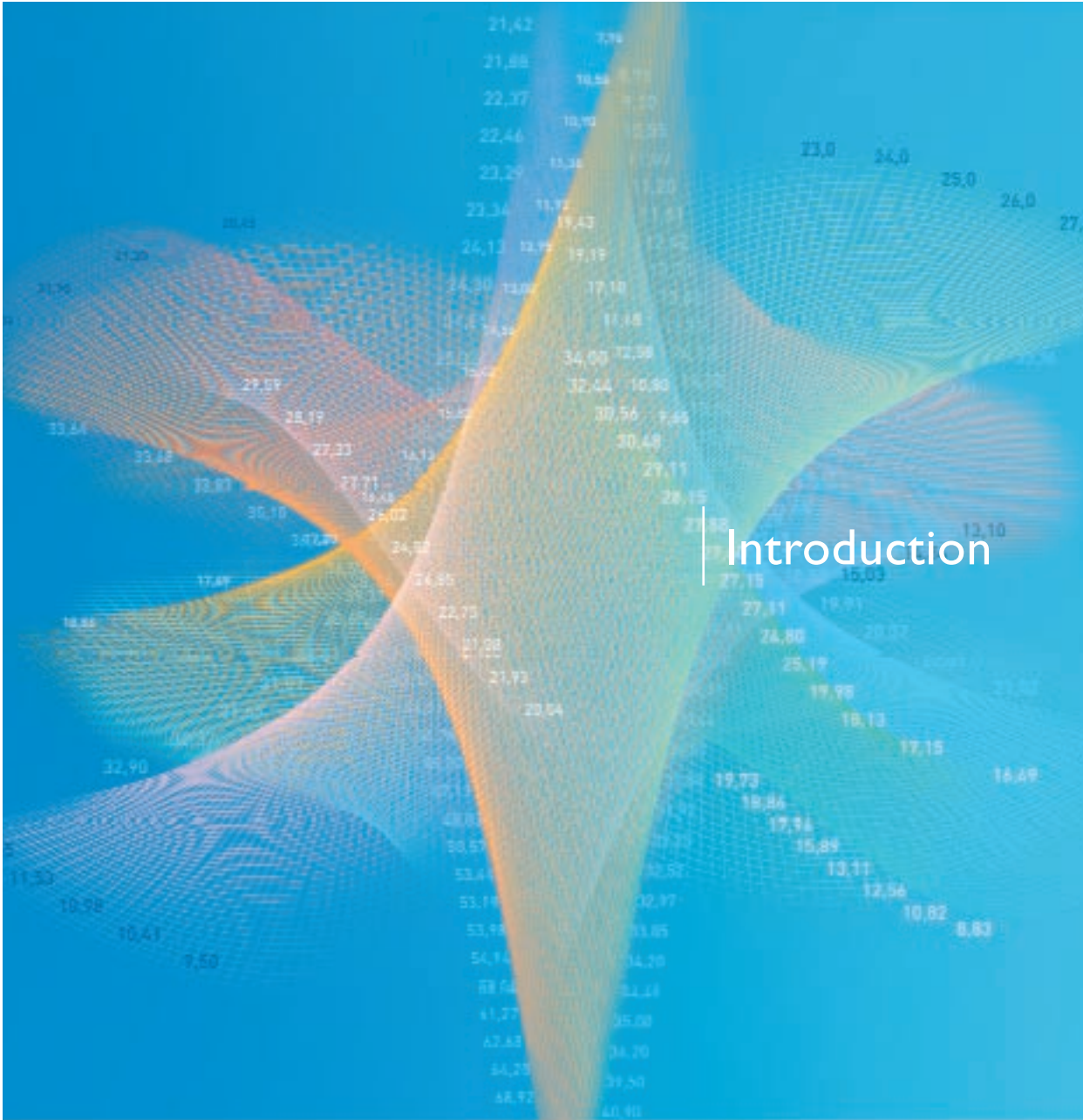
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# Introduction



The first day of October 2004 marked the third anniversary of the full liberalisation of the Austrian electricity market, and the second anniversary of that of the gas market. This report reviews the progress made in the intervening periods, and recent developments in the electricity and gas markets.

The amended **Electricity and Gas Directives**, which entered into force this year, are aimed at removing the **main obstacles** to fully operational and competitive internal markets. The main changes relate to the network access, tariff determination and unbundling rules, and the varying degrees of market opening in member states. As the legal implementation of liberalisation had already reached an advanced stage in Austria, the need for significant legislative amendments was limited to the unbundling rules for the electricity market, and hence the Electricity Industry and Organisation Act (EIWOG). Two other EU directives will result in long-term changes in the electricity generating industry. As from 1 January 2005 thermal power generators will face altered operating conditions due to the need for **CO<sub>2</sub> emission allowances**, and hydro power generators will meet with increased difficulties in constructing and expanding generating plants due to the **Water Framework Directive**.

Electricity and gas liberalisation led to the division of what had been integrated supply markets into separate markets along the supply chain. The main competitive markets in Austria are the generation, wholesale, balancing energy, very large and large consumer, and small consumer markets, as well as the storage services

market in the gas sector. Functioning wholesale and balancing markets are central liberalised electricity and gas markets. These markets supply important intermediate products on which the supply of final customers depends. Market failure, geographical segmentation and the dominant positions often associated with them create barriers to entry that represent significant obstacles to the integration of retail markets.

In the **electricity sector** the high capacity transmission links in the West have already led to the emergence of a wholesale market extending to Germany and Switzerland. Consolidation of the wholesale market and its expansion into other neighbouring countries is hindered not just by the inadequate capacity of cross-border lines but also by manifold methods for allocating existing transmission capacity, many of which are not based on market mechanisms. A Council Regulation which entered into effect in 2004 should bring significant improvements to capacity allocation procedures and transparency with regard to interconnection capacity. In principle, it would also be possible to extend the electricity balancing market beyond the borders of the control areas, but this would require a number of harmonisation measures by the control area managers. The segmentation of the upstream markets and the existence of differing legal frameworks limit the electricity market to Austria, except in the case of very large consumers. The creation of **regional electricity markets** by improved **interconnection of the national grids** and **integration of the balancing markets** represents the next step towards realisation of the internal market.



In the **gas sector** the technical preparations for the establishment of an organised trading platform in the shape of a gas hub have been made by Central European Gashub GmbH, but with the exception of the gas release programme auctions, these arrangements have yet to be used. The main obstacles to the emergence of a liquid wholesale market at a gas hub in Austria are the gas producers' supplier oligopoly, as well as the long-term supply agreements, containing destination clauses, under which most gas is imported, and the opaque tariff determination and capacity booking system for cross-border transportation. There is however a form of short-term gas trading on the balancing market.

The **development of a liquid spot market** – separate from the balancing market – with a variety of products, and of transparent, harmonised and non-discriminatory **rules for cross-border transmission systems** would enhance the efficiency of the gas market as a whole. The dropping of the destination clauses from the agreements between Gazprom and the Italian Eni energy group represents a small advance in the wholesale area. For final customers, markets are still confined to the control areas, despite full liberalisation. No switching of suppliers takes place in the VEG and Tigas grid zones due to the lack of a link with the Eastern control area, the de facto absence of access via the German gas grid, and the resultant lack of alternative suppliers. As system access via Germany is not possible at cost reflective rates at present, the only means for Tyrolean gas consumers to switch suppliers is by way of the domestic **interconnector between the Tyrol and Eastern control areas**.

New entrants to the retail market, independent of the local incumbents, are EnBW, Ökstrom AG and Alpen Adria Naturenergie AG in the electricity sector, and CE Oil and Gas Trading GmbH in the gas sector. Foreign companies' presence in Austria is largely restricted to investments in other suppliers, rather than subsidiaries. Liberalisation has not been followed by any change in the high level of state ownership of electricity and gas companies. In many cases, the latter's strategic objectives are still established by public sector owners.

Electricity and gas companies are continuing to react to changed market conditions by entering into **mergers and joint ventures**. The sale of Verbund's interest in APC to Istrabenz Energetzki Sistemi, d.o.o. fulfilled the key condition for completion of the "Austrian electricity solution" merger, and also meant that the large consumer segment of the electricity market gained a new supplier. At the same time, however, the part-merger of EVN AG, Wien Energie GmbH, Energie AG Oberösterreich, BEWAG, Linz AG and Verbund to form Energie Austria resulted in a marked reduction in the number of suppliers in the wholesale and large-scale consumer markets. As with the gas sector when EconGas was formed, the transaction significantly increased concentration in the upstream and retail electricity markets. There is now a fully horizontally and vertically integrated group in Austria, exercising considerable market power, in the shape of the line-up of Energieallianz, EconGas and Energie Austria. The Austrian competition authorities have the task of **monitoring fulfilment of the conditions** imposed during the merger proceedings, and of **reporting regularly on their effects**.

Following the passage of the new green power legislation the electricity companies would appear to have sufficient incentives for stepping up their activities in this subsidised and protected area of generation. Most of the Austrian incumbents are attempting to gain a foothold in other network industries so as to exploit anticipated marketing advantages arising from increased brand awareness or multi-utility products. Attempts are being made to leverage synergies not just by merging electricity and gas operations, but also – as with EnergieAllianz and its investments in Energie Austria and EconGas – by moving into other typical utility industries (such as water, district heating, waste disposal and telecommunications). In contrast to these diversification efforts, some Austrian companies are choosing to retreat to their core business.

All the larger Austrian electricity and gas companies are taking the opportunities offered by liberalisation to enter new export markets. However, the incumbents are making little effort to break into domestic markets outside their home territories. Shrinking advertising budgets, both in the electricity and the gas industry, likewise, point to a lack of commitment to expansion at home. Electricity and gas advertising is primarily aimed at image maintenance rather than informing consumers about product quality or prices. Heavy reliance on doorstep selling by new suppliers has also cut into their advertising expenditure. When marketing their product ranges to small consumers most energy companies are opting for a multi-utility approach, at least as far as power and gas are concerned.

The **wholesale electricity market** in Austria, Germany and Switzerland has consolidated its position; both bilateral and exchange trading have gained ground. For instance, both the number of members and volume on the Leipzig EEX have risen steadily. In 2003 supply and demand side events triggered a strong run-up in spot prices. Prices stabilised thereafter, and by mid-2004 they were below the levels of 2003. Overall, however, there has been a **rising trend in wholesale prices** after the collapse in the immediate aftermath of liberalisation. Forward prices have been on the upturn since 2003, partly reflecting the rising cost of primary energy sources and the anticipated cost of emission trading. It remains to be seen whether the latter factor will actually cause an increase in Central European wholesale prices.

The energy prices paid by both large and small electricity consumers have risen over the past year. Apart from higher wholesale prices and the increased cost burden imposed by the new Green Electricity Act, **reduced competitive intensity** probably played a part in the price rises. Another factor was the tendency of electricity companies to move over to more rational pricing for industrial consumers; they are no longer offering electricity at below wholesale price levels. Austrian industrial electricity prices have slipped back towards the European average. It was striking that the reduction in electricity system charges by the regulatory authority at the end of 2003 brought little change in the overall prices paid by small consumers, as most of the power suppliers put up their energy charges by the same amount.



There are wide differences in the margins between electricity purchasing and selling prices in the small consumer segment. While some companies' energy charges are well above the wholesale price level, the margins of some nationwide suppliers are considerably tighter, if not negative. The rising wholesale prices seen over the past two years have resulted in a marked improvement in companies' results – especially those of electricity companies with low generating costs. **Margins and the degree of variation between them** are widely regarded as a useful indicator of competition trends, and increased importance is being attached to **monitoring** them.

**Gas price trends** are driven less by gas-to-gas competition than by movements in the price of the main substitute, **crude oil**. Natural gas import prices, and in turn retail gas prices, track crudes, but the changes are lagged. Similarly to the small consumer electricity market, increases in gas purchasing prices are frequently **passed on**, at least to private consumers, whereas this is less so with **price reductions**. Liberalisation has brought price reductions for industrial consumers, but Austrian industrial prices are

still among the highest in Europe. At the beginning of 2004 overall gas prices were raised by the increase in energy tax.

For both gas and electricity consumers, the main motive for switching suppliers continues to be price, and the savings to be made. The churn rate among electricity consumers has fallen again in 2004, while that among gas consumers has remained at the previous low level. For most consumers both the network energy markets are relatively inflexible as compared to other liberalised markets. Although it is possible to make considerable savings on gas prices the small consumer segment is largely static. During the first two years of electricity liberalisation 1.5 % of all residential consumers switched, while almost all large consumers either changed suppliers or renegotiated their agreements. **Central provision of consumer information relating to switching** – particularly on new connections, as well as lower system charges through **more efficient system operation**, and **close monitoring** of compliance with the **unbundling** rules would **stimulate competition in the retail market**.





Existing market environment



## Existing market environment

→ Economic importance of electricity and gas

In 2003, Austrian final customers consumed 60,794 GWh of electricity and 8,911 billion (bn) cu m of natural gas. Electricity and gas are among the main energy forms used by Austrian households and businesses. According to Statistics Austria, in 2002 electricity accounted for almost 19.8 % of total final energy consumption in Austria, and natural gas for some 14.3 %<sup>1</sup>. In 1970 natural gas and electricity together met only 20 % of final energy consumption; this proportion has since risen to about 35 %. In 2002 liquid fossil fuels, most of which are used for road transportation, represented some 45 % of total final energy consumption, compared to approx. 52 % in 1970 (Chart 1).

The electricity and gas industries together form a major economic sector which generated approx. € 3.9bn in GDP added in 2002. In line with the high proportion of the population supplied with electricity, this sector's contribu-

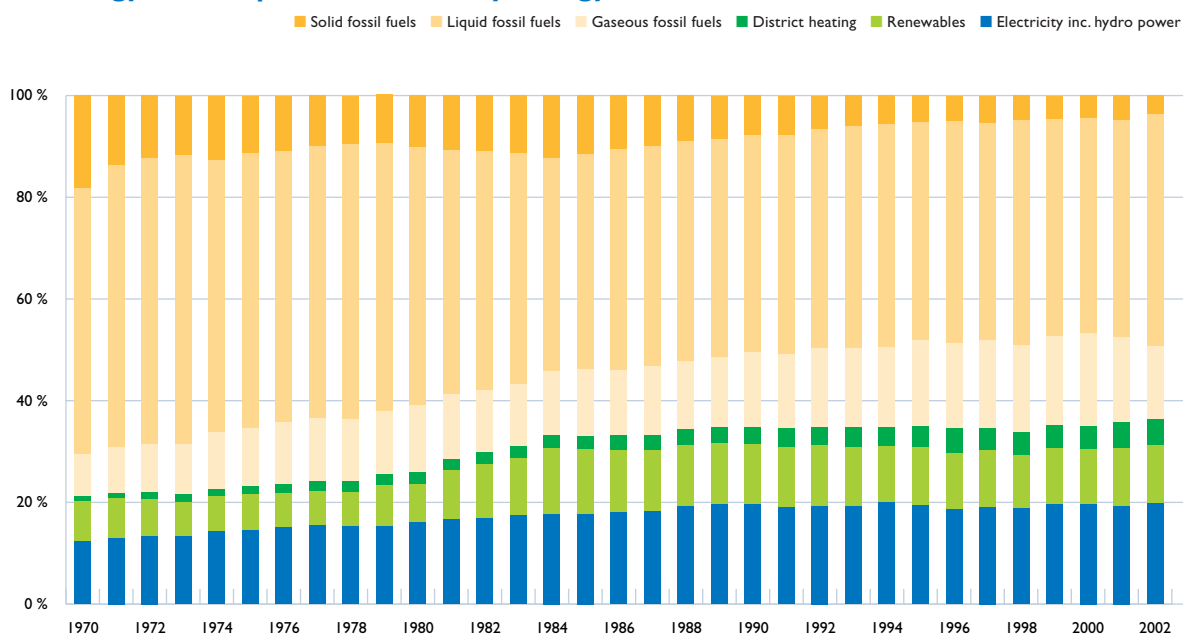
tion was far greater than that of gas, at € 3.5bn. By way of comparison, the GDP by the entire Austrian food, tobacco and beverage sector was € 3.7bn in the year in question.

However, measured against the electricity sectors of some other member states, the Austrian industry is relatively small in European terms. In 2000 German electricity companies alone generated a good 20 % of the total revenue of all electricity undertakings in the (then) 15 member states of the European Union (see Chart 2). The combined sales revenue figures of the British, French, German and Italian electricity industries added up to 70 % of total electricity revenue in the European Union. The shares of employment and investment are similar.

Electricity and natural gas are indispensable both as inputs for production processes and services, and as final products used by consumers. A break-

## → Energy consumption in Austria by energy sources, 1970–2002

Chart 1



Source: Statistics Austria

<sup>1</sup> Gaseous fossil fuels excluding blast furnace and coke oven gas, and solid fossil fuels including blast furnace and coke oven gas.

down of final consumption by Austrian economic sectors shows that the largest amounts of electricity are used by the metallurgical and metalworking, paper and printing, vehicle and mechanical engineering, and chemical and petrochemical sectors. These account for 70 % of all consumption by the manufacturing sector. Chart 3 reflects the growing weight of the service sector in the Austrian economy. While public and private services (inc. transport services) accounted for approx. 15 % of Austrian electricity consumption in 1970, by 2002 their share had risen to some 30 %. The proportion of Austrian electricity consumption accounted for households (inc. farms) has also grown markedly, from 19 % in 1970 to 31 % in 2002.

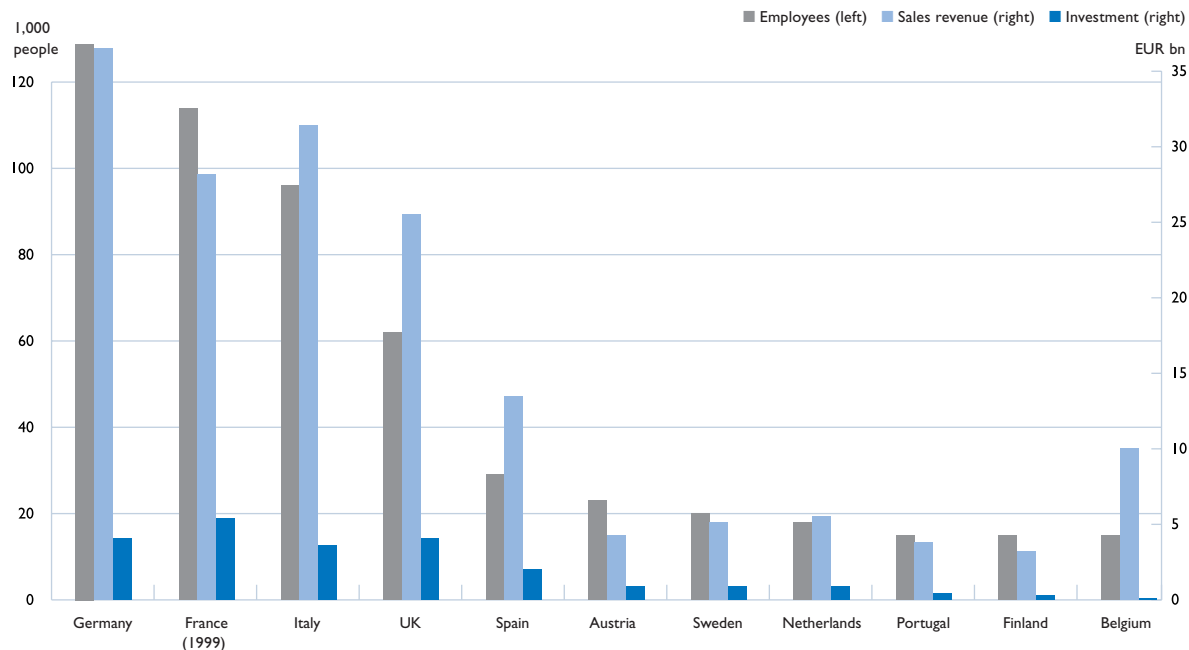
Natural gas represents a lower proportion of final energy consumption than electricity. The largest gas consumers are the metallurgy and metalworking, paper and printing, chemical, and

food, beverage and tobacco industries (Chart 4). In recent years these sectors have together been responsible for some 60 % of total industrial gas use. Between 1970–1982, gas used by households (inc. farms) as a proportion of total gas consumption grew faster than the household share of power used – from 12 % at the start of the period to almost 45 % in 2002.

Electricity and natural gas thus play an important role, not just in the production of goods, but also as consumer products in their own right. A look at the final energy consumption of the average Austrian household shows that the dominant energy forms are those typically needed for heating. The euro denominated comparison of household expenditure reveals that electricity claims by far the highest share of the overall household energy budget. The impact of a reduction in electricity prices on personal consumption is accordingly greater

→ Economic importance of electricity in Europe

Chart 2



Source: Eurelectric, VDEW (German Electricity Association) and E-Control



## Existing market environment

→ Influences on electricity and gas demand

than that of a fall in gas prices. In the event of a reduction in electricity prices, considerably more money would be diverted to alternative forms of consumption which would be the case with a gas price cut.

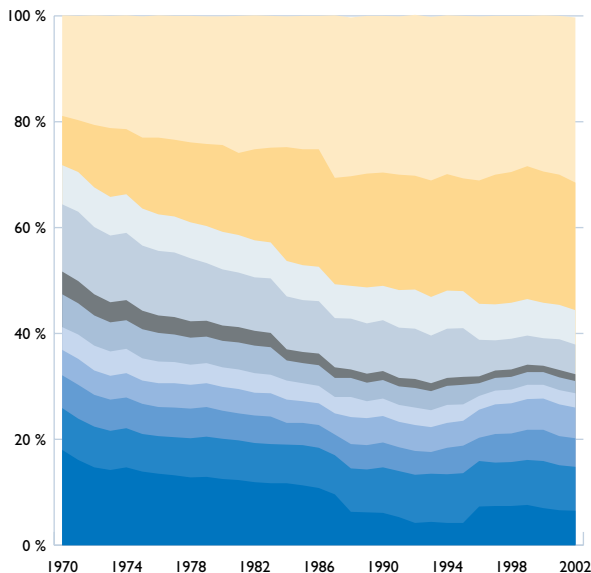
### → Influences on electricity and gas demand

A variety of factors are responsible for fluctuations in annual electricity and gas consumption. There is a strong correlation between natural gas consumption and prevailing temperatures. Chart 6 shows year-on-year falls in gas consumption throughout 2003. Temperatures during the winter months of 2003 – especially February, October and November – were below the long-term average and lower than

in 2002. During these months total heating degrees were up to 50 %<sup>2</sup> above the long-term average recorded for the 1980–2000 period. Though heating demand was not above average throughout the entire year, unusual weather conditions were the main factor behind increased gas demand. During the summer months of 2003 it was not unusually cold but rather extremely hot weather which indirectly led to rising gas demand. Electricity generation at hydro power stations fell sharply due to low water flow. The simultaneous increase in electricity demand (also weather related) resulted in prices that made increased use of gas fired power stations economic. This explains why the year-on-year increase in gas demand was particularly high in the second half of the summer, despite minimal heating demand.

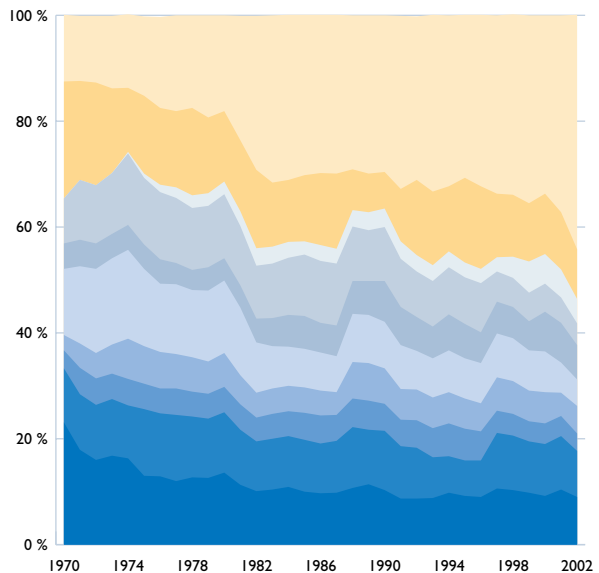
### → Electricity consumption by economic sectors, 1970–2002

Chart 3



### → Natural gas consumption by economic sectors, 1970–2002

Chart 4



Private households and agriculture Public and private services Transport inc. rail Other manufacturing  
Textile and leather (just left) Food, beverage and tobacco Stone, ceramics and glass Chemical and petrochemical Vehicle and mechanical engineering  
Paper and printing Iron, steel and non-ferrous metals (from above)

Source: Statistics Austria

<sup>2</sup> Total heating degrees = total degree days in a given period Degree day = total difference between a given constant room temperature (base temperature = 20° C) and the mean outdoor temperature if this is equal to or below an assumed threshold heating temperature of 12° C.

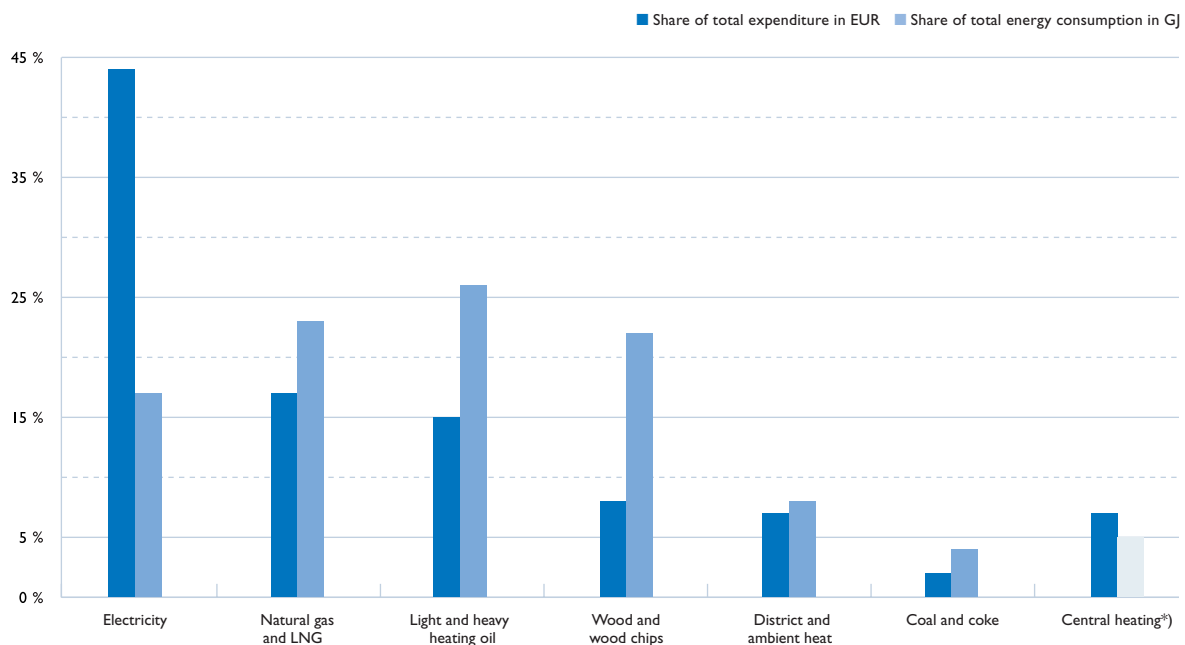


Electricity consumption is considerably less sensitive to temperature and precipitation changes than natural gas demand. This is demonstrated by a comparison of gas and electricity consumption trends. In the winter months of 2002 and 2003, electricity consumption climbed by only about one-quarter while gas consumption in the winter was almost two-and-a-half times as high as in the summer period. Not only is the difference between summer and winter demand significantly greater in the case of gas, but the fluctuations from one year to the next are wider. This is illustrated by the solid and striped lines in Chart 7; the curves are almost identical in the case of electricity, but diverge sharply in that of gas.

Domestic electricity demand is more closely related than gas demand to economic growth. Electricity plays a greater role as a manufacturing input, and the amount required depends on industrial companies' order books. When the wheels of industry are turning fast, electricity demand rises. The link between economic and power consumption trends is revealed by Chart 8. However, since weather conditions and shifts in consumption patterns – for instance, as a result of the adoption of new technologies – also influence electricity demand, the link with economic growth is less pronounced than that between gas demand and outdoor temperatures.

### → Energy consumption per dwelling (Austrian average)

Chart 5

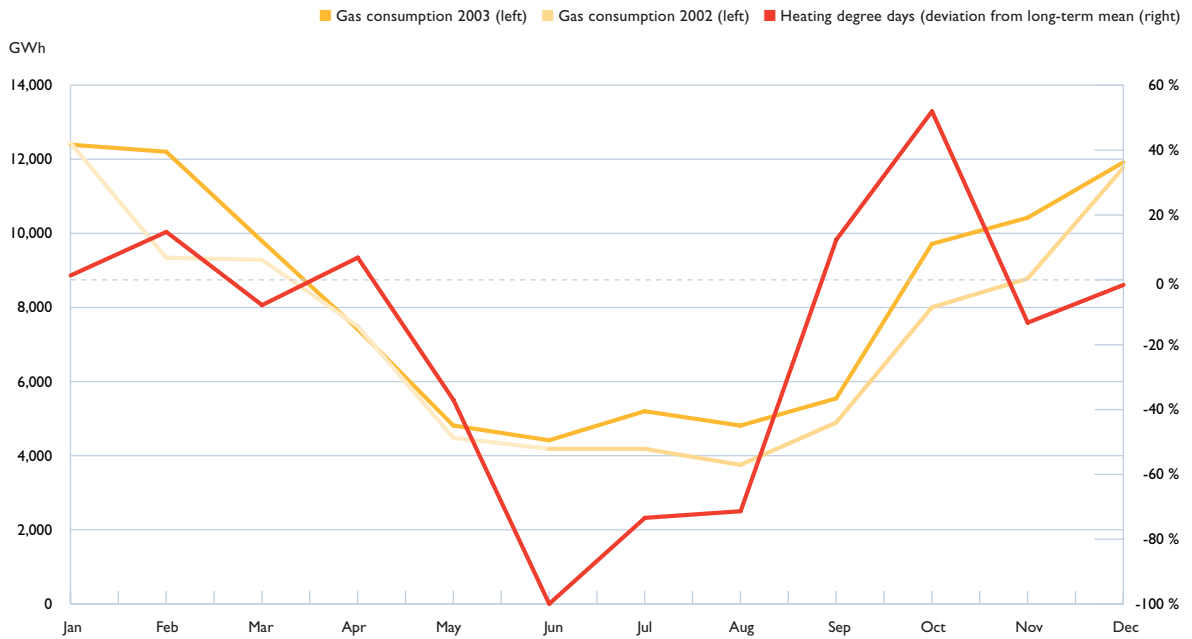


Source: Statistics Austria, June 2000 microcensus

\*) GJ share included in energy sources

## → Change in natural gas consumption between 2002 and 2003, and total heating degrees

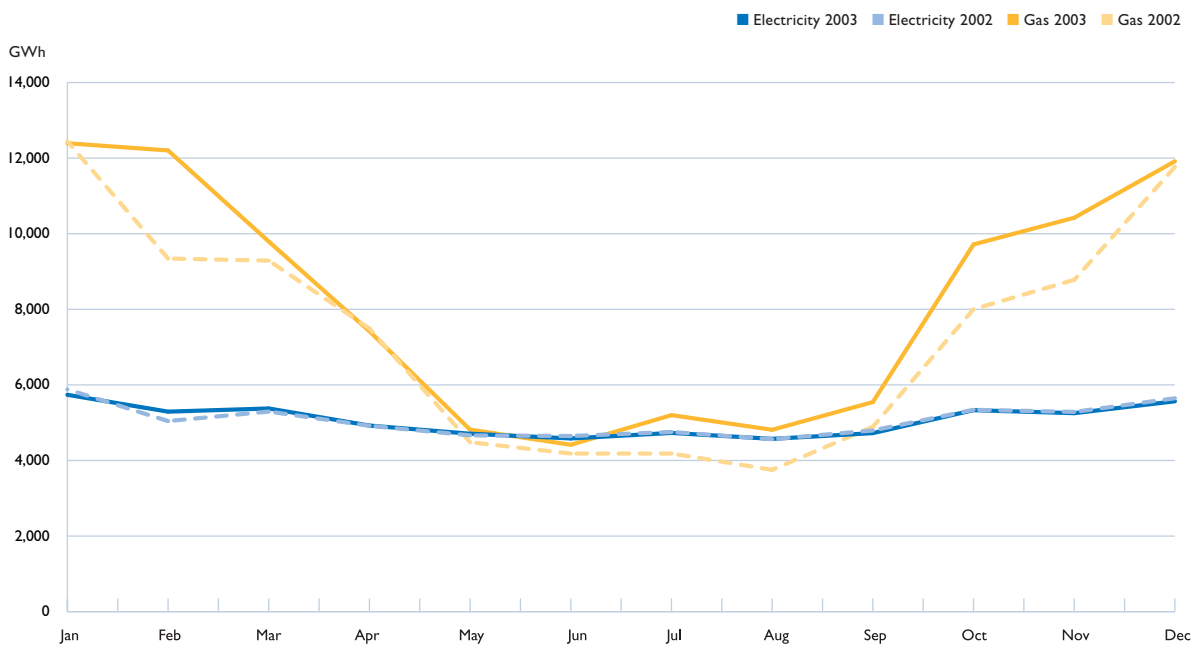
Chart 6



Sources: E-Control, Federal Ministry of Economic Affairs and Labour (Erdgas 2002 / Natural Gas in 2002) and Statistics Austria

## → Seasonal variations in electricity and gas consumption

Chart 7



Sources: E-Control, and Federal Ministry of Economic Affairs and Labour, 2002

Economic growth was exceptionally slow in 2003, at a mere 0.7 %. Nevertheless, domestic electricity consumption rose by 3.1 %. The highest monthly increase was in February 2003, when growth of 9.6 % was recorded; this was probably attributable to the exceptionally low mean temperature for the month. However, the high demand growth rate in 2003 cannot be put down entirely to unusual weather conditions, but was probably at least in part associated with activity in some energy-intensive industries. Nevertheless, the comparative growth rates over the past few decades appear to argue for a steady weakening of the link between electricity demand and economic activity. On the one hand the energy-intensive sectors have been shrinking relative to the size of the service sector, and on the other it is precisely the

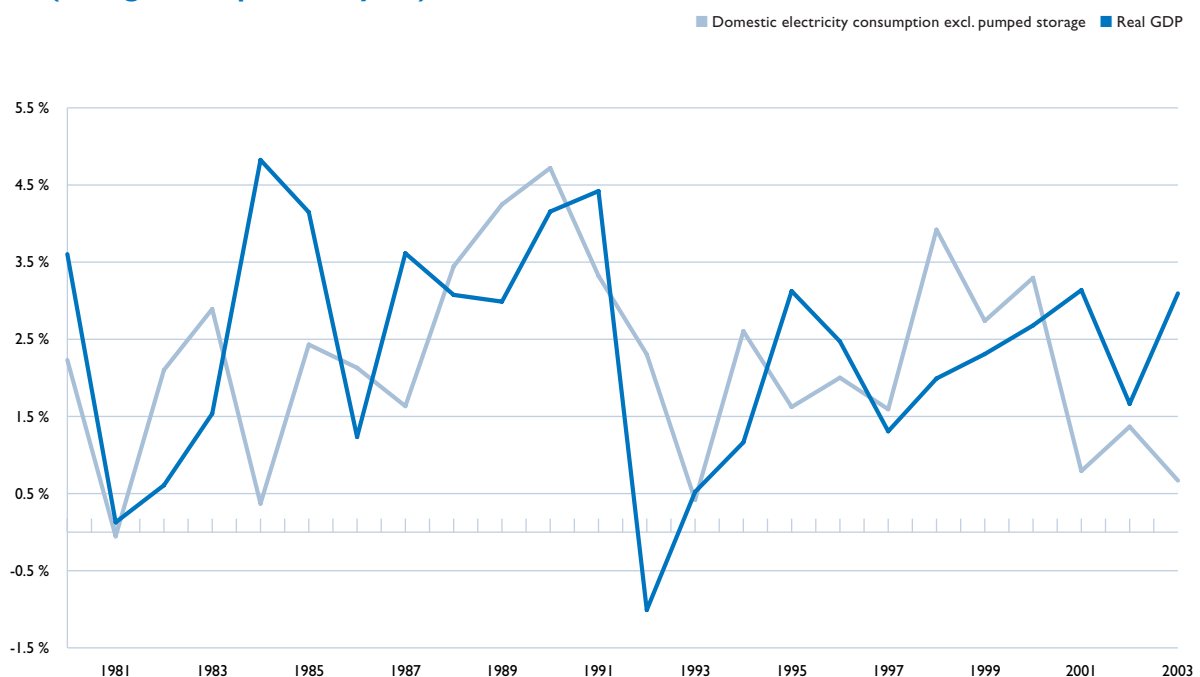
energy-intensive industries that are making the greatest efforts to keep costs down by reducing their energy use.

#### → Legal framework

Implementation of the EU electricity and gas directives continues to vary from one member state to another. This year further countries have opened all or part of their gas and electricity markets to competition. Of the accession states only Slovakia has fully liberalised its energy markets. The Baltic states, the Czech Republic, Hungary and Poland have only opened their large consumer and commercial markets. Residential consumers are not yet free to choose their electricity and gas suppliers in these countries.

#### → Economic trends and domestic electricity consumption in Austria (change from previous year)

Chart 8



Sources: E-Control and Statistics Austria



## Existing market environment

### → Legal framework

Implementation is patchy not just in terms of the degree of market opening but also of the legal and organisational frameworks. There are variations in the methods for determining the charges for system use, in the transposition of the unbundling rules, and in the support regimes (stranded costs, renewables, and combined heat and power), as well as the design and powers of the regulatory authorities.

### The Electricity and Gas Directives

As of 1 July 2004, Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC, and Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC entered into force.

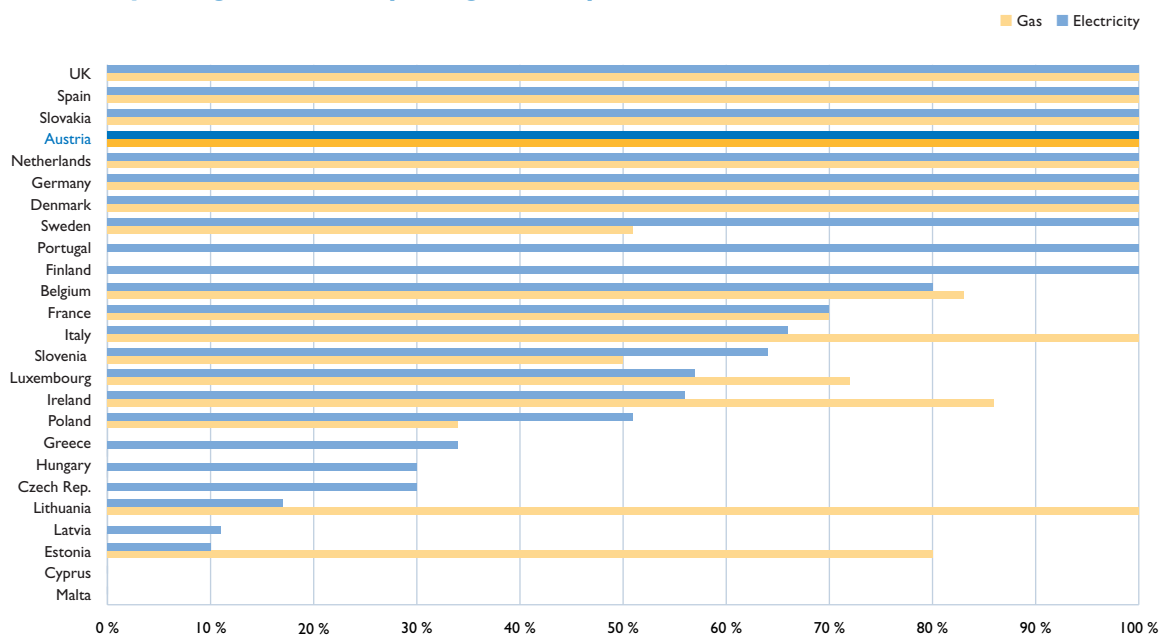
Austria met the requirements of the new Electricity Directive by passing an amendment to the Electricity Industry and Organisation Act (EIWOG) which entered into effect on 22 June 2004. The 2002 Natural Gas (Amendment) Act (GWG) had already anticipated the main provisions of the directive.

The new EU directives provide for a transition period up to 1 July 2007 for full market opening, and the full and effective independence of electricity and gas distribution system operators.

The European Commission is charged with monitoring the application of the directives by member states, and with submitting annual overall progress reports to the European Parliament and the Council.

## → Electricity and gas market opening in Europe

Chart 9



Source: European Commission, August 2004

### Amendments to the EIWOG

One of the touchstones of the liberalisation of network markets is the separation of system operation from the competitive areas in order to exclude discriminatory treatment of market participants that are not linked to a system operator by common ownership.

The amended EIWOG passed in June 2004 complies with the unbundling provisions of the EU Electricity Directive which member states are required to transpose. It requires transmission system operators (Verbund-APG, VKW-Übertragungsnetz AG, Tirag) to be independent of the other activities in the industry unrelated to transmission, at least as far as their legal form, organisational and decision-making structures are concerned<sup>3</sup>.

In the case of distribution system operators with over 100,000 customers that belong to a vertically integrated undertaking, steps must likewise be taken to ensure that the system operation function is kept separate from the other activities in terms of organisation and decision-making.

The overall aim is equal treatment of all market participants, irrespective of whether they are members of the same group of companies.

Safeguarding of the independence of a system operator forming part of an integrated undertaking is, inter alia, to be achieved by<sup>4</sup>:

- complete separation of the management of a distribution system operator from the other company structures of an integrated undertaking;
- measures to ensure that the management of a distribution system operator has effective decision-making rights;
- the provision of sufficient assets to operate, maintain and develop the network;
- establishment of a compliance programme containing arrangements for the monitoring of compliance and the exclusion of discriminatory conduct.

In order to clarify unresolved issues E-Control established a Labelling Working Party which drew up Guidance Notes on Power Labelling in consultation with the market participants concerned (electricity traders, audit, monitoring or certification bodies, NGOs, system operators, VEÖ [Austrian Association of Electricity Utilities] and plant operators). These explanatory notes and recommendations on the power labelling rules are posted on the E-Control website ([www.e-control.at](http://www.e-control.at)).

<sup>3</sup> Section 22(1) EIWOG.

<sup>4</sup> Section 26(3) EIWOG.

### → Uniform power labelling

Text box 1

In connection with the Green Electricity Act (BGBl. [Federal Law Gazette] I No. 149/2002), certain amendments, mainly relating to power labelling, were made to the EIWOG. Prior to the entry into effect of the arrangements in question as of 1 July 2004, power labelling was the responsibility of the provinces. This resulted in widely divergent rules (freedom to determine the product or company mix<sup>5</sup> and the two respective labelling types).

The main features of the harmonised rules in force since 1 July 2004 are:

- obligatory company mix;
- use of the amount of electricity supplied to final consumers as the basis of calculation;
- operative supply period the previous financial or calendar year;
- supporting evidence limited to certificates of origin or information certified by an accredited audit, monitoring or certification body;
- in the case of electricity of unknown origin (e.g. procured from power exchanges), assignment in accordance with the UCTE mix;
- E-Control the authority responsible for regulating power labelling.

### European competition law

Not only did ten new member states join the European Union on 1 May 2004, but the day also marked a major change in EU competition law.

Since 1962, Council Regulation No. 17 implementing Articles 81 (cartels) and 82 (abuse of a dominant position) of the EC Treaty has been the basis for the application of general competition law. Regulation No. 17 instituted a centra-

lised control system under which cartels in the meaning of Article 81 had to be notified to the Commission in order to obtain exemptions. Regulation No. 17 has now been replaced by Council Regulation No. 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty. The new regulation provides for a legal exception system under which all cartels that meet the exemption conditions of Article 81 EC and comply with the various block exemption regulations are exempt from notification. It is no longer necessary to obtain clearance for a cartel, but companies themselves are responsible for investigating the legality of such agreements. Regulation No. 1/2003 also provides for a network of competition authorities and confers additional powers on the European Commission.

At the same time, the previous Merger Control Regulation was replaced by a new one, Council Regulation No. 139/2004 of 20 January 2004 on the control of concentrations between undertakings. Still more than its predecessor, the new Merger Regulation is aimed at an efficient division of labour between the European Commission and member states. Whilst retaining the “one-stop shop” principle, it extends the possibilities for the national and European competition authorities to refer mergers to each other. The criteria for assessing mergers have been modified, and aspects of the US “substantial lessening of competition” test adopted. Otherwise, the existing principles of merger control remain in place.

### Emission Trading Directive

Under the 1997 Kyoto Protocol the European Union undertook to cut its greenhouse gas emissions by an average of 8 % over the 2008–2012 period in comparison with levels

<sup>5</sup> Company mix: power labelling disclosures show a uniform mix for all of a company's final customers. Product mix: power labelling disclosures vary according to the products and customer groups in question.



in the base year, 1990. Although the Kyoto Protocol has not yet entered into force the EU has decided to meet this emission reduction target. The 8 % target has been redistributed among member states in accordance with the “burden sharing” principle. Austria has committed itself to a reduction of 13 %.

One of the instruments in the package of emission reduction measures is emission trading, the framework for which was created by Directive 2003/87/EC which established a legally binding scheme for greenhouse gas emission trading

applying to all member states. The central principles of the directive are set out in Table 1.

Transposition of the directive into national law was required by 31 December 2003. In Austria an Emission Allowance Bill was considered by the Council of Ministers on 10 February 2004, and this was passed by Parliament on 24 March 2004. The Emission Allowance Act lays the groundwork for the preparation of the National Allocation Plan which determines the number of the allowances and how they are to be allocated for a given trading period.

## → Main elements of the Emission Trading Directive

Table 1

<b>System</b>	“Cap and trade”: a given emission limit may not be exceeded. Allowances must be held for greenhouse gas emissions; these are tradable between companies participating in the scheme.
<b>Trading periods</b>	Phase 1: 2005–2007 (“test phase”) Phase 2: 2008–2012
<b>Sectors affected</b>	Energy transformation (installations with a rated thermal input exceeding 20 MW) Production and processing of ferrous metals Mineral industry (cement, lime, glass and brick industries) Pulp and paper industry
<b>Greenhouse gases</b>	Phase 1: carbon dioxide Phase 2: possible extension to all greenhouse gases as defined by the Kyoto Protocol
<b>Market size</b>	10,000–15,000 installations, responsible for approx. 50 % of all carbon dioxide emissions
<b>Allocation</b>	In Phase 1 at least 95 % of the allowances must be distributed free of charge. 5 % can be auctioned. This proportion rises to 10 % in Phase 2. Allocation takes place under National Allocation Plans which must be approved by the European Commission.
<b>Validity and transferability</b>	Allowances are valid for the trading periods for which they are issued, irrespective of the year within the trading period in which they are used.

Source: European Commission

Under the Directive, member states had until 31 March 2004 to submit their National Allocation Plans (NAPs) to the European Commission. The Commission had until 30 June to review the plans with regard to potential market distortions and consistency with national climate change strategies. At the start of July 2004 eight NAPs (Austria, Denmark, Germany, Ireland, the Netherlands, Slovenia, Sweden and the UK) were approved, in some cases subject to conditions.

The quantity of allowances allocated is calculated according to the following formula:

$$\text{Allowances} = \text{baseline emissions 1998–2001} + \text{growth factor industry} - \text{climate change factor industry}$$

A “CHP bonus” was also allocated. This halves the standard reduction if an installation achieves a saving in primary energy use of at least 5 % as compared to separate heat and power generation. The bonus was included in the calculation via the potential factor.

The allocation also includes a reserve amounting to about 1 % of the total cap. This is to be

allocated to potential new entrants according to the “first come, first served” principle.

The total allowances allocated exceed the base level by 3.8 %. However it should be noted that the allocation to voestalpine AG is 20.3% above the base level, resulting in a reduction of approx. 3.3 % for the other sectors.

It is not yet possible to make reliable predictions about the impact of emission trading on the prices of the products of the sectors concerned. The potential effects on electricity prices are discussed in section Prices trends in the electricity retail market.

At present the allowance prices look likely to be in the lower range, even in the first period. The first phase of trading should probably be seen as a learning exercise, both for participating companies, and the European Union and the national governments. There may be positive spin-offs in terms of increased incentives to innovate in the area of low CO<sub>2</sub> emission technologies and, subsequently, move towards greater energy independence.

### → Allowances allocated in Austria, by sectors

Table 2

Sektor	Number	Allocation basis t CO <sub>2</sub>	Allocation 2005–2007 t CO <sub>2</sub>	Allocation per year t CO <sub>2</sub>
<b>Energy</b>	<b>61</b>	<b>13,107,706</b>	<b>37,180,563</b>	<b>12,393,521</b>
Elektricity industry	31	9,846,504	27,626,107	9,208,702
District heating	27	408,514	1,251,410	417,137
Oil refining	3	2,852,689	8,303,046	2,767,682
<b>Industry</b>	<b>144</b>	<b>17,800,540</b>	<b>61,395,786</b>	<b>20,465,262</b>
<b>Total</b>	<b>205</b>	<b>30,908,246</b>	<b>98,576,349</b>	<b>32,858,783</b>

Source: Ministry of Agriculture and Forestry, Environment and Water Management, 2004

## Water Framework Directive

Directive 2000/60/EC establishing a framework for the Community action in the field of water policy (Water Framework Directive) of 23 October 2000 has the following objectives, among others:

- achieving “good status” for surface waters and groundwater;
- protecting and enhancing the status of aquatic ecosystems;

- reducing discharges of hazardous substances;
- establishing a common approach to improving water protection;
- preventing further deterioration in the status of water bodies.

A number of steps will need to be taken to achieve “good status for surface waters” by 2015<sup>6</sup>. These are listed in Chart 10.

These objectives and the related measures are in potential conflict with other policies of the European Union, particularly the goals of Directive 2001/77/EC<sup>7</sup>. For Austria, this directive provides for an increase in the share of gross domestic electricity consumption accounted for by renewable energy sources to 78.1 % by 2010.

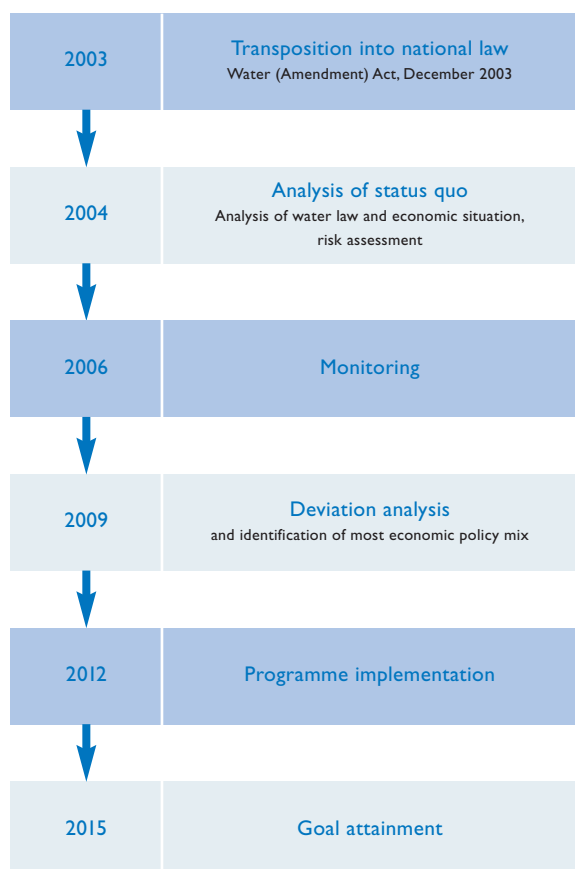
Hydro power will have to make a major contribution if this target is to be met. The need to achieve “good ecological status” and “good ecological potential” in the event of the classification of a water body (e.g. a lake or river) as a “heavily modified water body” under the Water Framework Directive represents a major obstacle to the expansion of hydro power generation. Due to the prohibition of deterioration of status by the Directive, the construction or expansion of hydro power stations is only possible where surface waters are already classed as “heavily modified water bodies”.

Implementation of the Water Framework Directive is also likely to affect existing hydro power stations, as measures such as surge barriers, increases in residual water levels or modifications to power stations themselves (e.g. fish ladders) may be necessary to meet the environmental objectives.

There was little possibility of assessing the potential impact of the directive at the time of writing (July 2004), as a survey of the current

### → Steps towards attainment of the objectives of the Water Framework Directive

Chart 10



Source: E-Control

<sup>6</sup> Article 4(1)(a)(ii) Directive 2000/60/EC

<sup>7</sup> Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market.

status of water bodies was in progress. Classification of “heavily modified water bodies” will be the next step. In order to form a reliable assessment, case-by-case investigations will be necessary, since both the effects of potential measures and the design of power stations vary.

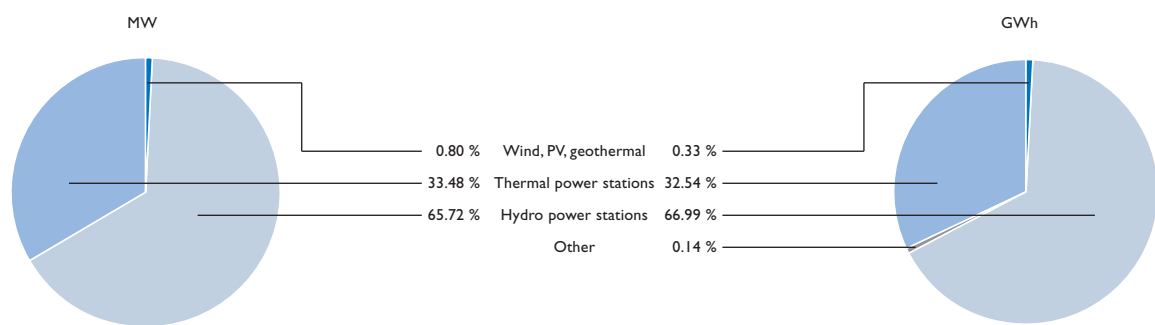
The company responsible for the highest proportion of Austrian hydro power generation, Verbund, estimates that the measures regarding surge water and residual water levels could result in a loss of 8–15 % of output from storage

power stations, and in some cases the losses could be considerably higher.<sup>8</sup>

Coinciding with electricity demand growth, implementation of the Water Framework Directive could lead to increased import requirements, which would be at odds with the EU’s efforts to reduce import dependence. Moreover, a shift away from renewable energy in the form of hydro power and towards other energy sources would be questionable from an environmental point of view.

→ Hydro power as a proportion of maximum installed capacity (left) and of electricity output (right), 2002

Chart 11



Source: E-Control

<sup>8</sup> The Water Framework Directive versus hydro power generation, presentation by Dr. Müller (VEÖ) and Dr. Pirker (Verbund) during the E-Control green electricity forum on 8 September 2003.



## Existing market environment

### → Summary and conclusions

#### → Summary

- In 2002 the electricity and gas industries contributed € 3.9 bn to Austrian gross value added.
- In 2002 electricity and gas accounted for some 35 % of total final energy consumption in Austria.
- Amendments to the EU Electricity and Gas Directives are aimed at removing the main obstacles to a fully operational and competitive internal market.
- Amendments to the unbundling provisions in the EIWOG were required; otherwise transposition of EU electricity and gas liberalisation was already far advanced.
- The Emission Trading Directive will affect the operating environment of thermal power stations, and the Water Framework Directive will affect that of hydro power stations.

#### → Conclusions

- The price and quality of electricity and gas supplies influence the competitiveness of the economy as a whole.
- Compliance with the unbundling rules requires careful monitoring. The legal framework in Europe requires further harmonisation.







Market structure



This chapter examines the key structural factors shaping the Austrian electricity and gas markets that are relatively constant over time. In particular, these include factors that are not subject to the direct strategic influence of individual companies. Of particular importance are market concentration, the degree of integration, the extent of product differentiation, the barriers to entry and exit (e.g. technological, regulatory and shortage related), and the links between markets.

Electricity and gas market liberalisation has brought lasting changes, some of which have given rise to entirely new market structures. The territorial monopolies have been broken up, energy prices are now set not administratively, but by the free market, and consumers are free to choose their energy suppliers. However, other characteristics of these markets have remained unchanged. Among these are the high degree of public ownership of electricity and gas companies, and this effectively mirrors Austria's federal structures.

The two sections below give a brief account of the definitions of the relevant electricity and gas markets, and the criteria used to arrive at them, and go on to discuss the structures of these markets.

→ The structure of the electricity market

Overview of the relevant electricity markets<sup>9</sup>

The purpose of specifying the relevant product and geographic markets is to arrive at precise definitions of the products offered by the various companies and of the areas within which the latter compete with each other. Only when the product and geographic markets have been defined it is possible to form a picture of the competitive situation and trends in the respec-

tive relevant markets, and to make judgments about them<sup>10</sup>.

A look at the value chain in the electricity industry suffices to see that a variety of non-substitutable products and services are being offered at the various stages of value creation. Table 6 summarises market definition in the electricity sector.

The European Commission's rulings on mergers have a crucial influence on the structure of the European electricity market. The definitions of geographic and product markets made in arriving at these decisions were the starting point for delineation of the Austrian electricity market. As regards the final customer markets, the Commission has hitherto distinguished between non-metered (residential and small commercial) and metered (large commercial and industrial) consumers. In addition, the Commission still draws a distinction between the relevant small and large distributor product markets; with the exception of the large distributor market, product market definition is no wider than national territory. When giving its reasons for decisions, the Commission only supplies comprehensive definitions of those geographic and product markets that are identified as affected in relation to the case under consideration. There may be either no precedents for definitions of the markets of individual member states, or very detailed definitions, depending on the cases heard. The decisions of the Commission's competition directorate hence provide useful guidance but not a comprehensive definition of all the various markets.

Unlike the Commission, E-Control regards a further differentiation between small, large and very large-scale electricity consumers as justified because of the widely differing characteristics of the products offered. However in

<sup>9</sup> For a comprehensive account of electricity product and geographical market segmentation, readers are referred to the Liberalisation Report 2003, available in printed form and as a download from the E-Control website.

<sup>10</sup> Here, it should be noted that the concept of the "relevant market" differs from market concepts used in other connections.

Austria, unlike some other member states, it has not proved possible to define separate product sub-markets. Metering services<sup>11</sup> and con-

tracting services<sup>12</sup> are treated as relevant product and geographic markets in British merger proceedings, and are investigated as such. The

### → Overview of relevant product and geographic markets in the Austrian electricity sector

Table 3

Relevant product market	Product/definition	Relevant geographic market
Generation	Electrical energy generated at power stations	National territory
Transmission	Transportation of electricity over the high and ultra-high voltage grid levels	Not defined (monopoly)
Distribution	Transportation of electricity over the medium and low voltage grid levels	Not defined (monopoly)
Wholesaling	Sale/purchase of electricity at own risk and for own account	Extending beyond national territory
Balancing market	Provision of power at short notice by quick-start power stations with minimum capacities of 10 MW	Control area:
Electricity consumers	<b>Small consumers:</b> Connected load < 50 kW or annual consumption < 100,000 kWh	National territory or control area
	<b>Large consumers:</b> Connected load > 50 kW or annual consumption > 100,000 kWh	National territory
Distributors	<b>Small distributors:</b> Jahresverbrauch < 500 GWh, Vollversorgung, längerfr. Lieferverträge	No wider than national territory
	<b>Large distributors/provincial utilities:</b> Annual consumption > 500 GWh; demand largely met by electricity trading (no decision as to whether trading should be treated as a separate market)	Possibly beyond Austrian territory (open)
Electricity consumers	<b>Small consumers:</b> Connected load < 50 kW or annual consumption < 100,000 kWh	National territory
	<b>Large consumers:</b> Connected load > 50 kW and annual consumption > 100,000 kWh < approx. 4 GWh	National territory
	<b>Very large consumers:</b> Connected load > 50 kW and annual consumption > approx. 4 GWh Annual consumption > 100 GWh, < 10 withdrawal points	National territory Extending beyond national territory

Sources: European Commission and E-Control

<sup>11</sup> See Consultation paper on Innogy Holdings/Northern Electric plc transaction, Office of Gas and Electricity Markets, August 2001.

<sup>12</sup> See SSE Power Distribution Ltd/Aquila Sterling plc transaction, Office of Fair Trading decision of 24 July 2003 under section 22 Enterprise Act.

Commission has defined the German “market at the level of the integrated grid” as a separate product market. The non-existence of this market in Austria is largely attributable to the regulatory environment, under which, for instance, system operators are responsible for metering services by law. The metering charges are not set by market forces as they are capped by the regulator.

Geographic market definition is performed by asking whether competitive conditions in the relevant geographic market are “sufficiently homogeneous” and are “appreciably different” from those in neighbouring areas. Neither the European Commission nor the German Federal Cartel Office have hitherto defined geographic markets for areas extending beyond national frontiers. The wide variations between the degree of market opening and the legal frameworks in member states are chiefly responsible for the national boundaries of geographic markets. The definition of the wholesale market applied to the “Austrian electricity solution” merger proceedings is an exception. Here, the European Commission has found that the borders of the geographic market extend beyond Austria’s frontiers. In Austria as in some other member states, conditions in some relevant markets are such that definition at below national level (e.g. control areas or grid zones) is still required. For instance, in the United Kingdom the territorial limits of the geographic markets for the supply of small consumers were found to coincide with the regional distribution areas despite full liberalisation<sup>13</sup>.

#### The wholesale market – the central hub

An efficient, liquid wholesale market is a precondition for the development of an integrated European internal electricity market.

Already, substantial numbers of market participants are trading large volumes of standardised electricity products on the wholesale market. The players include generators, traders, retailers and large consumers. Smaller final customers and subsidised green power generators do not trade on the market directly. The latter are not obliged to derive their income from the free market, since they receive financial support by way of guaranteed injection tariffs.

The prices obtained on the market serve as a basis for estimation when preparing offers to final customers, and thus influence the prices charged to them. The transactions involve both spot and forward products, and are conducted bilaterally (OTC) or via organised markets (electricity exchanges). Austrian traders deal in short-term electricity contracts on the Energy Exchange Austria (EXAA) and the European Energy Exchange (EEX). These offer similar products and compete in the same regional market.

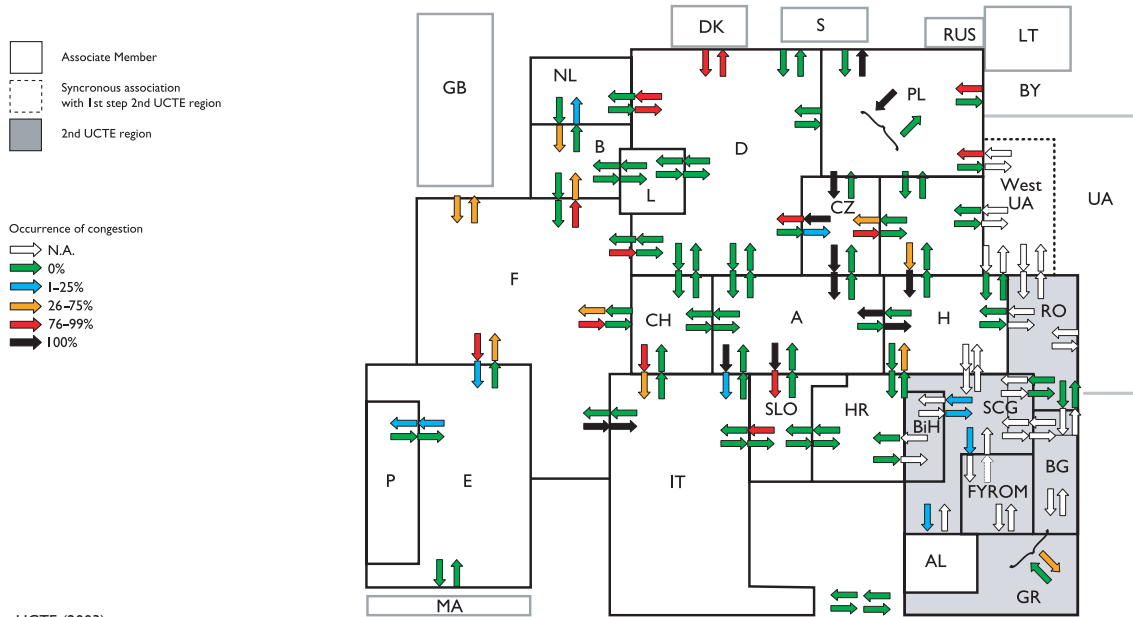
The emergence of an efficient national and international wholesale market depends on properly functioning transmission networks. However, neither in Austria nor in the EU area as a whole has this condition been fully met. Network congestion is widespread. Chart 12 gives an overview of European interconnection capacity utilisation.

Network congestion thus divides Europe into a number of regional wholesale markets. A direct consequence of this geographic division is regional disparities between wholesale prices. Congestion obstructs the transportation of electricity from low-price to high-price areas. This situation can frequently be observed in Scandinavia and elsewhere in Europe, e.g. between the Netherlands and Germany (see Chart 13).

<sup>13</sup> See Case IV/M. 1606 EdF/South Western Electricity, 19 July 1999.

## → Congestion on the European interconnected system

Chart 12

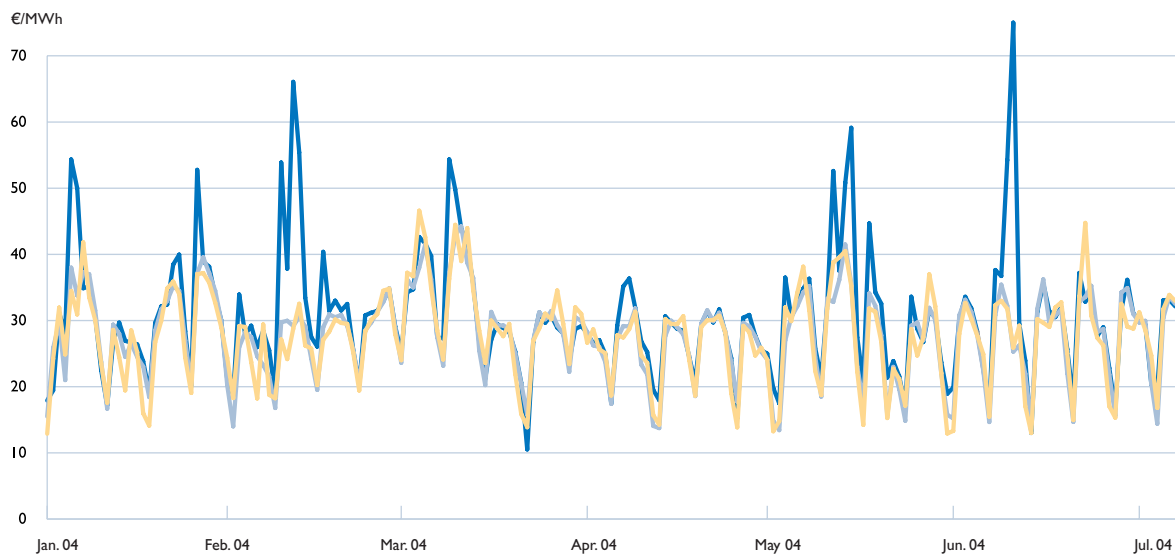


Source: UCTE (2003)

## → Wholesale prices in Germany, Austria (base) and the Netherlands

Chart 13

■ APX (NL) ■ EXAA (A) ■ EEX (D)



Sources: EEX, APX and EXAA

Not just the size, but also the direction of power flows on the European interconnected system can change. This may cause congestion, but may also relieve it. The borders of the regional wholesale markets may thus shift from time to time. Because of this, a complete picture of these markets' geographical boundaries can only be gained by viewing them over time.

Since high-voltage transmission networks connect Austria with its western neighbours, prices are closely linked to those of a highly integrated Central European market that also includes Germany and Switzerland. A feature of this is the way that wholesale prices move in step in these countries. The southern border of this geographic area is roughly demarcated by the interconnection points for Italy and Slovenia. The capacity of the interconnectors linking Austria with its eastern neighbours is limited and they thus form the border with another regional market. The development of competitive wholesale markets is still in its infancy in Central and Eastern Europe. One of the reasons for the lack of liquid exchanges in this region is the fact that the generators there committed the lion's share of their capacity under long-term supply agreements, long before electricity market opened.

Transmission system capacity utilisation is on the increase throughout Europe – in Austria, mainly as a result of the North-South imbalance between generation and consumption. Because of this, across Europe existing technical infrastructure is sometimes inadequate to meet the full demand for transmission capacity for cross-border electricity exchanges. The transmission system operators currently use a variety of procedures to allocate capacity to traders. These range from auctions (explicit, i.e. trading of transmission capacity alone, or implicit, i.e. simultaneous trading of energy and transmission capacity) through to pro rata allocation

to all applicants. For further discussion of cross-border capacity see section Entry barriers in the Austrian electricity market<sup>14</sup>.

#### The balancing market – an important spin-off of liberalisation

As it is effectively impossible to store electricity, it is essential to ensure that the power generated always corresponds to demand at any point of time. Balancing power serves to create this balance within a given control area, and is thus an integral part of the electricity market<sup>15</sup>. Balancing power is an essential input for the delivery of electricity to consumers. However, the European Commission has not ruled as to whether balancing energy constitutes a separate market.

The hold-all term “balancing energy” covers different standards of service, such as primary, secondary and tertiary balancing power (minute reserve). These services are defined by UCTE. Their provision is still partly limited to the respective control areas. Trading in minute reserve – the form of balancing energy best suited to trading – across control areas or control blocks is not practised at present, and is effectively impossible because of the regulatory regimes in place. The geographic balancing energy market is thus confined to the respective control areas.

The only organised markets in the three Austrian control areas are for the provision of minute reserve capacity. However, in the case of secondary balancing power tendering of power to be paid for in kind introduces market elements into the system. The balancing market is run by the so-called “balancing group coordinators”. This role is performed by A&B in the VKW-ÜNB and TIRAG control areas, and by APCS in the Verbund-APG control area. The provision of balancing power under competitive conditions depends on the existence of an adequate number of market participants with sufficient generating

<sup>14</sup> See the E-Control Liberalisation Report 2003 for a more detailed description of the wholesale markets.

<sup>15</sup> For a more detailed description of the balancing markets see the Liberalisation Report 2003.



capacity. As this is not the case in all three Austrian control areas efforts are being made to remove the barriers between the minute reserve markets in the three Austrian and four German control areas.

Increased networking between balancing markets would represent a major step towards the European internal electricity market. In most countries this segment is dominated by incumbents. Although the amounts of balancing power are generally comparatively small, attractive profits can be made which can be ploughed into other competitive markets. There is every expectation that widening the number of suppliers to a larger number of generators and extending the geographic area of the market – possibly resulting in the joint use of standby capacity – would enhance the efficiency of the balancing market.

Operational and market harmonisation will be required if these markets are to be integrated at a wider European level. For instance, the time windows, pricing structures and means of communication will need to be standardised.

#### The structure of the supplier market

Liberalisation has brought differentiation according to production stages, and disaggregation of the latter. Power transmission and distribution services continue to be subject to state price regulation<sup>16</sup>, while electricity prices are determined by the free market. With most Austrian energy companies vertically integrated, and active not just in system operation but also in generation and retailing, strict organisational and functional unbundling of system operation from generation and marketing is essential if third-party electricity suppliers are to enjoy non-discriminatory system access.

Liberalisation has, indeed, led companies to re-organise and reposition, but the structure of the

supplier market still bears the imprint of the Second Nationalisation Act<sup>17</sup>. Amendment of the 1998 Act requires a two-thirds parliamentary majority which is unlikely to be forthcoming in the short to medium term. As a result, Austrian federalism is reflected in the supplier market structure and in ownership of the electricity industry. The long-standing territorial protection accorded to the incumbents prior to liberalisation, and the resultant high degree of consumer awareness of their brands, favours the continued existence of the current supplier structure.

The Austrian electricity market is still dominated by Verbund, the nine provincial utilities and municipal utilities in the provincial capitals. In 2003 these few companies generated almost 95 % of all electricity infed to the public grid, though a total of about 200 generators with capacities of more than 1 MW (excluding wind farms) inject electricity to the public grid. Verbund is the largest Austrian power generator, but other small to medium-sized companies also operate in this market or at least, as is the case with Steweag-Steg, own interests in generating capacity. Verbund, Tiwag and VKW are the largest transmission system operators. At the same time most of the companies named in the Second Nationalisation Act are involved in the retail market, either directly or through subsidiaries.

Table 4 summarises the changes encountered by the companies as a result of market opening. Apart from new functions and areas of activity, new markets have grown up (the wholesale and balancing markets). However, not just commercial but also economic and social policy considerations continue to play a major role in the incumbents' behaviour because of the high level of public ownership (witness the political debate in Styria on the price increases introduced by the provincial utility, Steweag-Steg).

<sup>16</sup> In Austria charges for system use are fixed by the E-Control Commission.

<sup>17</sup> The Second Nationalisation Act (BGBl. No. 81/1947) as amended by BGBl. No. 762/1992 was formally repealed by the Constitutional Act Regulating the Ownership of Austrian Electricity Companies (BGBl. No. 143/1998), but this effectively retained the substance of the ownership provisions of the Second Nationalisation Act.

The predominant vertical integration is often accompanied by horizontal integration with other utility industries. Virtually all the major electricity companies have direct or indirect links with gas suppliers. Moreover, most of the municipal utilities have ties with other typical utility industries such as water supply, waste disposal or telecommunications. By contrast, the only local subsidiary of a foreign company – EnBW Austria – exhibits a very low degree of integration. Chart 14 summarises vertical inte-

gration in the electricity industry, and Chart 15 gives an overview of non-electricity activities. The areas of business in which companies operate, i.e. with which they are vertically or horizontally integrated, are colour coded. The charts also indicate the subsidiaries, fellow group companies and parent companies active in the respective markets. They clearly demonstrate that a high degree of vertical and horizontal integration is a structural characteristic of the Austrian electricity industry.

→ The electricity market before and after liberalisation

Table 4

Prior to liberalisation	After liberalisation
<p>Verbund</p> <ul style="list-style-type: none"> <li>→ Generation</li> <li>→ Transmission</li> <li>→ Supplying provincial utilities</li> </ul>	<p>Verbund</p> <ul style="list-style-type: none"> <li>→ Generation</li> <li>→ Transmission</li> <li>→ (supplying provincial utilities)</li> <li>→ Control area management</li> <li>→ Trading</li> <li>→ Supplying final customers</li> </ul>
<p>Provincial and municipal utilities</p> <ul style="list-style-type: none"> <li>→ Some generation</li> <li>→ Some transmission</li> <li>→ Distribution</li> <li>→ Supplying final customers</li> </ul>	<p>Provincial and municipal utilities</p> <ul style="list-style-type: none"> <li>→ Some generation</li> <li>→ Some transmission</li> <li>→ Distribution</li> <li>→ Supplying final customers</li> <li>→ Some control area management</li> <li>→ Trading</li> </ul> <ul style="list-style-type: none"> <li>→ Wholesale market (100–150 TWh)                             <ul style="list-style-type: none"> <li>→ OTC</li> <li>→ Exchanges (Graz EXAA and Leipzig EEX)</li> </ul> </li> <li>→ Balancing market</li> <li>→ One foreign supplier with an Austrian subsidiary (EnBW)</li> <li>→ Some foreign holdings in Austrian companies (EnBW, RWE and EdF)</li> <li>→ Mergers at regional and national levels</li> </ul>
	<p>Continued political influence. Policies determined by:</p> <ul style="list-style-type: none"> <li>→ commercial considerations</li> <li>→ economic policy</li> <li>→ social and employment policy</li> </ul> <p style="text-align: right;">} target</p>

Source: E-Control



Comparison of the Austrian electricity industry with its European peers shows that though Verbund is the largest generator in Austria and is one of the 30 largest European electricity companies it is far smaller than the major players in the European electricity industry.

The large European electricity companies, such as EDF, RWE and E.ON, hold dominant positions in their home supply areas, with market shares of over 90 %. The reason for this is the fact that

market opening is in reality far less advanced in France and Germany than in Austria. At the same time the major players are expanding out of their secure home markets into the European market at large (Chart 16). Oligopolisation is putting small and medium-sized suppliers in Central Europe under growing pressure. The Austrian electricity companies have substantial market shares in their base service territories, but are of insignificant size in comparison to the main players in Europe.

### → Production stages: electricity

Chart 14

	Generation	Wholesaling	Grid	Small distributors	Balancing market	Control area manager	Settlement agency:	Large consumers	Small consumers
Verbund		APT neu		Energie Austria			Equity interest	Energie Austria	
Wienstrom		APT neu		Energie Austria				Energie Austria	Energie Allianz
EVN		APT neu		Energie Austria				Energie Austria	Energie Allianz
Energie AG		APT neu		Energie Austria			Equity interest	Energie Austria	Energie Allianz
Bewag		APT neu		Energie Austria				Energie Austria	Energie Allianz
Steweag-Steg							Equity interest		
Linz AG		APT neu		Energie Austria				Energie Austria	Energie Allianz
Salzburg AG							Equity interest		
Tiwag							Equity interest		
VKW							Equity interest		
Kelag							Equity interest		
EnBW									

Sources: Company annual reports and websites, and E-Control

### → Comparison of European electricity companies, 2001

Table 5

Ranking	Consolidated sales revenue		Ranking	Net cash from operating activities <sup>18</sup>		Ranking	Profit after tax	
		€ million			€ million			€ million
1.	E.On Gruppe	69,839	2.	E.On Gruppe	8,626	2.	E.On Gruppe	3,137
2.	RWE Gruppe	43,970	4.	RWE Gruppe	6,839	5.	RWE Gruppe	1,744
3.	EdF	40,716	1.	EdF	8,671	3.	EdF	848
4.	Enel	27,725	3.	Enel	8,172	1.	Enel	3,952
5.	Endesa	15,576	5.	Endesa	5,113	4.	Endesa	1,537
6.	Electrabel	12,580	9.	Electrabel	1,6341	4.	Electrabel	910
11.	EnBW	7,861	19.	EnBW	929	18.	EnBW	272
29.	Verbund	1,684	30.	Verbund	389	23.	Verbund	137
n.a.	EVN	1,114	n.a.	EVN	264			

Sources: Eurelectric and EVN annual report

<sup>18</sup> Earnings before interest, tax, depreciation and amortisation (EBITDA)

The relatively small size of the Austrian companies in comparison to other European businesses probably results in cost disadvantages. Another striking characteristic is the ownership structure of the Austrian incumbents – namely, the many cross-holdings (see Chart 25: Ownership in the Austrian electricity and gas industries). According to a recently published study,<sup>19</sup> the Austrian distribution system operators (DSOs) alone hold some € 2bn in equity investments in each other – roughly equal to the annual revenue of such a company.

The same study shows that the returns on the DSOs' financial investments (including the cross-holdings) were very modest during the observation period (2000–2002). This suggests that the holdings were largely inspired by strategic considerations related to liberalisation, rather than being true financial investments. This approach is favoured by majority public

ownership, which means that the automatic discipline of the capital market in case of misinvestments only operates to a limited degree. There are only two listed Austrian electricity companies – Verbund and EVN. The international competitiveness of Austrian electricity companies is weakened by their small size, the drain on their liquidity from cross-holdings and the low returns on their financial assets. On the other hand, the cross-holdings will provide relatively good protection from takeovers in the event of further privatisation.

Where hydro power accounts for the bulk of their generating capacity, however, the low long-term costs give the Austrian electricity companies a considerable advantage in international competition. This advantage is all the greater, because some hydro power stations were written off as impaired assets before market opening.

### → Power utilities' activities

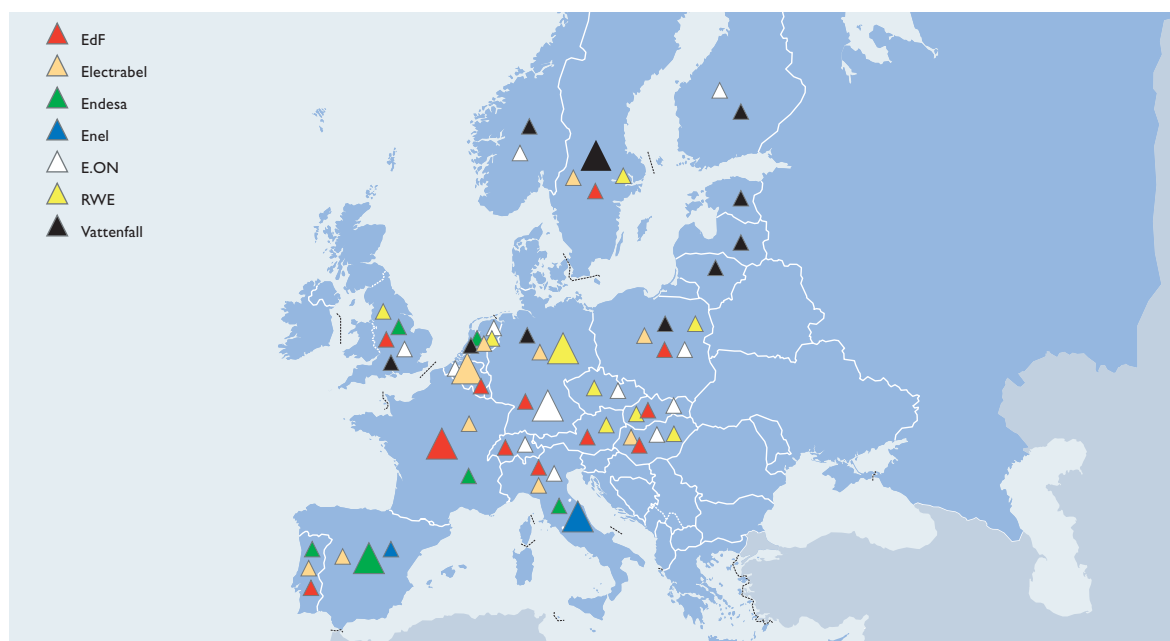
	Ownership	Electricity	Gas	District heating
Bewag/Begas	Majority public	Bewag	Begas	
Energie AG	> 80 % public	Energie AG	OÖ Ferngas	Energie AG
Estag	Majority public	Steweag-Steg	Steirische Gas Wärme	Steirische Gas Wärme
EVN	Majority public	EVN	EVN	EVN
Kelag	Majority public	Kelag	Kelag	Kelag
Salzburg AG	> 90 public	Salzburg AG	Salzburg AG	Salzburg AG
Tiwag/Tigas	100 % public	Tiwag	Tigas	other interests
VKW/VEG	> 90 % public	VKW	VEG	other interests
Wienenergie	100 % public	Wienenergie	Wienenergie	Wr. Stadtwerke, Wienenergie
Linz AG	100 % public	Linz AG Strom	Linz Gas Wärme	Linz Gas Wärme
Energie Graz	Majority public	Energie Graz	Energie Graz	Energie Graz
EnBW Austria	Indirect majority public	EnBW Austria		

Sources: Company annual reports and websites, and E-Control

<sup>19</sup> Elektrizitätsmarkt in Österreich 2004 (The Austrian Electricity Market in 2004), collaborative study prepared under the guidance of the University of Klagenfurt ([http://www.econ.uni-klu.ac.at/strom2004/strommarkt\\_2004\\_v203.pdf](http://www.econ.uni-klu.ac.at/strom2004/strommarkt_2004_v203.pdf)).

→ Expansion of the major European electricity companies

Chart 16



Source: Verbund

Chart 15

Water	Wastewater	Telecommunications	Waste disposal
		UTA, BKF	
Upper Austrian provincial water companies	WAV, AVE	LIWEST, UTA	WAV, AVE
		UTA	Steirische Abfallverwertungs GMBH
EVN Wasser GmbH, WTE Wassertechnik GmbH	WTE Wassertechnik GmbH	NÖKOM, UTA, Kabelsignal AG	AVN Abfallverwertung
		Kelag, UTA	KRV
Salzburg AG, WSG Wasser Service GmbH	Salzburg AG, WSG Wasser Service GmbH	Salzburg AG	
		TI.KOM, UTA	
	Hubert Häusle GmbH	UTA, Vorarlberger Telekommunikations-GmbH	Hubert Häusle GmbH
Wiener Wasserwerke, Aqua Plus	Aqua Plus, Wien Kanal	UTA	
Linz AG Wasser	Linz AG Abwasser	Linz AG Strom, LIWEST	Linz Service GmbH
Grazer Stadtwerke	Grazer Stadtwerke	Grazer Stadtwerke	AEVG

Final clearance of the “Austrian electricity solution” (Energie Austria)<sup>20</sup> merger has brought a major change in the structure of the Austrian supplier market, this year. This, too, reflects Austrian companies’ efforts to hold their own in the liberalised European market. The transaction involves the merging of some activities of Verbund and the parent companies of Energie-Allianz – EVN AG, Wien Energie GmbH, Energie AG Oberösterreich, BEWAG and Linz AG. The parties’ electricity trading operations are being merged into “ew” ATP controlled by Verbund, and their large consumer distribution businesses are being merged into “new” e&s controlled by EnergieAllianz. To this end two joint venture companies have been formed (see Chart 17).

The main commitments given by the merging parties were as follows<sup>21</sup>:

- disposal of the Verbund subsidiary Austrian Power Vertriebs GmbH (APC), active in the large consumer segment, to an independent third party;
- disposal of Verbund’s interests in MyElectric and Unsere Wasserkraft;
- temporary non-exercise by Verbund of its right to exert a significant influence over Steweg-Steg, and by Energie AG of its voting rights in Salzburg AG;
- regular auctioning of 450 GWh per year of electricity supplies (50 % hydro power) in the form of products tailored to the load profiles of Austrian small consumers up to July 2008;
- supply of a minimum amount of balancing energy subject to a price cap until a functioning cross-border balancing market emerges;
- the right of large customers of the notifying parties to premature, unilateral termination of their agreements upon their transfer to the new distribution business for large customers.

Verbund sold its 20 % holding in MyElectric to Salzburg AG on 11 November 2003. At this time Salzburg AG already owned 80 % of the company. On 1 March 2004 Verbund’s 20 % interest in Unsere Wasserkraft was acquired by Energie Steiermark Holding AG (ESTAG) which likewise already held 80 % of this enterprise.

The central undertaking given during the proceeding was that by Verbund to sell its 55 % interest in APC to an independent third party. APC sells electricity to industrial and commercial customers, and to aggregation pools with an annual consumption of over 0.1 GWh. ESTAG, which held 35 % of APC as well as a preemptive right to Verbund’s shares in APC, was expressly excluded from recognition as an independent third party. Salzburg AG holds the remaining 10 % in APC.

Another obstacle to the search for a purchaser for Verbund’s large customer business was the fact that the future acquirer faced tight margins due to the low prices on the large consumer market. The Energie Austria merger could not go ahead until the disposal had taken place and the Commission had approved the acquirer of the Verbund holding in APC. The merger parties were given a six-month extension to fulfil this key condition, having failed to find a buyer for APC within the appointed six-month period. After protracted negotiations ESTAG waived its preemptive right to the Verbund shares and subsequently transferred its 35 % interest in APC to Verbund. In the spring of 2004 Salzburg AG likewise sold its shares to Verbund. In April 2004 the Verbund holding, ESTAG’s 35 % and Salzburg AG’s 10 % were sold to the highest bidder – Slovenia’s Istrabenz Energetski Sistemi, d.o.o – in an international tender procedure. The other bidder was the Tyrolean provincial utility.

<sup>20</sup> Both the “Austrian electricity solution” label and Energie Austria are only working titles used to denote this complex merger transaction. As the overall venture still lacks an official name this report continues to use the working title, Energie Austria.

<sup>21</sup> Detailed information on the merger proceeding and the undertakings given by the notifying parties can be found in the Liberalisation Report 2003.

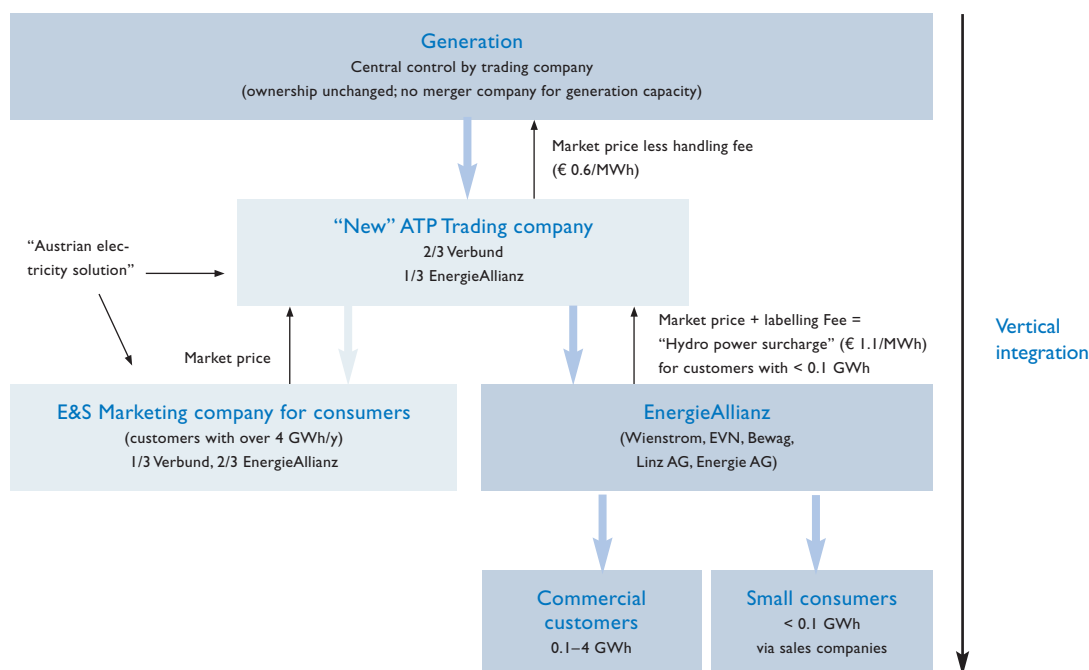
Istrabenz Energetski Sistemi, d.o.o. is a subsidiary of Istrabenz, d.d. The latter is the holding company of a Slovenian industrial group focusing on the energy and tourist sectors. The group currently comprises 26 companies, and is mainly active in Slovenia, Italy, Croatia and Bosnia-Herzegovina. Through Istrabenz Energetski Sistemi the group engages in oil trading, refining and storage, gas trading and other energy businesses. In July 2004 the European Commission ruled that the sale of Verbund's interest in APC to Istrabenz constitutes a disposal to an independent third party. The only suspensive merger condition was thus fulfilled, and Energie Austria was free to commence operations.

According to information from Verbund and the EnergieAllianz partners available as of the editorial deadline of this report, the "new" APT and e&s are due to commence operations on 1 October 2004. The implementation of the "Austrian electricity solution" will result in a marked consolidation of the Austrian supplier market, as it will mean that six large Austrian companies – EVN AG, Wien Energie GmbH, Energie AG Oberösterreich, BEWAG, Linz AG und Verbund – now work through single joint ventures in the wholesale and large customer markets, respectively.

Over the first three years of full liberalisation, hardly any new suppliers have entered the Austrian market. Apart from the incumbents' distribution subsidiaries and the sole foreign

→ Overview of Energie Austria

Chart 17



Sources: Energie Austria and E-Control



## Market structure

### → The structure of the natural gas market

supplier with a local subsidiary – EnBW – there are few independent players. The main distribution subsidiaries of the incumbents in the small customer segment are ESTAG's Unsere Wasserkraft, EnergieAllianz's Switch and Salzburg AG's MyElectric. Kelag and VKW are the only incumbents marketing electricity to small consumers under their own names on a nationwide basis. The new independents include Ökostrom AG and Alpen Adria Energie AG, both of which offer electricity from renewable energy sources.

### → The structure of the natural gas market

#### Brief description of the relevant gas markets<sup>22</sup>

As with the electricity market, the purpose of defining the relevant product and geographic markets is to arrive at precise definitions of the products offered by the various companies and of the areas within which the latter compete with each other. Market definition is an essential first step towards forming a picture of the competitive situation and trends in the respective market segments, and making judgments about them.

A look at the value chain in the gas industry is sufficient to see that a variety of non-substitutable products and services are being offered at the various stages of value creation. Table 8 summarises market definition for the gas sector.

The pre-liberalisation structure of the natural gas market was clearly delineated. OMV Gas was primarily an importer, producer, system and storage facility operator, while the provincial utilities supplied final customers and municipal utilities, and the latter final customers. These roles have changed little after liberalisation. The gas market still lacks competitive structures. Austria remains highly import dependent (approx. 80 % of demand is met from imports,

mostly from Russia), and OMV Gas is the main importer.

The formation of EconGas – a joint venture between EnergieAllianz and OMV Gas – has indirectly turned the latter into a retailer, and hence a competitor with the provincial utilities it supplies as an importer. Due to the existing take-or-pay (TOP) agreements, this constellation is unlikely to change in the short or medium term.

Despite liberalisation few companies operate across the entire Eastern control area, i.e. outside their original supply territories. Particularly in the small consumer segment, most of the provincial utilities largely limit themselves to supplying their existing customer base in their former territories, as indicated by their advertising activities (see section Advertising activities by Austrian electricity and gas companies).

Competition in the Tyrol and Vorarlberg control areas is still prevented by the lack of an interconnector between the control areas. Gas can only be transported to Tyrol and Vorarlberg via Germany. As a result, other Austrian companies are unable to offer gas at competitive prices in these provinces, since apart from the transportation costs inside Austria there is the cost of transit via the Ruhrgas grid in Germany to consider.

The lack of interconnectors between Tyrol and Vorarlberg, and Salzburg and Tyrol, as well as the small number of companies marketing outside their former supply territories, and the absence of foreign suppliers (with the exception of Ruhrgas) all indicate that the various control areas define the relevant geographic markets in Austria. There is no national or cross-border gas market, unlike the electricity sector, in which there is at least a supraregional wholesale market.

<sup>22</sup> For an exhaustive account of gas product and geographical market segmentation, readers are referred to the Liberalisation Report 2003, available in printed form and as a download from the E-Control website.

### The wholesale market

EconGas, RAG, Terragas, Steirische Gas Wärme and Kelag operate in the wholesale market. In addition, CE Oil and Gas Trading GmbH has entered the market as a gas trader, using volumes auctioned under the gas release programme in June 2003.

Although the organisational groundwork has already been laid for a gas hub in Baumgarten, no turnover is yet being recorded on this market (apart from the gas release programme). The operating company Central European Gas Hub GmbH (CEGH) will start offering gas trading services in October 2004.

There is no reliable wholesale trading volume data. Since gas is traded on the balancing market, data relating to the latter would provide useful clues. From October 2003 to June 2004, excess supplies to the balancing market totalled 260 million (m) cu m of gas. In other words, this volume, over and above the amount consumed, was injected into the grid by the balancing groups. When system losses and own use (approx. 2.6m cu m) are deducted from excess deliveries by the balancing groups (approx. 130m cu m) it is seen that about 127m cu m of gas was exchanged via the balancing market. These activities could be described as short-term trading. The current design of the gas balancing

## → Overview of relevant product and geographic markets in the Austrian gas sector

Table 6

Relevant product market	Product/definition	Relevant geographic market
EProduction	Natural gas production	Control area
Import/trading	Import and trading of natural gas at own risk and for own account	Extending beyond national territory
Transit	Transportation of natural gas on transit pipelines	Not defined (Monopoly)
Transmission	Transportation of natural gas on long-distance pipelines (Level 1)	Not defined (Monopoly)
Distribution	Transportation of natural gas at regional level (Levels 2 and 3)	Not defined (Monopoly)
Storage	Injection/withdrawal of natural gas to/from storage facilities	Control area
Balancing market	Natural gas made available at short notice	Control area
Gas consumers	Supply of gas to final customers	Small consumers: Annual consumption < 100,000 cu m
		Large consumers: Annual consumption > 100,000 cu m and < 500,000 cu m
		Very large consumers: Annual consumption > 500,000 cu m
		Control area or supply area
		Control area
		Control area

Source: E-Control

market thus offers functions and products equivalent to those found on the electricity wholesale market.

Liquefied natural gas (LNG) has recently made inroads in some European markets. Alongside the existing sources of supply via pipelines (e.g. from Norway and Russia), some new suppliers have now succeeded in offering LNG at competitive prices in Europe (see Text box 2). LNG is taking on an increasing role as compared to pipeline gas in countries with very long transportation routes. It is of little significance in Austria at present. However if it proved possible to transport LNG to Austria at competitive prices, e.g. from Italy, this would have a favourable effect on competition. Additional suppliers and sources of supply would promote the development of a wholesale market at the Baumgarten gas hub by increasing liquidity.

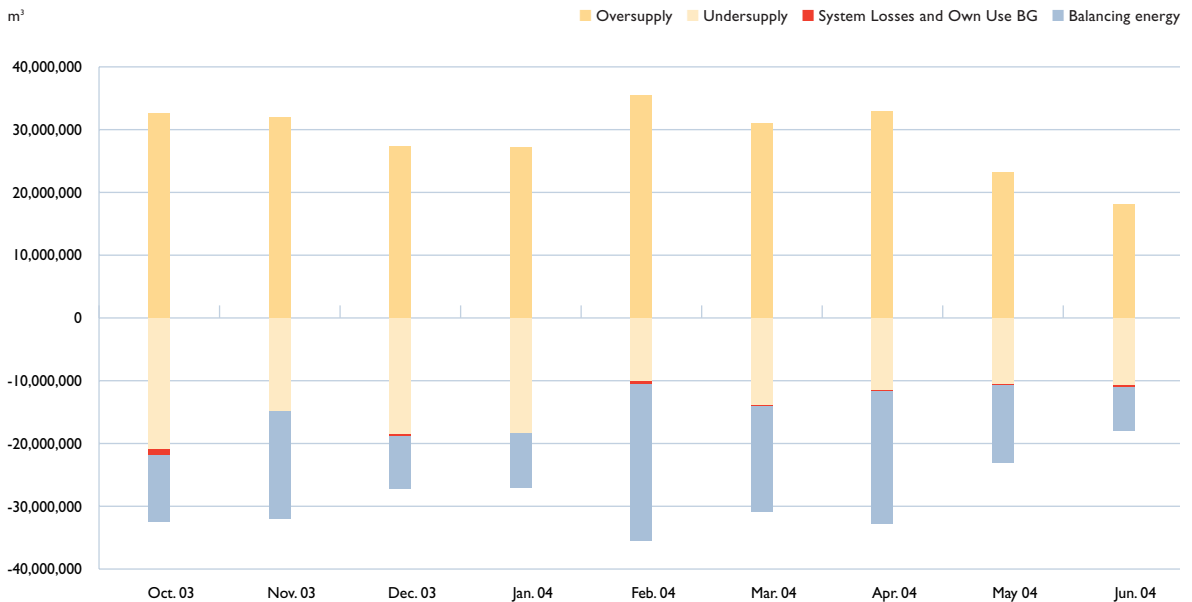
The share of the European natural gas market claimed by LNG has reached about 10 %. Some 90 % of all gas used in Europe is still transported conventionally, via pipelines – mostly from Norway and Russia. In some European countries and sub-markets, LNG’s market share is considerably higher.

The Baumgarten gas hub is one of the main centres for trading in Russian natural gas. Half of the Russian gas (approx. 30bn cu m/year) exported to Central and Western Europe passes through Baumgarten. There are interconnectors with Germany (WAG), Hungary (HAG) and Italy (TAG). There are plans for an additional pipeline from Turkey to Baumgarten (Nabucco project), in part using existing systems.

Gas shipments to Baumgarten under long-term supply agreements began in the 1970s.

→ Trading volume on the gas balancing market from October 2003 to June 2004

Chart 18



Source: AGCS



## → Liquefied Natural Gas

Kasten 2

The liquefied natural gas (LNG) supply chain has a number of stages:

1. Gas liquefaction in the exporting country (cooling to  $-161.5^{\circ}\text{C}$ );
2. Transportation by tanker;
3. Revaporisation in the destination country;
4. Injection into the gas grid.

Natural gas is reduced to 1/600 of its volume when it is liquefied, meaning that large amounts can be transported. Thanks to the sharp reduction in costs over the past few decades LNG is now competitive with gas transported by conventional means. LNG has a cost advantage on long transport routes, as in contrast to pipeline gas the cost of carriage does not rise in proportion to the distance travelled.

The amount of LNG sold has more than doubled over the past 15 years. LNG demand is continuing to grow, partly reflecting the fact that some consuming countries are islands, as well as the decline in the supply of pipeline gas.

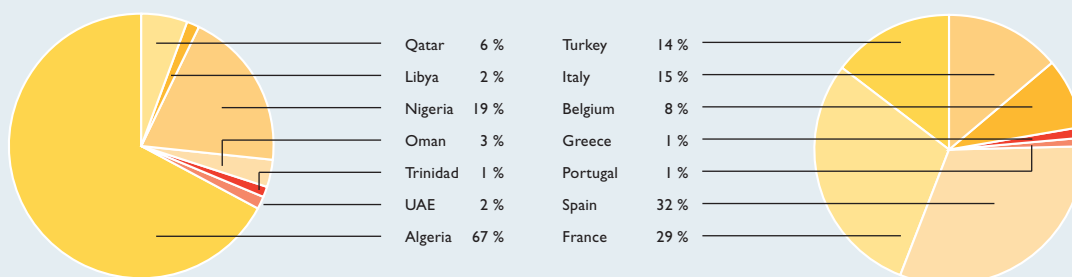
A total of 12 countries currently offer LNG. However, a global market is unlikely to emerge because of the transport costs and the distances between the various markets. Short-term (intra-day or day-to-day) trading is limited to given geographic markets, due to the shortage of transportation and storage capacity.

In 2002 the main exporters to Europe were Algeria (market share approx. 67 %) and Nigeria (approx. 19 %). Smaller volumes come from Libya, Oman, Qatar, Trinidad and the United Arab Emirates. The main consuming countries are France and Spain – each of which take some 30 % of the volumes transported to Europe – followed by Italy, Turkey and Belgium (see Chart 19).

The share of the European natural gas market claimed by LNG has reached about 10 %. Some 90 % of all gas used in Europe is still transported conventionally, via pipelines – mostly from Norway and Russia. In some European countries and sub-markets LNG's market share is considerably higher.

## → Percentage breakdown of European LNG supply and demand, 2002

Chart 19



Sources: Cedigaz, 2003 in EWI, 2004

Gazprom's main trading partners are Ruhrgas, Gaz de France, ENI and OMV Gas. In 2001 OMV founded Central European Gas Hub Gesellschaft (CEGH) with the object of developing a gas hub in Baumgarten. The first step in this direction was the auction conducted by CEGH in July 2003, under the gas release programme agreed in connection with the EconGas merger. Some 250m cu m of gas were auctioned online. Four of the eight successful bidders have availed themselves of hub services. A further auction, also of 250m cu m, was held in July 2004. The vendor was EconGas. CEGH has now posted its services and prices on its website. These will be valid from 1 October 2004. It is not yet known how many bidders in this year's auction are using the company's hub services. Only when this information becomes available will it be clear whether the services offered are marketable.

As the record in Northern Europe shows, the tariff scheme and capacity booking system are crucial to the development of the Baumgarten gas hub. The distinction made between transit and domestic transportation, and negotiated system access for transit shipments offers problems. Potential trading volume is greatly restricted by the shortage of transit capacity. Apart from a sufficient number of traders the main precondition for a functioning natural gas market is a high degree of liquidity. Some companies, including EdF, OMV and Ruhrgas, procure

re gas at the Baumgarten hub, but these volumes are locked in by long-term agreements, and this has impeded the development of a short-term market. Moreover, as only a few companies ship gas to Baumgarten there is a virtual supply monopoly. Other gas hubs have better prospects of creating liquid wholesale markets. Together with storage facilities in the vicinity, the presence of a number of suppliers is central to a functioning gas hub. Gas is transported to various countries via Bunde/Oude (Germany/Netherlands), resulting in a heterogeneous supplier market and a high level of liquidity. Another important factor is the development of standardised products. CEGH has taken its first step towards standardisation by posting its prices and services on its website.

The destination clauses that the gas exporters have hitherto agreed with their customers (e.g. with OMV Gas in Austria) are another impediment to the development of an efficient and liquid gas market. The agreement between ENI and Gazprom (see Text Box 5), to revoke the destination clause in respect of shipments to Italy marks an advance towards increased competition and the development of gas hubs. OMV plans to cooperate with other gas suppliers on the construction of a pipeline running from Georgia and Iran to Austria, via Turkey. If implemented the Nabucco project will add to the number of suppliers at the Baumgarten gas

hub, and this could result in increased liquidity – on the short-term market, too.

#### The gas balancing market in the Eastern control area

The balancing market was created by the introduction of the balancing group system in October 2002. On this market control area managers call off the gas required by the balancing groups to balance forecast and actual demand on an hourly basis. The suppliers on the balancing market are EconGas, Rohöl-Aufsuchungs AG (RAG), Steirische Gas-Wärme GmbH, Salzburg AG and Kelag.

The balancing market is highly concentrated, with EconGas and RAG holding large market shares. The major suppliers of balancing energy are the balancing groups with the highest demand in the Eastern control area. All the other balancing groups are consumers, for which the control area manager calls off balancing energy, charging it to their accounts. Balancing groups pay the balancing energy price for all negative deviations from their schedules, and receive it for all positive deviations. It is thus not the physical quantity of balancing energy called off by the control area manager that is charged to the balancing groups by the balancing group coordinator (AGCS), but the net positive or negative deviations from the schedule.

#### The structure of the storage market in the Eastern control area

In Austria, storage facilities play an important part in evening out seasonal fluctuations in demand, thereby increasing security of supply (heavy dependence on imports from Russia). Most of the seasonal storage capacity takes the form of pore storage facilities (depleted gas fields). The capacity is concentrated in the Eastern control area – especially Lower and Upper Austria. There are only two suppliers on the storage market: OMV Gas (four storage facilities) and RAG (one facility).

As Table 7 shows, OMV owns 75 % of the total injection and working gas capacity in Austria, and 78 % of the withdrawal capacity. The remaining 25 % and 22 %, respectively, are accounted for by the other supplier, RAG. As would be expected, this duopolistic structure results in high concentration indices (HHI: 6,250 and 6,568).

As the operation of gas storage facilities is not a natural monopoly, access has not been subject to blanket regulation since market opening (no automatic right to access and no ex ante price regulation). The GWG provides for access on the basis of negotiation between operators and parties entitled to access. Under the GWG producers, suppliers and traders are entitled parties. The Act requires that negotiated agreements be on the basis of non-discriminatory

treatment and cost-reflective pricing. If storage charges are 20 % higher than the average charges for comparable services in the EU as a whole the E-Control Commission may intervene and regulate pricing. If a company is denied access to storage, it is entitled under section 39(4) GWG to apply to the E-Control Commission for an investigation of the reasons for refusal.

OMV Gas is the sole operator of storage facilities with withdrawal capacities of less than 15,000 cu m/h. RAG only offers storage contracts for withdrawal/injection rates upwards of 15,000 cu m/h.<sup>23</sup>

Information on the products offered is posted on the websites of the companies concerned<sup>24</sup>. RAG offers a standard product (six-month injection and withdrawal periods), for which an indicative price is published. Other services are subject to individual negotiation. OMV Gas offers a number of products on its website (bundled and unbundled services), and has published the general terms and conditions that serve as the basis for agreements. It also publishes standard contracts and rates on its site.

#### → Storage capacity in Austria, 2004

Table 7

Storage facility	Injection capacity in N cu m/h	Withdrawal capacity in N cu m/h	Working gas volume in m cu m
OMV – Schönkirchen	650,000	740,000	1,570
OMV – Tallesbrunn	125,000	160,000	300
OMV – Thann	115,000	130,000	250
RAG – Puchkirchen	290,000	290,000	700
Total	1,180,000	1,320,000	2,820

Sources: RAG and OMV Gas

<sup>23</sup> See information on the RAG website ([www.rohoel.at](http://www.rohoel.at)).

<sup>24</sup> OMV: [www.omv.com](http://www.omv.com); RAG: [www.rohoel.at](http://www.rohoel.at)



## Market structure

### → Barriers to entry in the Austrian electricity and gas markets

#### Barriers to entry in the Austrian electricity market

Entry barriers in the Austrian electricity market: generation

Section 18 EIWOG establishes the right of all market participants – and hence all generators – to system access on non-discriminatory terms and conditions. Denial of system access is only possible on the grounds set out in section 20 EIWOG (inter alia crowding out of electricity from environmentally sound, energy-efficient, and technically and economically competitive combined heat and power [CHP] district heating plants or plants using renewable energy sources), and equal treatment must be accorded to all market participants.

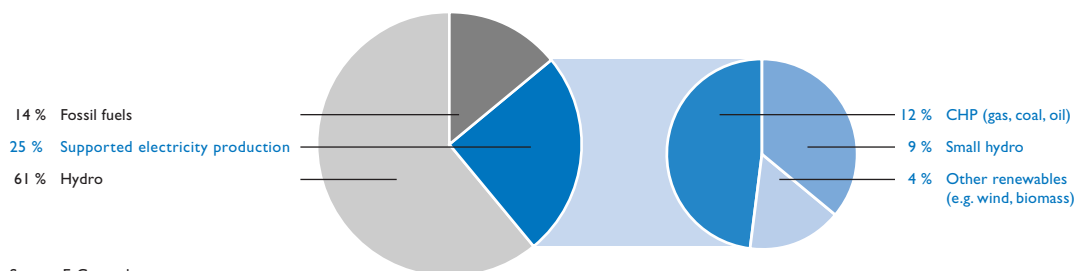
However the construction and operation of power stations in Austria requires a wide variety of approvals (including water licences, construction and operating permits, and environmental impact assessments) which must be obtained regardless of the identity of the operator. This is meant to ensure that approvals of new power stations (irrespective of the type) are granted

in a non-discriminatory manner, so as to prevent barriers to entry in the generating market. However it should be mentioned that most of the approvals in question are granted by provincial governments which are also the majority owners of the various provincial utilities, and as such have a duty to represent the shareholder interests concerned. This situation, in which the owners of the utilities are identical to the authorities approving the projects of potential competitors, results in a conflict of interests.

Meanwhile electricity generation in Austria is extensively subsidised. All electricity generation – with the exception of the small proportion represented by electricity from non-CHP thermal power stations and electricity from CHP stations not defined as CHP power under sections 12 and 13 ÖkostromG (Green Electricity Act) – probably attracts support payments when the generating costs exceed current market prices. As a result some 25 % of all electricity generated in Austria is effectively taken out of the market, and the subsidised capacity is thus not exposed to competition.

#### → Subsidised electricity in Austria

Chart 20



Source: E-Control

The full cost of green power generation (including wind, biomass and PV) is covered by the injection tariff. The CHP support tariff<sup>25</sup>, which is aimed at safeguarding district heating supply and reducing primary energy use and CO<sub>2</sub>

emissions, at the least covers the operating costs. This becomes a problem where support payments are neither cost-effective nor market based, and thus lead to market distortions (see Text box 3). The generating units outside the

### → The environmental and economic effects of subsidies

Text box 3

A support scheme will be economically and environmentally beneficial if it minimises market distortions, thereby enabling generators of green electricity to compete, and costs no more than is necessary.

Electricity generation gives rise to negative externalities, the extent of which varies according to the type of plant. These range from the impact of storage of radioactive material from atomic power stations through to CO<sub>2</sub> emissions from thermal stations, interventions in nature associated with the construction of hydro power plants, and noise nuisance and visual degradation of landscapes through wind farms.

Externalities cause costs (e.g. damage to ecosystems or human health) at least part of which are normally not borne by the power station operator. In one way or another the burden is transferred to society. Determining the cost of externalities is extremely difficult, if not impossible. Because of this such costs are frequently not internalised, that is, paid by the polluter. Accordingly, the price of the electricity does not reflect its full cost to society. This, in turn, puts generating plants that cause minimal externalities at a disadvantage against those that occasion high externalities. Support mechanisms attempt to compensate for these varying cost burdens, which represent a barrier to market entry, in various ways.

An optimal outcome from an environmental point of view is the internalisation of all externalities in the price of electricity. Internalisation of the externalities created by electricity generation is, at least in part, achieved by the CO<sub>2</sub> emission allowance system. The cost is paid by the polluter, namely, the CO<sub>2</sub> emitter. Electricity prices include the cost of the CO<sub>2</sub> allowances. If the price of electricity generated at thermal power stations is equal to the actual cost, then the competitive disadvantage suffered by companies that cause very low externalities will be reduced, thus correcting the market distortions in question.

Another way of offsetting the competitive disadvantage faced by green electricity generators is to subsidise generating plants that cause barely any externalities by way of injection tariffs. This effectively cuts the generating costs of these facilities, enabling them to compete with (for instance) thermal capacity. This approach evens out for the competitive disadvantage, but it means that electricity prices still fail to reflect actual generating costs. Since the externalities are not internalised, market prices are too low and energy demand too high. Due to the higher consumption and resultant negative externalities, the distorted price signals to electricity consumers cause additional environmental burdening.

<sup>25</sup> Subsidised CHP power remains the property of the generator. Apart from the market price, the latter receives a support payment (the difference between 39/MWh and the market price). Unlike CHP power, green electricity is only subsidised if it is supplied to the respective green power balancing group representative.

subsidy systems (chiefly hydro power stations) are competitive at current market prices. This is mainly because most of the hydro power stations have been fully written off for accounting purposes, and had already been financed by income from final customers' before liberalisation took place. Such hydro power stations only have to cover their variable costs.

Newcomers must invest heavily to enter the generation market, and must finance such investments entirely from income generated in a fully liberalised market. They are at a competitive disadvantage vis-à-vis companies that paid for their generation capacity prior to liberalisation. It is also hard for new entrants to the generation market to find sites for their power stations. Companies that already have installed capacity can use the sites as they please, and can thus at least replace or upgrade old plants.

Under the CO<sub>2</sub> emission allowance system existing power stations are given preferential treatment over new thermal stations through the allocation of allowances free of charge. True, the National Action Plan provides for a reserve of about 1 % of the total allocation for new entrants, but these allowances will be issued on a "first come, first served" basis. As soon as the reserve has been taken up, operators of new power stations which have not been included in the allocation will have to go to the market for allowances. Market entry is hindered by the high generating costs of new thermal power stations which place the latter at a disadvantage vis-à-vis existing capacity.

#### Barriers to entry in the electricity wholesale market

As mentioned above, Austria has high-capacity interconnection lines to its western neighbours. However the free transmission capacity linking it with neighbouring countries to the north and south is limited. This is because load flows in Central Europe predominantly flow from north to south.

The emergence of an international wholesale market is obstructed not just by the limited capacity of the interconnectors but also by the systems for allocating this scarce commodity to market participants. At present, there are a number of different allocation mechanisms, some of which are not market based and are hence inefficient. Even on Austria's borders the methods for allocating transmission capacity vary, as they must be agreed with the neighbouring control area managers.

Moreover, capacity at several heavily congested interconnection points is currently reserved under long-term agreements ("legacy contracts"<sup>26</sup>) concluded before the market is opened. For instance, on the border with Slovenia 200 MW of capacity were unavailable for the 2004 rationing procedure. No new allocations for cross-border exchanges with Italy were made on the Austrian side of the frontier in 2004, as the entire capacity was already spoken for under legacy contracts.

A new EU regulation on conditions of access to the network for cross-border exchanges in electricity (No. 1228/2003) entered into effect on 1 July 2004. Its main requirements are that market based mechanisms be used to allocate

<sup>26</sup> Section 19(1) EIWOG stipulates that deliveries under existing contracts and contractual obligations superseding them shall take precedence over all other deliveries.

capacity, and that all market participants be provided with information on cross-border capacity and physical flows of electricity in a transparent manner. Implementation is currently under way, in cooperation with the bodies concerned (e.g. control area managers and regulators) in neighbouring countries, and will bring changes in capacity allocation procedures.

#### Entry barriers in the Austrian natural gas market

Since October 2002, apart from the incumbents five companies have notified E-Control of their intention to commence gas distribution operations, but only three have in fact done so.

During the past year, CE Oil and Gas Trading GmbH has joined Ruhrgas Austria AG as the second foreign company active in Austria, albeit only as a trader. The only foreign company supplying final customers in Austria is Ruhrgas Austria AG. Ruhrgas and Salzburg AG have merged their large customer business, forming the Terragas GmbH joint venture for the purpose.

The lack of interest in entering the market, particularly among foreign companies, is widely attributed both to the poor growth prospects in Austria and to the unregulated transit regime in neighbouring countries.

### → Cross-border capacity and its allocation in Austria

Table 8

From	To	Congestion	Available capacity in MW (total baseload)	Capacity allocated under legacy contracts in MW	Allocation mechanism (Austrian share)
Austria	Germany	no			
Austria	Switzerland	no			
Czech Republic	Austria	yes	50	400	joint explicit auction
Austria	Czech Republic	some	600		joint explicit auction
Hungary	Austria	yes	100		rationing (by APG)
Austria	Hungary	yes	100		explicit auction (by MAVIR)
Austria	Slovenia	yes	450	200	rationing
Slovenia	Austria	no	225		rationing
Austria	Italy	yes	220	110	rationing
Italy	Austria	no	220		rationing

Source: E-Control, status as of 2004 (some additional peak load capacity available)



Other suspected reasons are the legal framework for market entry, and the conditions for access to sources of supply and infrastructure, which are discussed below.

#### Legal framework for market entry

The commencement of gas retailing activities and hence the supply of gas to final customers is subject to notification to E-Control. An informal letter is sufficient. A notified retailer must either form its own balancing group and become a balancing group representative or join an existing balancing group as a full member.

If a retailer forms a balancing group in the Eastern control area it must furnish financial securities in accordance with the market rules in its capacity as the balancing group representative. The basis for assessment of the securities to be provided is a creditworthiness check by the settlement agent.

The modalities for calculation of the securities leave a certain amount of room for discretion, such that the unit costs per kWh of gas sold by a balancing group representative may vary.

In the Tyrol and Vorarlberg control areas notified gas retailers must likewise submit to a creditworthiness check and furnish securities in accordance with the market rules. In principle the access conditions for incumbents and potential entrants are the same, but the manner in which the securities are assessed makes it possible to impose different unit costs on market participants.

## → Congestion management mechanisms

Text box 4

### **First come, first served principle**

Capacity is allocated in the order in which requests are made. Starting with earliest, requests are met until all the available capacity has been allocated.

### **Rationing**

All requests are met on a pro rata basis. Allocations are reduced by the ratio of available to total requested capacity.

### **Explicit auction**

This is an auction in which applicants only bid for given amounts of capacity. The bids are ranked by price, and allocated starting with the highest bid and continuing until the available capacity has been completely exhausted.

### **Implicit auction**

In an implicit auction available capacity is traded together with energy (usually on the spot market). Companies place buy and sell orders for power in given geographical areas, and the market clearing procedure determines the allocation of cross-border exchanges between those areas. Capacity is not separately allocated.

The requirement for market based capacity allocation under EU Regulation No. 1228/2003 is only met by explicit or implicit auctions, since the first come, first served and rationing procedures contain no market elements. Implicit are superior to explicit auctions in that they are more economically efficient and less prone to abuse of market power.

#### Conditions for access to sources of supply

Due to existing long-term supply agreements access to sources of supply poses a major problem for new entrants to the gas market. At present most gas deliveries to wholesalers are made under the long-term agreements of the domestic producers RAG and OMV Gas with Norwegian and Russian producers, and German suppliers. These have enabled EconGas, in which OMV Gas holds a 50 % interest, to secure about 80 % of the Austrian market. Over the past two decades Steirische Gas Wärme, Salzburg AG and Kelag have also concluded long-term supply agreements with Norwegian and Russian companies, through OMV Gas. RAG as a producer, and Ruhrgas Austria and Terragas through Ruhrgas – a major West European importer – have access to sources of supply.

To date, the exporters have mostly confined themselves to making exclusive long-term TOP agreements with general importers. The importers (in Austria, OMV Gas) have in turn resold the gas to regional distributors. New entrants are thus compelled to buy gas from their competitors unless they can conclude supply agreements with exporters. This gives importers an opportunity to exploit their position as vertically integrated companies and sell to new market participants at higher prices than those charged to their own downstream operations. Differential pricing puts incumbents and entrants on an unequal footing, and gives an advantage to vertically integrated enterprises.

Access to sources of supply is impeded not just by the volumes tied up by long-term agreements but also by the absence of a short-term spot market. There is a type of short-term gas trading on the balancing market. So far, the balancing energy called off in the Eastern control area has averaged 2–4 % of total sales during the 2003–2004 gas year. However the proportion is considerably higher in some balancing groups. The main difference from a spot market is the fact that the buying and selling prices cannot be based on current hourly prices. AGCS generally publishes the balancing energy prices one day later, while those for hours in which no balancing services are used are not published until after monthly clearing of the market (the middle of the following month), resulting in price uncertainty. However, since prices have not been very volatile since the market was introduced, there is probably little perceived risk.

By contrast, buyers and sellers are not exposed to any volume risk. If gas injected by the buyer finds no consumers it remains in the network (i.e. it is imputed to the System Losses balancing group) or the control area manager has to withdraw gas from the network by calling off balancing energy offers. If a buyer withdraws more gas than other balancing group members have injected, the surplus is either withdrawn from the network (i.e. the System Losses balancing group sells gas) or the control area manager must inject gas into the network by calling off balancing energy bids.

The conditions for participation in gas trading on the balancing market are those described above (e.g. forming or joining a balancing group and providing financial securities).

Short-term trading on the balancing market has the significant disadvantage in comparison to a spot market that the market risk is shared by companies that play no part in the trading – namely, the system operators and other balancing groups. The establishment of a spot market in which every trader was obliged to bear its own market risk would therefore be desirable. The clear assignment of risk would positively influence liquidity, thereby adding to the sources of supply open to Austrian gas suppliers. Free access to sources of supply available on both a short and long-term basis is indispensable for new entrants. Efforts are being made through the gas release programme and development of the Baumgarten gas hub to create better conditions for market entry.

The gas release programme stems from a commitment given by OMV Gas during the EconGas merger proceeding. In July 2003 some 250m cu m of gas were auctioned in lots of 10m cu m. However only about 13 % (approx. 32 m cu m) were sold on the Austrian market. This meant that the loss of market share sustained by the dominant supplier, EconGas was modest. An important reason for the lack of interest on the part of Austrian gas companies and industrial consumers was the high price level as compared to Austrian import prices.

### → Abolition of destination clauses

Text box 5

Most gas supply agreements still contain destination clauses. These restrict the buyer (e.g. OMV Gas) to selling only inside the destination country, and prohibit it from exporting. Such clauses stand in the way of the emergence of a European internal market, as they prevent gas from being traded in accordance with the principle of the free movement of goods.

Negotiations between the European Commission and the Russian gas exporter Gazprom in autumn 2003 led to an agreement whereby Gazprom is waiving the destination clauses in its agreements with Italy's Eni energy group. This can be seen as a first step towards the abolition of destination clauses.

The long-term supply agreements, which mainly serve to make future investments in Gazprom's transmission pipelines and in continued exploration less risky, thereby enhancing Europe's security of supply, are to stay in place but will be amended to bring them into line with EU competition law. The purpose of dropping the destination clauses is both to strengthen competition and to increase the liquidity of the Austrian, German and Italian gas markets.

The changes to the supply agreements between Eni and Gazprom enable Eni to sell gas abroad, and Gazprom to sell directly to customers in Italy. The main potential markets for Eni are Germany, where it has a presence through its investment in GVS, and Austria.

Other explanations may have been the lot sizes of 10m cu m, the cost of participation and the rules of the auction, as well as the terms and conditions of the gas supply contract. The gas release programme did enable one gas trader to enter the Austrian market.

In July 2004 EconGas auctioned annual contracts for some 250m cu m of gas (approx. 3 % of the Austrian market) through an OMV Gas subsidiary, Central European Gas Hub Baumgarten. Some adaptations were made to the procedure for the 2004 auction, principally with a view to attracting more Austrian bidders. No changes were made to the size of the lots, the volume auctioned or the design of the auction. The main differences were more transparent conditions for participation and reduced costs. Nevertheless, the interest of Austrian gas traders was no greater than in the previous year. However the overall number of bidders increased.

Closely related to the gas release programme is the development of the Baumgarten gas hub. The gas release programme was implemented by carrying out an online auction via the hub. Some successful bidders have availed themselves of CEGH's services. However the lack of transparency with regard to the services offered and the charges for them have been a serious criticism.

#### Conditions for access to infrastructure

Another important factor in the decision to enter the market is the availability of transport and storage capacity.

Section 17 GWG states that transport capacity used by a customer must continue to be available after a supplier transfer. So far, the Austrian system access model has led to very few denials of access. However, the division between regulated domestic and negotiated cross-border transportation is a major obstacle to the efficient utilisation of free pipeline capacity across the system as a whole. A move to an entry-exit system would permit incentives for better use of pipeline capacity (Text box 6).

In an entry-exit tariff system two charges are made for gas transportation. The first is made upon infeed to the pipeline network, and represents a kind of entry fee. The second is made upon offtake from the network, when the gas is transferred to the distribution network or to a neighbouring network at the frontier. On the capacity side, it is not the entire transportation routes that are booked, but only the infeed and offtake/withdrawal points. The system operator is responsible for determining the precise transport route. The entry and exit points can be booked independently of each other, both by different market participants and at different times.

Entry-exit systems both for tariff determination and for capacity reservation bring a high degree of flexibility to a pipeline system. Competition is facilitated without any loss of transparency or cost-reflectiveness. Moreover, the risk of discriminatory behaviour by the incumbent is reduced, and the emergence of a secondary market in capacity made possible.

Comparison with the other two systems currently in use shows that all three tariff deter-

mination models have pros and cons. Also, an efficient entry-exit system depends on correct cost allocation. A simple average cost approach would result in unjust cost allocation, and might cause competitive distortions.

A number of EU member states have already introduced entry-exit systems. Such systems have already been in operation for some time in Belgium, the Netherlands and the UK. The French system was launched in 2003 and that in Ireland modified to correspond to a full entry-exit system in 2004. The system has also been introduced in Italy and parts of the German market. The UK already has a functioning wholesale market, and regional markets are being created in the other member states. Belgium has already had some success with creating a liquid market in the shape of a hub.

Parties entitled to access to storage (producers, traders and suppliers domiciled in the EU) may negotiate access with the storage operators, OMV Gas and RAG. However OMV Gas is the

only supplier in the market offering injection and withdrawal rates of less than 15,000 cu m/h. Under section 39 GWG the storage operators have a duty to offer access to storage under non-discriminatory and transparent conditions. OMV Gas und RAG have published information on storage access on their websites<sup>27</sup>. During the EconGas merger proceeding OMV Gas committed itself to publishing its general terms and conditions of business. OMV Gas has also posted information on standard storage products and storage charges, as well as standard contracts on the internet. RAG so far published little information on its products on the internet. For instance, details of available storage capacity are absent. The transparency regarding access to storage still leaves something to be desired.

The published tariffs represent only maximum prices and the basis for negotiation, and are thus merely a rough guide to the actual cost of concluding a storage contract. The storage contracts are in competition with the balancing market, which has so far appeared to be a cheaper alternative.

### → Entry-exit-system

Text box 6

A system access model consists both of tariff and of capacity booking systems. Discussion at European level has largely focused on three approaches:

1. a distance based system (point to point);
2. a “postalised” system; and
3. a hybrid model – the entry-exit system.

A distance based capacity booking system can be combined with postalised tariffs as is the case in Austria, but other mixes are also possible. For instance, until the end of July 2004 Ireland had an entry-exit tariff system combined with a point-to-point capacity reservation system. Table 8 compares the three systems according to a variety of criteria.

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<sup>27</sup> OMV website: [www.omv.com](http://www.omv.com); RAG website: [www.rohoel.at](http://www.rohoel.at)

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### → Comparison of tariff systems

Table 9

Assessment criterion	Point to point	Extry-exit	Postalised
User friendliness	good	good	very good
Transparency for regulator	difficult to determine	good	very good
Risk of discriminatory transport costs	high	non-existent	non-existent
Risk of discriminatory portfolio effect	high	moderate	moderate
Cost-reflectiveness	generally low	in some cases critical	critical for larger systems
Risk of wrong investment signals	possible	possible	high for large areas
Ease of trading in secondary market for capacity	difficult	easy	easy
Compatibility with like systems	good	moderate	action such as "pancaking" necessary
Compatibility with other systems	a priori no problems with tariffs, but wrong investment signals possible		difficult

Sources: E-Control and Brattle Group Ltd.



## Market structure

→ Concentration in the electricity and natural gas markets

Competition and the creation of a common European energy market are obstructed not just by the strong positions of the incumbents in the various national markets but also by the high shares of all market segments that they and the many merger companies hold. An EU-wide view shows that, apart from EDF with a share of over 20 % of the generation market there are six other companies with market shares of over 5 % (Chart 21). The Herschman-Herfindahl Index (HHI) – a measure of concentration rates – for the European market as a whole is around 1,200<sup>28</sup>, pointing to a moderate level of market concentration.

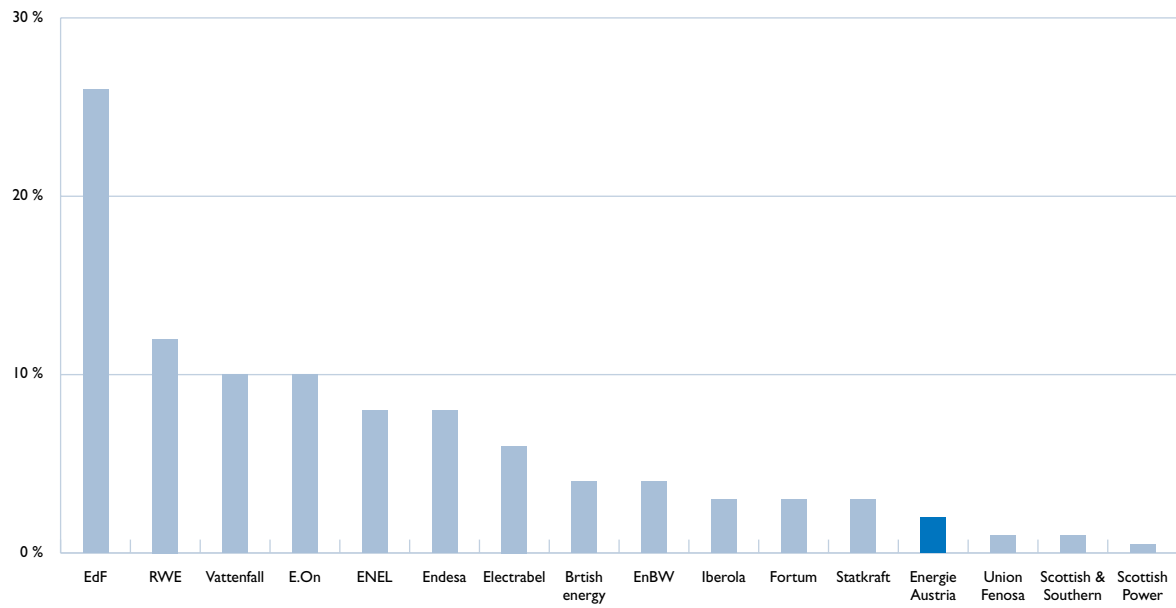
The Austrian companies play a relatively minor role in the European electricity market. However, since the relevant electricity and gas product markets continue to be confined to the national level (the exception is the electricity wholesale market where there are some

cross-border regional markets, e.g. Austria and Germany), very high concentration indices (HHI and concentration rate) can generally be expected.

A look at the relevant electricity generation market at national level reveals HHIs of more than 1,800 in all EU member states (pre-enlargement 15) and Switzerland (Chart 22). The HHI levels are only slightly higher in some countries such as Finland and Spain, while in Luxembourg and Switzerland the HHIs are in the order of 5,000, in France 6,000 and in Norway almost 10,000. An HHI of nearly 10,000 means that a company has a market share of almost 100 %. Even at regional level (e.g. Nordpool), markets are dominated by small numbers of companies. In other words, it can be taken that market structure is oligopolistic, and that the HHIs are over 1,800.

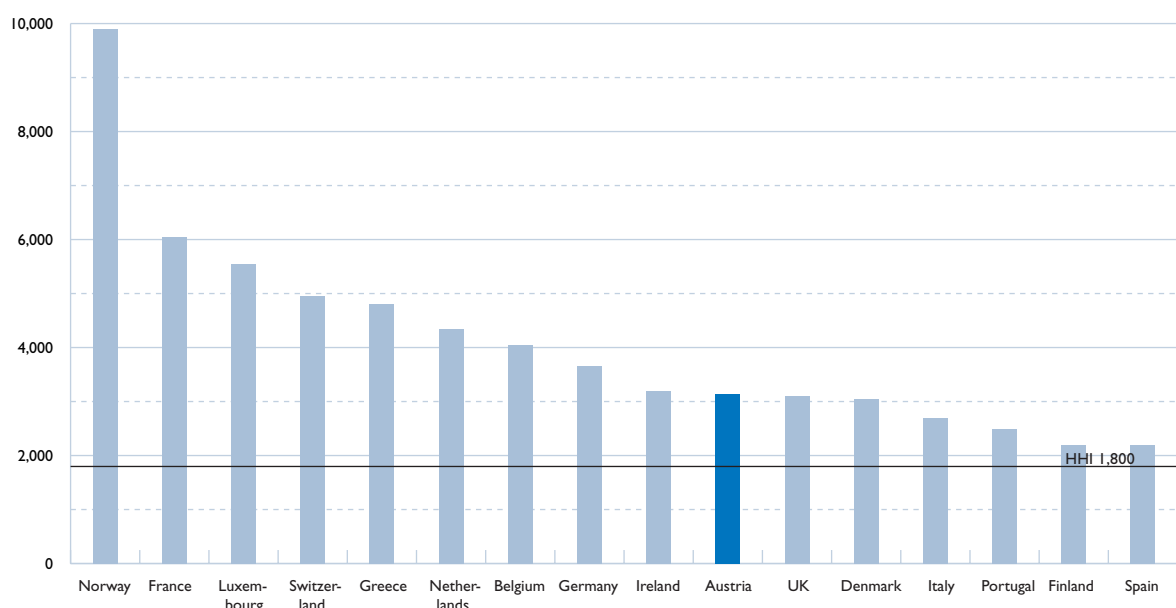
<sup>28</sup> An HHI over 1,000 indicates a moderately, and one of over 1,800 a highly concentrated market.

→ Market shares of the largest electricity companies in Europe (generation) Chart 21



Source: Merrill Lynch, 2003

→ Concentration in European markets: generation, 2002 Chart 22



Sources: IEA online database (lecture by Jamasb and Pollitt, MIT) and E-Control



### Concentration in the Austrian electricity market

There have been no further significant mergers in the electricity market since 1 July 2003. Merger activity has been limited to acquisitions of small suppliers by incumbents. However it should be noted that these have nevertheless reduced the number of suppliers and increased market concentration.

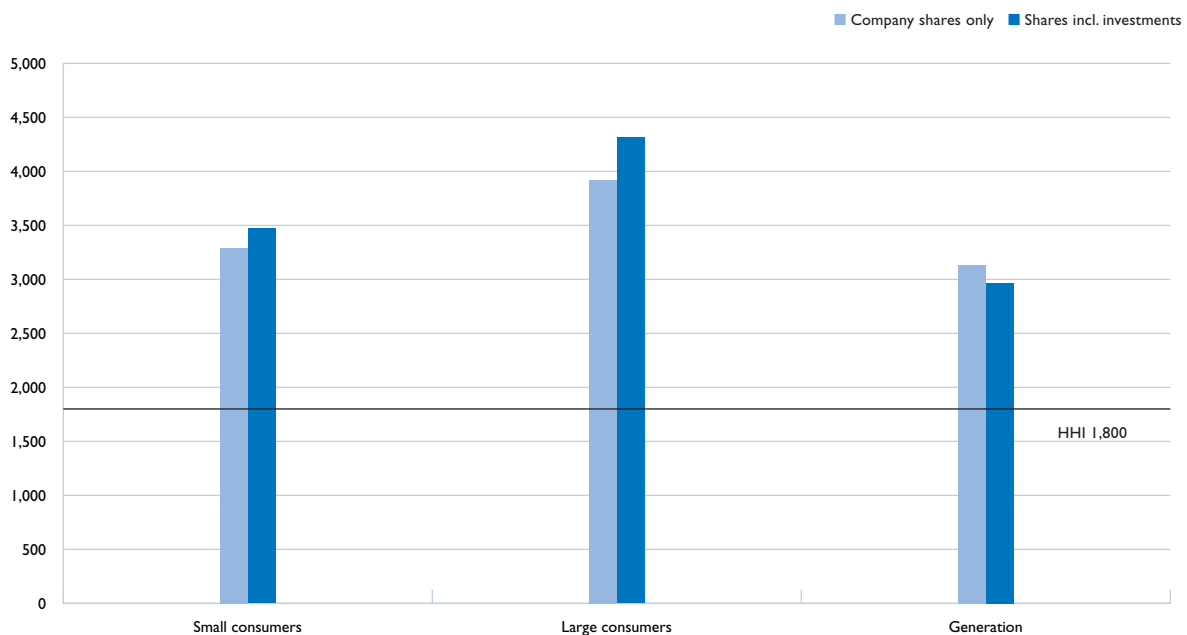
Since large numbers of cross-holdings are a feature of the Austrian electricity industry it makes sense to include such investments when calculating concentration levels. Shares of some product markets<sup>29</sup> were reapportioned in accordance with holdings in other companies. As Chart 28 shows, in some cases this leads to still higher HHIs for the large and small-scale consumer markets. However, adjustment for cross-holdings results in a slight decline in concentration in the generation product market.

The change in the result is largely attributable to Verbund's holdings in Kelag and Steweag-Steg, as well as those of the foreign companies. The shifts between the Energie Austria companies (e.g. EVN's holding in Verbund) have no effect on their market shares, as the market shares of companies with interests in Energie Austria (Verbund, Wienenergie, EVN, Energie AG, BEWAG/Begas and Linz AG) are aggregated.

Despite higher HHIs for small and large consumers the concentration rate (CR5) for the five largest suppliers falls slightly. This is due on the one hand to the increasing shares of Energie Austria and on the other to the wider distribution of the remaining market shares (e.g. RWE and EdF/EnBW). Thus the CR 5 for both the small and large consumer markets declines by 4 %. Nevertheless, both remain at very high levels.

### → Concentration in the Austrian electricity market<sup>30</sup>

Chart 23



Source: E-Control

<sup>29</sup> In accordance with European Commission practice and current market conditions, the definition of geographic markets has been restricted to national level.

<sup>30</sup> Aggregate market shares of the five largest companies.

Table 11 shows the market shares of the largest Austrian companies in terms of total electricity sales to final customers in Austria, and the respective HHIs. Energie Austria, which is expected to commence operations on 1 October 2004, has a retail market share significantly in excess of 50 % both on a pure company-by-company basis and when cross-holdings are taken into account, resulting in HHIs of 3,145 and 3,872, respectively – far above the 1,800 threshold for high concentration – and a CR 5 of well over 80 %.

The reduction in the market shares of, for instance, Steweag-Steg, Kelag and Salzburg AG when cross-holdings are factored in reflecting the interests held in them by Verbund, RWE and EDF/EnBW, while the increase in Tiwag's market share is due to its interest in Verbund. Due to

the division of the market among more companies (EnBW and RWE) the concentration rate (CR 5) edges down from 89 % to 85 %. This reading nevertheless demonstrates that the Austrian electricity industry is dominated by a small number of companies, and that the Austrian electricity market is not very competitive.

Applying the “concentration rate” methodology, used by the German Cartel Office among other authorities, market concentration in Austria is well above 66.7 % by both measures, at 74 % and 75 %, respectively<sup>31</sup>. CR 1, CR 2 and CR 3 are all above the levels that indicate a dominant position. Both the adjusted and unadjusted figures point to a high degree of market concentration in Austria, and hence to weak competition – also evidenced by low advertising budgets and churn rates.

<sup>31</sup> A dominant position is presumed when CR 1 > 33 %, CR 2 > 50% and CR 3 > 66.7 %.

## → Concentration in the Austrian electricity market<sup>32</sup>

Table 10

	HHI <sup>33</sup> by customer groups	HHI adjusted for cross-holdings	CR 5 <sup>34</sup> per company	CR 5 adjusted for cross-holdings
Small consumers	3,289	3,471	75 %	71 %
Large consumers	3,918	4,314	92 %	88 %
Generation	3,136	3,381	77 %	70 %

Source: E-Control

## → Concentration in the Austrian electricity market: total sales to final customers, 2003<sup>35</sup>

Table 11

	HHI by companies	HHI adjusted for cross-holdings	Company market shares	Market shares adjusted for cross-holdings <sup>36</sup>
Energie Austria	2,769	3,436	53 %	59 %
Steweag-Steg	150	36	12 %	6 %
Tiwag	87	91	9 %	10 %
Kelag	74	8	9 %	3 %
Salzburg AG	36	20	6 %	4 %
VKW	24	24	5 %	5 %
Energie Graz	3	3	2 %	2 %
Stadtwerke Klagenfurt	1	1	1 %	1 %
E-Werk Wels	1	1	1 %	1 %
EdF/EnBW	0	21	0 %	5 %
RWE	0	7	0 %	3 %
Total HHI <sup>37</sup>	3,145	3,648	CR 5 89 %	CR 5 84 %

Source: Company annual reports and E-Control

<sup>32</sup> Due to the impending implementation of the Energie Austria merger the market share of Verbund, Wienenergie, EVN, Energie AG, BEWAG/Begas and Linz AG have been aggregated.

<sup>33</sup> The HHI is calculated by squaring the market shares and then summing the resulting numbers.

<sup>34</sup> Aggregate market shares of the five largest companies.

<sup>35</sup> The market shares of the smaller companies were excluded from the HHI calculations as they would only have had a minor positive impact on the index (< 1).

<sup>36</sup> The market shares of EdF/EnBW and RWE are indirect, arising from these companies' interests in EVN and Steweag-Steg, and Kelag, respectively.

<sup>37</sup> The market shares of the remaining companies (small municipal utilities and new entrants) have little or no effect on the two measures of concentration.

### Concentration in the Austrian natural gas market

As demonstrated in the Liberalisation Report 2003, the level of concentration in all relevant product markets is higher in the gas than the electricity sector. The reasons for this are the smaller number of companies and the related stronger positions of the incumbents.

Adjustment for cross-holdings in other gas companies results in a small reduction in the HHIs for the final customer markets. This reflects the inclusion in the calculation of the holdings of EdF/EnBW in EVN and of ESTAG in Steirische Gas Wärme, as well as the interests held by RWE and Verbund in Kelag. Nevertheless, the HHIs for all three markets – industrial, commercial and residential consumers – are well above 1,800, implying a high degree of market concentration.

Both the concentration rate and the HHI in the final customer markets have declined, but only by a marginal 2 %. This slight reduction results from the assignment of sales volumes to equity holdings in other companies, including those of EdF/EnBW, RWE and Verbund. Here, the concentration rates are very high, and it may be assumed that all the retail markets in the Eastern control area are highly concentrated.

Table 13 gives an overview of the market shares held by the largest Austrian companies in terms of total sales to final customers. The merger of Wienenergie, EVN, Oberösterreichische Ferngas, Begas, Linz AG and OMV Gas to form EconGas has created a dominant market participant that accounts for some 74 % of all gas supplies to final customers in the Eastern control area. The EnergieAllianz and EconGas mergers call Austrian liberalisation into question, since they have created an entity that not only has a far higher market share than any other, but is also, through OMV Gas, the main importer and the supplier of the other market participants in the Eastern control area. This high market share results in disquieting HHIs, at 5,798 or 5,272 after adjustment for cross-holdings. CR 1, CR 2 and CR 3 are all above the threshold levels of 33 %, 50 % and 66.7 %, since the largest company alone has unadjusted and adjusted market shares of 74 % and 71 %, respectively.

The reduction in the HHI and CR 5 is a reflection of the investments of EdF/EnBW, RWE and Verbund in Kelag, ESTAG and EVN, respectively. The sales of Terragas were reapportioned to Ruhrgas AG and Salzburg AG in proportion to their holdings in it. Despite the slight decline in the concentration indices the continued high levels still point to a market in which there is little competition.

### → Concentration in the Austrian gas market<sup>38</sup>

Table 12

	HHI by companies	HHI adjusted for cross-holdings	CR 4 <sup>39</sup> per company	CR 4 adjusted for cross-holdings
Residential	7,255	6,318	100 %	98 %
Commercial	6,578	5,367	100 %	98 %
Industrial	5,597	4,946	100 %	98 %

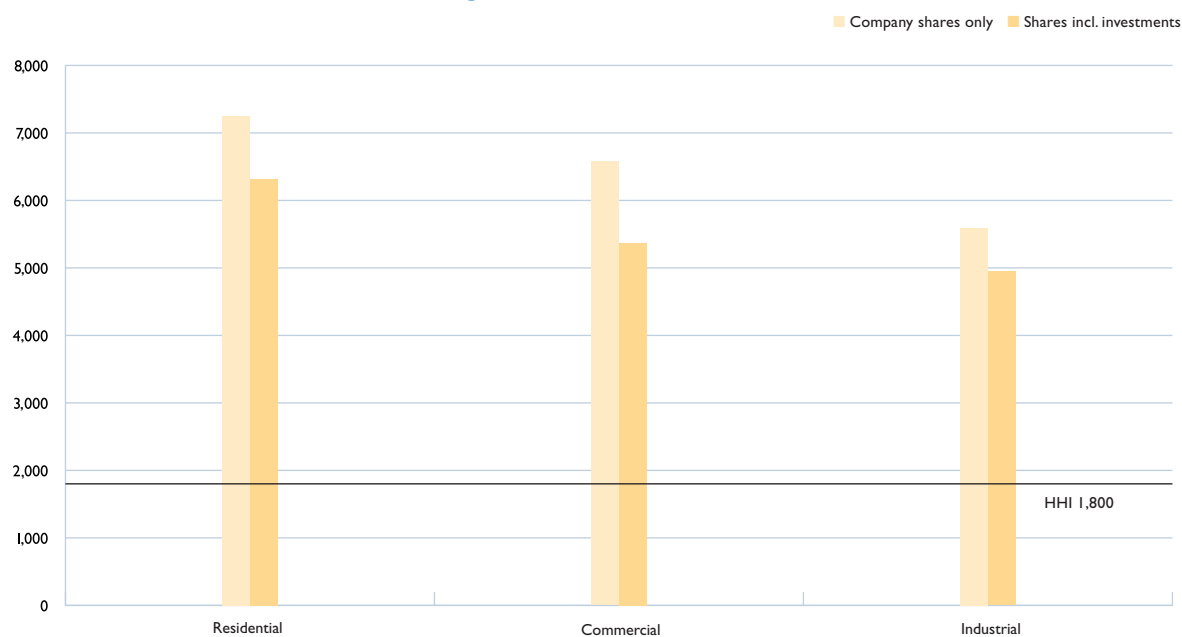
Source: AFG and E-Control

<sup>38</sup> The definition of the geographic markets is restricted to the Eastern control area. TIGAS and VEG were disregarded as there are no interconnectors between the control areas, and the companies in Tyrol and Vorarlberg both have market shares of over 95 %.

<sup>39</sup> Aggregate market shares of the four largest companies.

## → Concentration in the Austrian gas market

Chart 24



Sources: AFG and E-Control

## → Concentration in the Austrian gas market (Eastern control area): total sales to final customers

Table 13

	HHI by companies	HHI adjusted for cross-holdings	Company market shares	Market shares adjusted for cross-holdings <sup>40</sup>
Econgas	4,977.3	4,560.3	70.6 %	67.5 %
Steirische Gas Wärme	230.7	129.7	15.2 %	11.4 %
Ruhrgas	67.8		8.2 %	
Salzburg AG	7.0	22.1	2.6 %	4.7 %
Kelag	3.8	0.4	2.0 %	0.7 %
Energie Graz	0.8	0.8	0.9 %	0.9 %
E-Werk Wels	0.2	0.2	0.4 %	0.4 %
Stadtwerke Klagenfurt	0.0	0.0	0.2 %	0.2 %
E.On Ruhrgas Austria		38.2		6.2 %
EdF/EnBW		45.2		6.7 %
Verbund		0.6		0.8 %
RWE		0.4		0.6 %
<b>Total HHI</b>	<b>5,287.6</b>	<b>4,797.8</b>	<b>CR 5 99.4%</b>	<b>CR 5 96.5 %</b>

Source: company annual reports and E-Control

<sup>40</sup> The market shares of EdF/EnBW, Verbund and RWE are indirect, arising from these companies' interests in EVN and Steweag-Steg, and Kelag, respectively.



## Market structure

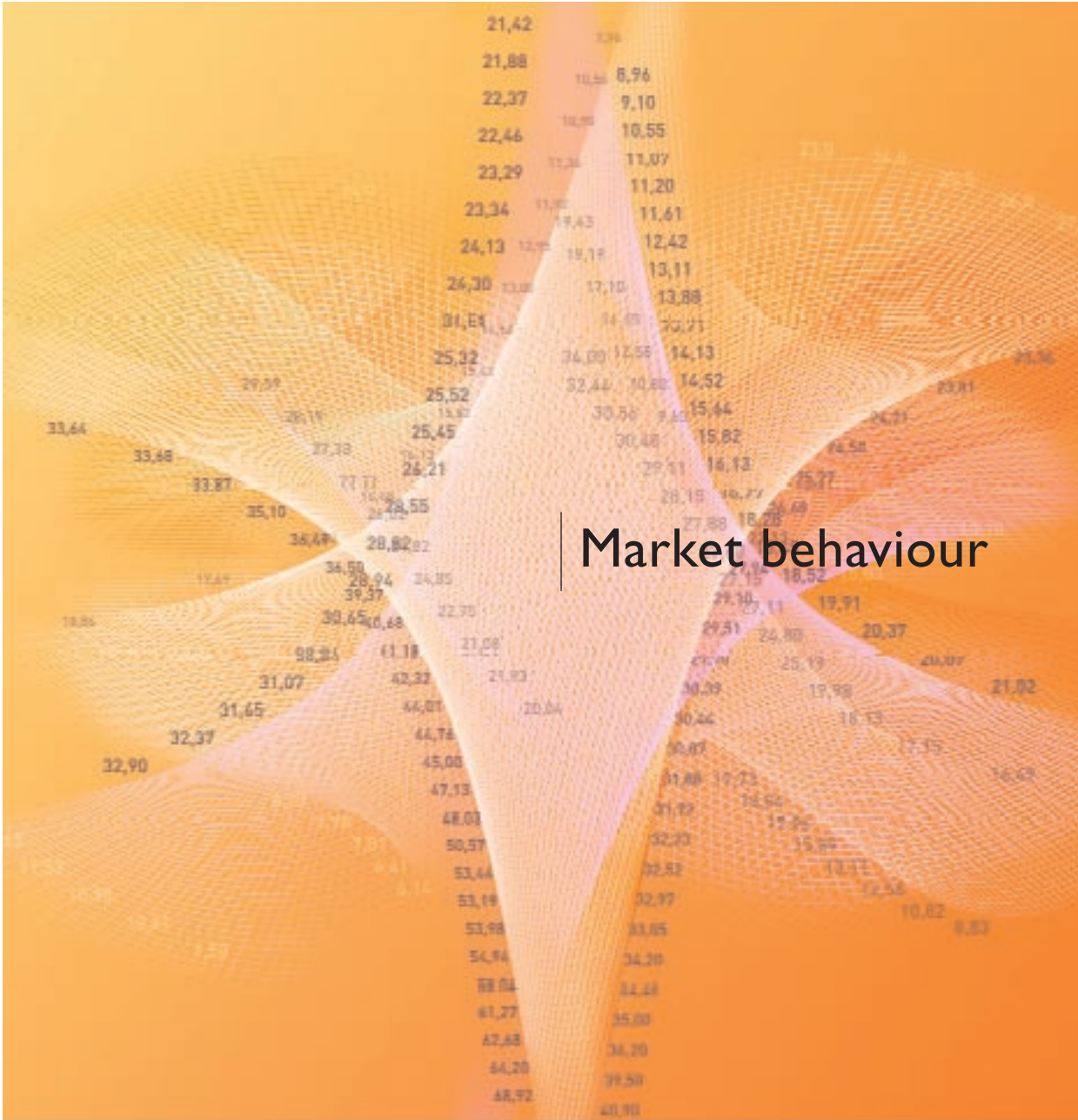
### → Summary and conclusions

#### → Summary

- Liberalisation has brought profound changes to market structures: the break-up of territorial monopolies, the unbundling of energy prices, freedom for consumers to choose their suppliers, and new markets.
- There has been no change in the high level of public ownership.
- The upstream balancing and wholesale markets are central to functioning retail electricity and gas markets.
- Undeveloped and geographically segmented wholesale and balancing markets represent barriers to entry in the electricity and gas sectors.
- The sale of APC to Istrabenz has brought a new supplier on to the Austrian large-scale consumer electricity market.
- Overall, however, there are few new suppliers, independent of the incumbents, on the electricity and gas markets.

#### → Conclusions

- The legal environments in which the European electricity and gas markets operate are insufficiently harmonised.
- Functioning upstream markets and cross-border regional electricity and gas markets need to be created in order to reduce the barriers to entry;
- The boundaries of the electricity balancing market need to be extended.
- A liquid wholesale market also needs to be created in the gas sector, among other things by abolishing destination clauses.
- International transport links need to be expanded.
- There is a need for the introduction of transparent, market based mechanisms for the allocation of electricity transmission capacity.
- Transparent, harmonised and non-discriminatory rules for cross-border gas transmission systems need to be developed. The absence of a physical link between the Tyrol control area and the Eastern control area in the gas market needs to be addressed.



Market behaviour



Unlike the foregoing description of the structural characteristics of the electricity and gas markets, the following investigation of market behaviour looks at the use made by companies of the competitive strategies at their disposal. The investigation of market behaviour is based on the assumption that the more competitive the market environment is, the less scope companies choose between alternative forms of behaviour. Important aspects of market behaviour include pricing policy (price discrimination, predatory pricing, etc.), investment and innovation policy (e.g. with regard to generating plants), quality policy (e.g. as an element of differentiation strategies), and advertising and marketing activities (e.g. bundled and multi-utility services).

→ **Strategic behaviour of electricity and gas companies**

The strategies of Austrian and other European electricity and gas companies are discussed on a sectoral and cross-sectoral basis below. While an attempt has been made to present activities and strategies in the two sectors separately, a strict division is not always possible as some enterprises operate in both markets. Energy companies both engage in non-energy activities but also offer combined electricity and gas service packages (multi-utility marketing). The horizontal mergers between electricity and gas companies, and the existing structure of the Austrian electricity gas markets also mean that the behaviour of Austrian electricity and gas companies must be viewed in the context of that of their counterparts elsewhere in Europe.

**Strategic behaviour of electricity companies**

Austrian electricity companies are continuing to react to changed market conditions both by restructuring and rationalising, and by entering into mergers and joint ventures. Since the passage of the Green Electricity Act they have presumably also had sufficient incentives to step up their activities in these subsidised and protected areas of the market. Most of the established Austrian companies are making an increased effort to break into other network industries so as to exploit marketing advantages, e.g. through increased consumer awareness or multi-utility products. In contrast to these diversification efforts a few Austrian companies are electing to retreat to their core (utility) business.

All the larger Austrian electricity companies are attempting to take the opportunities for growth offered by liberalisation by embarking on activities abroad. However, few are attempting to go it alone in domestic markets outside their established territory. Likewise, foreign companies are tending to gain a foothold in Austria by acquiring interests in local companies, rather than establishing a direct presence.

**Consolidation in the Austrian electricity market**

One of the main reasons for mergers, acquisitions and joint ventures is the wish to realise potential economies of scale and scope. The opportunities for this were limited by the geographical segregation of pre-liberalisation organisational structures in the Austrian electricity industry. Such benefits can be leveraged both in the competitive generation, wholesale and re-



tailoring markets and in the regulated monopoly areas of transmission and distribution system operation. The growing downward pressure on prices from stiffening competition is forcing companies to exploit such potential savings.

Most of the joint ventures and mergers between Austrian electricity enterprises have taken place between provincial and municipal utilities, and have been in the contested generation and retail markets. Few attempts have been made to leverage synergies in the transmission and distribution system operation area. This contrasts with some other European countries such as Switzerland, where the six leading transmission system operators have formed a company called Swissgrid which is to assume responsibility for operating the national transmission grid and for network coordination on 1 January 2005.

Table 14 gives an overview of recent mergers and joint ventures in the Austrian electricity industry. The many mergers and acquisitions, often involving small companies, have resulted in larger units and reduced the number of suppliers. In most of the transactions concerned only parts of companies concerned have been spun out and merged, meaning that they have led to only a limited loss of independence and the original managements and supervisory boards have been able to remain in office. For instance, after the merger of Tiwag and Innsbrucker Kommunalbetriebe (IKB) the number of directors on the Tiwag management board rose from two to three. Similarly, the management board of EnergieAllianz Austria GmbH, which was

constituted in December 2003, has six members. Synergies are sought at lower levels, while management continuity is generally preserved. Merging areas of companies' operations rather than the organisations as a whole has certain advantages from the perspective of local politicians. Experience shows that public opinion responds considerably better to mergers that retain company headquarters, and hence jobs.

The main effect of the cooperation between the five provincial utilities, the municipal utilities in the provincial capitals and Verbund, through the "Austrian electricity solution" (Energie Austria) will be vertical integration of the companies' operations.

The declared goal of the partners is that of acting as a counterweight to the four heavyweight suppliers in Central Europe (EdF, RWE, E.ON and Enel), and in the long run of creating an additional major European player. According to press reports it is hoped that the "new" post-merger APT will trade almost 100 TWh/year of electricity, giving it a top ten position in the European market.

Though the regional mergers and investments mostly result in a reduced number of suppliers they have only a marginal impact on competition in Austria as a whole. However, the merger of EVN AG, Wienenergie GmbH, Energie AG Oberösterreich, BEWAG and Linz AG to form EnergieAllianz, and the latter's subsequent part-merger with Verbund have led to a dramatic decline in the number of suppliers on the electricity market.

## → Mergers and joint ventures since 2000

Table 14

Parties/year	New company	Merger/equity investment	Sector(s)	Level	Vertical/horizontal integration
Verbund (APT) Energie Allianz (e&t) 2004	APT	APT and e&t merged into "new" APT Verbund 66.7 % EnergieAllianz 33.3 %	Coordination of power station dispatching; electricity trading	Five provincial and municipal (provincial capital) utilities, and largest Austrian generator	Vertical and horizontal integration
Verbund Energie Allianz (e&s) 2004	e&s	New formation: Verbund 33.3 % EnergieAllianz 66.7 %	Supply of electricity consumers with demand > 4 GWh	Five provincial and municipal (provincial capital) utilities, and largest Austrian generator	Vertical and horizontal integration
Bewag/Begas Energie AG EVN, Linz AG Wienenergie 2002	Energie Allianz	Wholesale and retail joint venture	Electricity and gas retailing (small consumers with demand < 4 GWh)	Municipal utility and several provincial utilities	Horizontal integration
Steg-Steweag Hereschwerke Energie GmbH 2003		Acquisition of remaining 51 % in Hereschwerke	Electricity and district heating	Regional and provincial utility	Vertical and horizontal integration
Steg-Steweag Überland Strom GmbH 2003		Acquisition of remaining 51 % in Überland Strom GmbH	System operation and electricity supply	Regional and provincial utility	Horizontal integration
Steg-Steweag 2000	Steweag-Steg GmbH	Merger	Electricity	Regional and provincial utility	Horizontal integration
Steweag Feistritzwerke Gleisdorf 2000	Feistritzwerke-Steweag GmbH	Acquisition by Steweag of 27 % interest in Feistritzwerke-Steweag GmbH	Electricity	Regional and provincial utility	Vertical and horizontal integration
Steweag Stadtwerke Hartberg 2000		Acquisition by Steweag of 25.1 % interest in Stadtwerke Hartberg	Electricity, district heating and waste disposal	Regional and provincial utility	Vertical and horizontal integration
ESTAG Verbund 2004		Acquisition by ESTAG of 20 % Verbund holding in Unsere Wasserkraft	Electricity and gas retailing	Provincial utility and supplier	Vertical integration

Source: E-Control

Parties/year	New company	Merger/equity investment	Sector(s)	Level	Vertical/horizontal integration
ESTAG Grazer Stadtwerke AG 2002	Energie Graz GmbH	Acquisition by ESTAG of 49 % holding of Graz City Council	Electricity and gas	Municipal and provincial utility	Vertical and horizontal integration
Salzburger Stadtwerke SAFE 2000	Salzburg AG	Merger	Electricity and gas	Municipal and provincial utility	Vertical and horizontal integration
Salzburg AG Verbund 2004		Acquisition by Salzburg AG of remaining 20 % in MyElectric	Electricity and gas retailing	Provincial utility and supplier	Vertical integration
IKB TIWAG 2002		Investment in IKB (25 % plus 1 share)	Electricity and gas (gas inc. system operation)	Municipal and provincial utility	Vertical and horizontal integration
TIWAG, Steirische Gas-Wärme GmbH, Stadtwerke Lienz 2004	Stadtwärme Lienz Produktions- und Vertriebs-GmbH	Formation of JV. Tiwag and Steir. Gas-Wärme 48 % each, StW Lienz 4 %	Green electricity and district heating	Provincial gas utility and provincial power utility	Horizontal integration
TIWAG Stadtwerke Kufstein GmbH 2004	Bioenergie Kufstein GmbH	Formation of 50:50 JV	Green electricity and district heating	Regional and provincial utility	Horizontal integration
Energie AG EWWAG Wels 2002	Wels Strom GmbH	Acquisition of 49 % interest by Energie AG	Electricity	Regional and provincial utility	Vertical and horizontal integration
RLB OÖ Energie AG 2003		Acquisition by RLB OÖ of Energie-Contracting Steyr's 6.5 % interest in EVN	Electricity, gas and district heating, etc.	Investor and provincial utility	
Stadtwerke Kapfenberg Kelag 2002		Investment (35 % of Stadtwerke Kapfenberg)	Electricity and gas	Municipal and provincial utility	Vertical and horizontal integration
BEWAG Stadtgemeinde Jennersdorf Stewag-Steg 2003		Complete takeover by BEWAG of Jennersdorf power distribution system	Electricity	Regional and provincial utility	Horizontal integration

As noted above, concentration in all the relevant, contested product markets has increased markedly in the past few years. Since every segment apart from wholesaling is confined to national borders, competition in these markets is likely to be weakened for the foreseeable future, as there have been hardly any new entrants in the first three years of full liberalisation. The main reason why competition in the electricity market is largely restricted to domestic companies is the persistence of low energy prices. The provincial utilities continue to enjoy a quasi-monopolistic position in their grid zones. Even after three years of full market opening no intensification of competition is in sight. Awareness of the incumbents' brands, conservatism among small consumers, low margins, high customer acquisition costs in the small consumer segment, and incomplete legal unbundling of system operation and retail businesses make market entry unattractive and financially risky.

Characteristic of the Austrian electricity market are not only active alliances and joint ventures like EnergieAllianz and Energie Austria but also many cross-holdings which go back much further (see Chart 25). For instance Wienenergie, Tiwag and EVN hold interests in Verbund. Verbund, for its part, has equity investments in Ste-

weag-Steg, Burgenland Holding – the parent company of BEWAG – and Kelag, and until the end of 2002 also had an interest in EVN. Meanwhile ESTAG, the parent of Steweag-Steg, has holdings in Verbund's generating subsidiaries, Austrian Hydro Power and Austrian Thermal Power. The ties between ESTAG, Steweag-Steg and Verbund are so close that during the Energie Austria merger proceeding ESTAG was not treated as an independent third party. This meant that both ESTAG and Steweag-Steg were ruled out as acquirers of Verbund's 55 % stake in APC. ESTAG already owned 35 % of APC and had preemptive rights to the Verbund shares.

Verbund has long expressed a keen interest in expanding its holding in Steweag-Steg, through ESTAG. Here, the issue is the rumoured intention of the Province of Styria to sell its 24.8 % stake in the company. Verbund has also been eyeing Electricité de France's holding in ESTAG (25 % plus one share). The only entirely new, purely Austrian entrants have been Ökostrom AG and Alpen Adria Energie AG which specialise in electricity derived from renewable energy sources. Ökostrom AG has expanded steadily over the past few years, and is working towards an initial public offering by 2007 at the latest, according to press reports.

The Austrian incumbents are increasingly striving to offer products of their own in the niche green electricity market. To this end they have founded a number of subsidiaries, such as evn Naturkraft, exclusively devoted to marketing green power. EVN has spun out its small hydro and wind power activities to this subsidiary. Salzburg AG has grouped its green power interests in Alternative Energie Salzburg GmbH. EnergieAllianz has founded Naturkraft Energievertriebsgesellschaft mbH which is principally responsible for procuring green and small hydro power. The being backed by the provincial governments in this approach. All the provinces' energy policies are aimed at expanding green power capacity, as the politicians' statements make clear.

The increased commitment to green electricity is reflected in current and planned plant construction projects. Over the past 12 months there have been announcements of the expansion or construction of wind farms, biomass (often in CHP configurations) or small hydro plants, or – in isolated instances – PV systems from almost every province. Many of the small hydro projects concern the upgrading of existing capacity, since it is increasingly difficult to build new stations owing to the environmental regulations. In power station construction, too, cooperation between electricity companies is not uncommon. For instance, Wienstrom, EVN and Verbund (AHP) are currently building a small hydro plant on the Danube Canal, in Nussdorf, Vienna; this is scheduled to come onstream in 2005.

Biomass fired CHP plants are increasingly being built in densely populated areas. In May 2004 Wien Energie and Austrian Federal Forests signed a contract for the joint construction and operation of a large biomass fired power station in Simmering, Vienna. A joint venture between TIWAG and Stadtwerke Kufstein has built Austria's largest biomass fired district heating plant. And TIWAG has joined forces with Steirische Gas Wärme GmbH, as well as Lienz Council as a minority shareholder, to form Stadtwärme Lienz Produktions- und VertriebsgmbH with the object of building and operating a biomass fired CHP plant.

While capacity expansion plans in the West are mainly focused on biomass and small hydro plants, in eastern Austria investment is increasingly going to wind farms owing to the high wind potential there. Wind power has been attracting particularly heavy investment in Burgenland and northeastern Lower Austria. BEWAG has formed a subsidiary, Austrian Wind Power (AWP), which is largely devoted to building and operating wind farms. Formed in 2002, AWP now operates 133 wind turbines with a combined installed capacity of 217 MW (status as of June 2004). AWP also has joint ventures with other electricity companies for the construction of green power plants (e.g. with Wienstrom for the Pama and Gols wind farms). And it has signed a partnership agreement with Austrian Federal Forests for the joint construction and operation of wind farms.

Especially in the residential consumer segment, the electricity companies are no longer competing exclusively on price, but are increasing using highlighting green or hydro power as a quality feature of their products. However, there are significant differences in the marketing methods employed. Some companies price their green power products 10–20 % higher than their standard products for private consumers. Others market them via sales subsidiaries that undercut the parent company or the respective incumbents in other supply areas. In Vorarlberg a new Verein Öko Strombörse (Green Power Exchange Association) has been established in cooperation with the incumbent. This is aimed at meeting electricity demand growth from renewable sources, wherever possible. Vorarlberger Kraftwerke AG is offering a green power product called “Öko plus”. The customers pay an extra 1 cent/kWh which helps finance the construction, modernisation and recommissioning of green electricity generating plants.

In this connection it should be noted that the operators of most green power and small hydro power plants are compensated for their additional generating costs by a support payment system. Under the Green Electricity Act, this subsidised green electricity is pooled in a balancing group and allocated to all its members. Residential consumers cannot buy green electricity directly on the free market. The support payments are partly financed by surcharges, imposed on all Austrian consumers and itemised on their bills. The remainder is paid for by allocating green electricity to all balancing group members on a pro rata basis, at a price of € 45/MWh. In 2003 the electricity suppliers passed on the additional costs arising from the support scheme to their customers in the form of energy price increases. Some suppliers itemise the cost of the obligation to accept green electricity on their bills (“additional expenses under the Green Electricity Act”).

It is not immediately apparent to consumers whether the additional cost of the green electricity offered to them has already been recouped via the support system or by way of the energy price increase in 2003. This means that green power products could be marketed at above-average prices although the extra generating costs have already been paid for by the support scheme.

Suppliers’ additional costs due to the obligation to take electricity arise from the difference between the price paid and the market price. If market prices rise the difference is less. In 2003 some suppliers based their prices on the assumption that these additional costs were 0.2028 cent/kWh. Since the market price was actually higher, the extra cost burden incurred as a result of mandatory acceptance of green electricity must have been lower, and so consumers should also have been charged less.

The companies differentiate not just between products (electricity derived from renewable versus conventional energy sources) but also between regions in their pricing. For instance, VKW and Kelag offer power in their own and other grid zones at slightly different tariffs. Kelag’s energy price outside its own grid zone (3,500 kWh/year, July 2004) is some 8.8 % lower than inside it. It is also striking that Kelag is the lowest-cost supplier in all the grid zones apart from its own and that of VKW. Such behaviour may reflect the low switching rates, which mean that a local player can safely offer electricity at a higher rate than new suppliers. A similar tendency is also observable on the gas market.

Besides green electricity, the sale of peak load electricity from pumped storage power stations is another lucrative line of business. Here, the main problem is generally obtaining approvals for power station construction. In Vorarlberg the contract for the construction of the Kops II pumped storage station was signed in May 2004. The project is being financed from Illwerke's own resources and from the sale of electricity to the company's long-standing German partner, EnBW. According to media reports efforts to implement further storage and hydro power station projects (e.g. in the Ötz Valley) are also under way in Tyrol, but these are likely to encounter difficulties.

As regards the marketing activities of Austrian incumbents on the home retail market, customer loyalty campaigns have come before customer acquisition. Kelag has worked hardest to win new customers outside its home market. *Unsere Wasserkraft* and *MyElectric* – both of which are likewise owned by non-Energie Austria parents – have an active presence in the Eastern control area, albeit one that has not been untroubled (see section Doorstep selling). So far, efforts to market to consumers outside companies' own control areas have been very muted. However, some companies to be found in the E-Control tariff calculator do offer electricity on a nationwide basis; examples are VKW and Kelag. Towards the end of June 2004 *Unsere Wasserkraft*, a subsidiary of the Styrian energy utility ESTAG, launched a new marketing campaign in the Tyrol control area. According to the company's management between 800–1,000 consumers per month have been switching to *Unsere Wasserkraft* which is aiming to win 800 small businesses and 5,000 households as customers by the end of 2004.

According to its annual report for 2003 *Verbund* has modified its strategy for the domestic retail market. In 2003 it ceased focusing on ex-

panding its market shares and made increased profitability its main aim. *Verbund* now only seeks to attract customers if the contractual prices are sufficient to cover costs.

#### Back to basics?

Traditionally the Austrian electricity companies – especially the energy utilities in the provincial capitals – have either already been active in other utility industries or have subsequently attempted to leverage synergies by moving into other network industries, waste disposal or waste incineration. Typical areas of business, apart from electricity, include gas, district heating, telecommunications, internet providing, cable TV and – in the case of the municipal utilities – public transport. Austrian electricity companies often offer wastewater and solid waste disposal services. At present two conflicting trends are apparent in terms of the approach to diversification.

On the one hand, there is a tendency to expand into new areas – particularly other network industries and waste disposal – sometimes across provincial borders. The companies are attempting to create additional benefits for customers by offering them a number of utility products as a package (see section Multi-utility strategies). Some have created additional lines of business without using multi-utility products in their marketing; they are active in other industries, and sometimes other countries, mostly through holding company structures. By contrast, *Verbund* and ESTAG have been retreating to their core business.

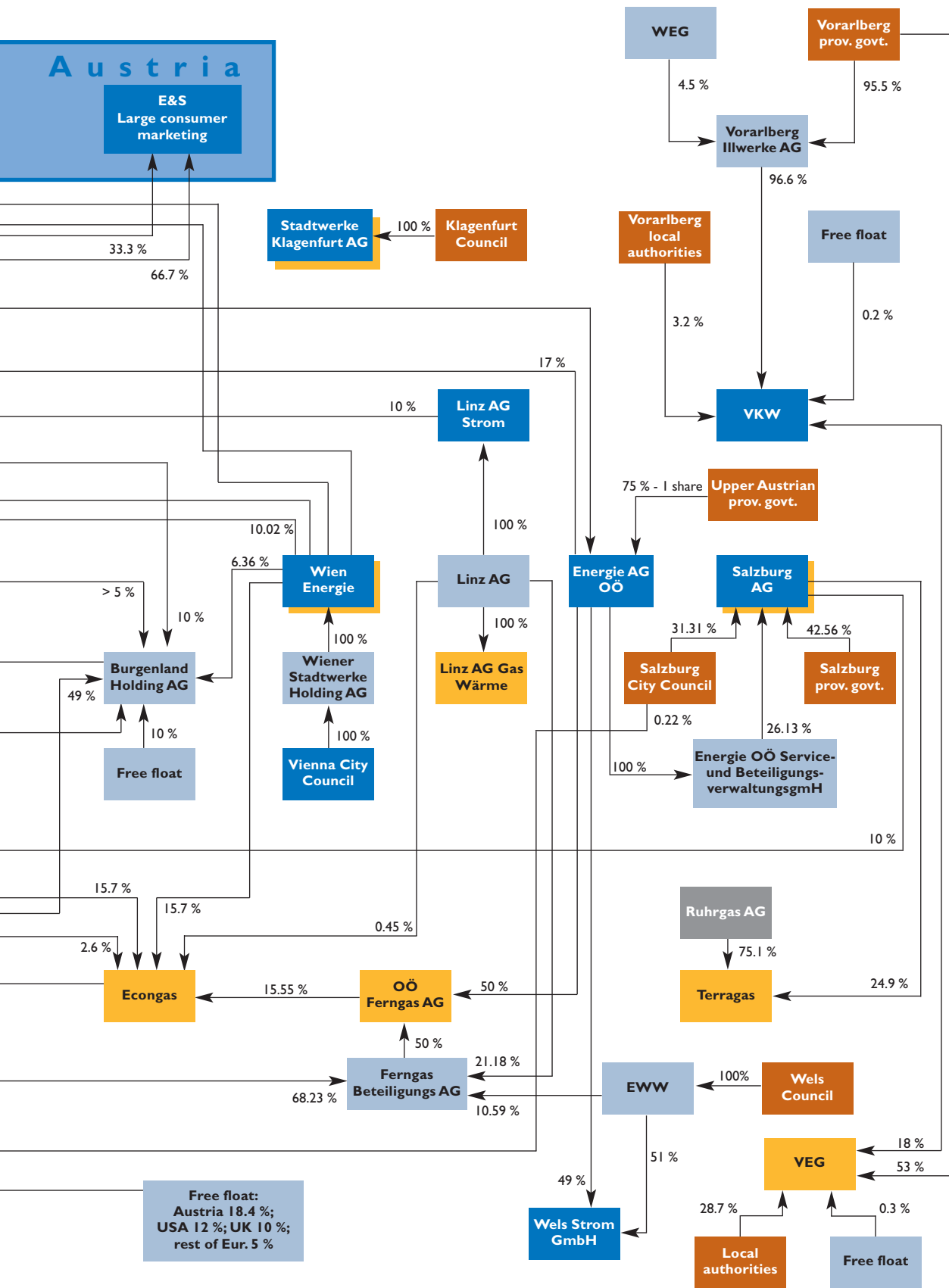
In recent years ESTAG has responded to the changed conditions of a liberalised market by launching numerous restructuring exercises and joint ventures. Apart from takeovers and increased holdings in local Styrian utilities, the merger of *Steweag* and *STEG*, and the transfer of its generating capacity to *Verbund's* AHP and ATP





Chart 25

Public holdings Austrian holdings Foreign holdings Electricity Gas Electricity & gas



generating subsidiaries, the group has sought to open up new income streams by engaging in non-energy activities. These include investments in an underground car park in Graz, the Cargo-Center Graz, the Styrian Spirit airline and the Ottendorf spa. In the spring of 2004 however, a new management decided to divest the “non-core” investments.

In April 2004 Verbund sold 74.9 % of its Verbundplan subsidiary and 95.19 % of its Czech subsidiary Aquatis a.s. to the international engineering group Jaakko Pöyry. Verbundplan is an engineering consultancy that focuses on energy, transport and infrastructure systems, test and measurement instrumentation, and hydraulic and environmental engineering. The disposal was seen as a logical step towards refocusing Verbund's operations on its core business.

Outside Austria, too, some large European energy supply companies are withdrawing from non-core activities. E.On is nearing the completion of a series of disposals of businesses outside its core electricity and gas operations stretching back of several years. Since embarking on this strategy, Germany's largest energy group has returned to profit, and it is now hard on the heels of its main competitor, the RWE Group. Results available as of the editorial deadline of this report show two-figure growth in E.On's profits from its core energy business.

The third-largest German energy group, EnBW, posted a record loss in 2003. Some areas of business, including energy and environmental services – especially waste incineration – as well as the investments in APCOA, a multi-storey car park operator, the Gegenbauer-Bosse cleaning company and the Salamander shoe group weighed heavily on EnBW's results. Of late the Group had a total of 395 subsidiaries. Apart from drastically reducing the head count, EnBW's management has been selectively exiting from investments, especially in non-core areas, in an attempt to improve results.

#### Strategic behaviour of Austrian electricity companies abroad

A look at the strategic objectives of most Austrian incumbents shows that they look for growth potential not on the home market but abroad. The western provincial utilities were already cooperating with German companies under long-term agreements before liberalisation, but the other Austrian electricity suppliers and their parent companies have only recently built increased export efforts into their corporate strategies. There have been further joint ventures with German enterprises. For instance, Vorarlberger Illwerke AG is building hydro power stations in cooperation with EnBW. However, the main target markets are Austria's southern, and Central and East European (CEE) neighbours. Italy is attractive because of the high electricity prices there, and the CEE countries because of their high growth potential. Expansion is not confined to electricity, but extends to the entire utility and waste disposal sector.

Austrian companies have been cautious about investing in CEE electricity industries because of the politically highly charged issue of atomic power. Energie AG acquired interests in three Czech regional energy supply companies in recent years, but in spring 2003 it sold these holdings to Germany's E.On Energie on the instructions of its owner, the Upper Austrian provincial government. Energie AG has since endeavoured to reposition itself in the Czech Republic, and intends to step up its operations in the areas of environmental services, energy contracting, renewables and small hydro – well away from the fraught issue of nuclear power. In November 2003 Energie AG entered the Czech water market by acquiring two Czech water companies. In a further expansion move, it took over RWE Umwelt AG's Czech and Hungarian waste disposal operations in spring 2004. And in July 2004 it established a local subsidiary, Energie AG Bohemia to manage its Czech energy interests.

The reasons why German (E.On and RWE) and to a lesser extent Austrian energy companies (including OMV) are focusing on energy investments in Central and Eastern Europe include:

- the continued scope for major savings at companies in the region, and hence good long-term opportunities for improved profits;
- incomplete market opening, and hence opportunities to exploit dominant positions in these markets (early mover advantage); and
- closeness to investors' home markets.

According to an investors' letter on the capital increase of July 2004, one of EVN's main medium-term strategic objectives is expansion in Central and Eastern Europe. EVN plans to move into countries where there are openings

for the group to market its energy, water and waste incineration services jointly. It therefore plans to continue to take opportunities for acquisitions and direct investments in its core energy business as well as the water and waste incineration growth markets, in selected CEE markets. This year EVN has already won orders for the construction of a waste incinerator in Moscow and a wastewater treatment plant in Zagreb. The waste incinerator in Moscow is to be modelled on AVN's plant in Dürnröhr, Lower Austria, commissioned at the start of 2004. The steam generated by it is to be used to produce electricity.

In summer 2003 EVN acquired WTE Wassertechnik GmbH – a water and wastewater disposal company with a presence in 11 European countries – from Berliner Wasser Service GmbH. EVN operates two wastewater treatment plants in Moscow through WTE, and is currently building a potable water treatment plant for the city. The company is also active as a gas supplier in western Hungary, and plans to enter the Bulgarian electricity market. It emerged as one of three best bidders in a tendering procedure for a 67 % interest in seven electricity distribution companies, being offered in three packages. Negotiations on which of three packages are to be sold at what terms are expected to be completed in the autumn of 2004.

BEWAG not only operates wind farms in Austria but also plans to build facilities in Central and Eastern Europe at a cost of € 100 m, according to press reports. BEWAG accounted for about € 200 m of the € 300 m invested in wind power capacity in Austria in 2003. The company already has a presence in the Croatia and the Czech Republic through its wholly owned subsidiary Austrian Wind Power GmbH, and according to a press release it is preparing to enter the Hungarian and Slovak markets.

According to Verbund, Italy is one of the most attractive electricity markets in Europe as the price level is significantly higher than in any other EU member states. Italian wholesale electricity prices are about 50 % above the EU average, and two-thirds higher than Austrian prices. The reasons for this are tight transmission capacity and the fact that domestic generation capacity is insufficient to meet demand. Italian electricity imports totalled 51 TWh in 2003 – almost equal to the entire output of all Austrian generators. Verbund has therefore expanded its operations on the Italian electricity market, and has raised its holding in the Energia SpA joint venture from 26.6 % to 37.5 % by way of a € 150 m capital increase. Milan's CIR industrial group is the majority shareholder in Energia. The company plans to build three 760 MW gas-fired power stations by 2007, and will also have output from three power stations acquired from the Italian ENEL Group at its disposal. In all, Energia will be generating some 23 TWh of electricity by 2007 – equal to around three-quarters of Verbund's output in Austria (2003: total generation approx. 28 TWh). Formed five years ago, Energia is now one of the top five electricity and gas companies in Italy.

Apart from Italy, Verbund is principally active in Germany, but it also operates in the French and Slovenian large consumer markets. In Germany it mainly supplies municipal utilities, while in the other countries it concentrates on serving industrial consumers.

Verbund, too, is attempting to steer clear of the politically sensitive nuclear power industry in its expansion plans. For example in summer 2004, when making a binding offer for the largest Slovak electricity generator, Slovenské elektrárne a.s. (SE) – which operates the Bohunice and Mochovce atomic power stations as well as

thermal and hydro plants – Verbund excluded the nuclear capacity from its bid. In this connection Verbund ruled out any investments in atomic power. Ten years ago it ran into strong opposition over a project for the construction of an interconnector between Bisamberg in Vienna and Stupava in Bratislava because of public fears of increased atomic power imports. The project has remained on ice ever since.

Apart from the two atomic power stations SE operates two thermal power plants and 34 hydro power stations. In 2003 it returned a net profit of SKK 1.31bn (€ 32.9m) on revenue of SKK 47.71bn. It generates 80 % of Slovakia's electricity.

Not least because of the protracted approval procedures in Austria, Verbund is thinking of looking for power station sites in neighbouring countries, and of relocating projects originally planned for Austria to sites across the border. For instance, Slovenia is seen as an attractive location, as the approval procedures are probably shorter, and the margins to be made higher. If necessary electricity can be imported from Slovenia to Southern Austria – an advantage in view of the missing 380 kV transmission line in the Austrian grid.

Tiwag has also embarked on an expansion drive in Italy. Because of this and the legal situation in Italy, it registered an Italian subsidiary, Tiwag Italia Srl, in Bolzano, in May 2003. This sells Tiwag products and services in Italy, and is responsible for customer service there. Tiwag Italia Srl is now the sixth-largest electricity importer in Italy. In January 2003 Tiwag and Südtiroler Elektrizitäts-Aktiengesellschaft (SEL) formed Seltrade AG – a pure play electricity trading company – which is likewise domiciled in Bolzano. Tiwag holds a 9 % interest in Seltrade.

In the spring of 2003, Salzburg AG joined forces with VA Intertrading (a trading company owned by voestalpine, VA Tech and Raiffeisen Landesbank OÖ) and the Russian RAO UES electricity group to found an electricity trader, Terrawatt. The partners each hold one-third of Terrawatt.

#### Foreign companies in Austria

Besides the regional and national mergers, there have also been foreign investments in Austrian utilities in recent years, most of these involving minority interests due to the Second Nationalisation Act<sup>41</sup>. Because of the Act, the Austrian electricity industry is still under Austrian majority ownership, unlike those of some other European countries.

The German RWE energy group has an indirect 31 % holding in Kelag, and EdF and its subsidiary EnBW have interests in various Austrian electricity companies. EdF owns 25 % of ESTAG (the parent company of Steweag-Steg GmbH). EnBW holds over 6 % of Verbund, and has increased its stake in EVN to more than 10 %. The reputed wish of EdF to raise its indirect holding in EVN to over 35 % has not been borne out by events. ESTAG has run down its interest in EVN from about 20 % to less than 5 %. In August 2003 Raiffeisenlandesbank Oberösterreich acquired Energie AG's shares in EVN – held through Energie-Contracting Steyr GmbH – to which ESTAG had had preemptive rights. This reduced EdF's indirect holding in EVN AG, through ESTAG, to less than 5 %. The free float now represents some 34 % of EVN's stock. There are also close contractual relationships on the generation side, going back decades, between the German companies E.On and EnBW, and Tiwag, and VKW/Vorarlberger Illwerke, respectively.

While there have been some foreign investments in Austrian companies, there have been

hardly any instances of foreign companies' entering the market directly. Germany's EnBW has been the only foreign company to establish a subsidiary in Austria. According to press reports the company has now dropped its ambitious goal of acting as an alternative supplier for all Austrian businesses, due to what it sees as excessive system charges. EnBW is now focusing on industrial consumers, and selected retail chains and service providers.

With the complete disposal of Austrian Power Vertriebs GmbH (APC) to the Slovenian Istrabenz Group – the key condition for clearance of the Energie Austria merger – a new supplier has entered the Austrian market. Simultaneously with the transaction, Verbund and Istrabenz concluded a long-term (4.5-year) supply agreement. Under a commitment given by the merger parties, the terms of this agreement may not be worse than those offered to the Energie Austria partners. In accordance with the conditions imposed by the EU competition authorities, Verbund has also agreed to refrain from active competition with APC. Verbund is, in any case, present on the large consumer market, through the "new e&s" subsidiary formed as part of the Energie Austria merger.

According to press reports APC has 5,300 business customers, to which it sells an annual 3,000 GWh of electricity, and returned € 80 m in sales revenue in 2003. APC claims to hold a 14 % share of the market segment it serves. The acquisition has given Istrabenz a foothold in the Austrian large consumer market. Like the Austrian power companies, Istrabenz aims not just to expand its share of the Austrian electricity market but also to position itself as a major supplier in Central and Eastern, and Southeastern Europe.

<sup>41</sup> See footnote 17.

It remains to be seen whether the arrival of Is-trabenz will give a new impetus to competition, which has hitherto primarily been confined to local companies, and has potentially been weakened by the Energie Austria merger.

#### Strategic behaviour of gas companies

Despite deregulation under the EU gas directives, the European gas market is compartmentalised into a large number of national and regional sub-markets in which the incumbents continue to act as quasi-monopolists. Long-term commitments under take-or-pay (TOP) agreements – some 95 % of all gas demand is met by TOP agreements with terms of 25 years or more – as well as a plethora of differing national regulations, and a high degree of concentration in the upstream areas of the industry stand in the way of the emergence of cross-border markets.

Even the Austrian market is geographically segmented. Due to the lack of interconnectors between Salzburg and Tyrol, and Tyrol and Vorarlberg, it is split into three sub-markets (control areas). The largest regional market is the Eastern control area (all the provinces except or Tyrol and Vorarlberg). Even here, concentration in all the relevant product markets is far beyond the critical level (see section Concentration in the Austrian natural gas market). In Austria as elsewhere, most gas demand is met by long-term TOP agreements (largely with Russian companies). OMV Gas is the main importer, and supplies the regional distributors (provincial utilities) while it also competes in the retail market, through the EnergieAllianz joint venture.

#### Strategic behaviour of domestic natural gas companies in Austria

The Austrian natural gas market is characterised by high transit volumes. Only about one-quarter of the gas arriving in Austria remains inside the country, and the rest is supplied to Germany and Italy. In 2003 total Austrian gas demand was about 8.9 bn cu m. The retail market is divided into two segments:

- Final customers with a consumption of over 500,000 cu m/year or 5m kWh (industrial consumers);
- Final customers with a consumption of up to 500,000 cu m/y (residential, commercial, and small industrial consumers).

EconGas is the largest supplier of large industrial consumers (uptake of over 500,000 cu m/y). Its main competitors are Terragas GmbH and Steirische Gas Wärme. Kelag also markets gas to this consumer segment.

The gas release programme has enabled CE Oil and Gas Trading to establish itself as an additional supplier to the large industrial consumer segment.

The other suppliers are attempting to create a counterweight to the dominance of EconGas. For instance, Salzburg AG and Ruhrgas Austria AG have been cooperating in the large consumer market since October 2003. Salzburg AG has transferred its large consumer business (eight major customers) to Terragas, receiving a 24.9 % interest in the company in return. This joint venture was explicitly billed as a means of countervailing EconGas' market power.

Steirische Gas Wärme has taken an 80 % interest in Gas Alive GmbH, a service company acting for commercial and industrial customers (e.g. transaction structuring) which also collaborates with other gas suppliers.

No new foreign gas suppliers have entered the market. Foreign companies' presence on the Austrian market continues to be largely confined to investments in local businesses (by GDF/EDF, RWE, E.On and Ruhrgas), indicating that this is still a more advantageous path than direct investments.

EnergieAllianz has the largest share of the residential consumer segment; marketing and supply go via the local sales companies of Wiengas, Begas, Oberösterreichische Ferngas, EVN AG and Linz AG. Steirische Gas Wärme, MyElectric, Kelag and Unsere Wasserkraft are also active across the entire Eastern control area. In the other two control areas the previous territorial monopolists have retained their dominant positions, holding market shares of almost 100 %.

#### Strategic behaviour of Austrian natural gas companies abroad

EconGas and RAG are already operating as suppliers in Italy and Germany, and EconGas is planning to expand its activities there. Profits generated on export markets can strengthen a company's position on its home market. At the same time, a dominant "national champion" has the option of expanding abroad at the expense of customers on its home market, leading to a transfer of welfare to the company or foreign consumers.

Tigas, a subsidiary of the Tiwag electricity company, is primarily focusing on expansion in neighbouring regions. For instance, it has taken over two gas companies, Südgas and Energas, in South

Tyrol (Alto Adige). Tigas also owns 30 % of Selgar, which likewise operates in South Tyrol, and plans to step up its co-operation with it. Tiwag's investments reflect the efforts of the Tyrolean provincial utility (Tiwag owns 99.79 % of Tigas) to establish itself on the South Tyrolean market.

#### Strategic behaviour of electricity and gas companies

The mergers to form Energie Austria – expected to commence operations on 1 October 2004 – and EconGas have effectively created a vertically integrated electricity and gas group, due to the participation of EnergieAllianz in both companies. Some of the partners are active in both sectors, thus strengthening both vertical and horizontal integration of the electricity and gas operations.

As Chart 26 shows, parties to these two large mergers are present at every production stage in both markets, and in each case hold dominant positions (see section Concentration in the electricity and natural gas markets). However, each merger has taken place only at the trading level and between the large consumer sales organisations. There are no short or medium-term plans to merge the partners themselves or their system operation businesses. In the course of the merger proceeding Verbund and OMV Gas both undertook to withdraw from the retail market, removing two potential competitors for EnergieAllianz.

Independently of the EconGas and Energie Austria mergers, Verbund, EVN and Energie AG (partly indirectly) all hold substantial interests in other Austrian provincial utilities. True, the parties to the Energie Austria merger have undertaken to desist from exercising influence over two subsidiaries (e.g. by waiving voting



rights), but there is no obligation to dispose of these investments, and the commitments in question expire at the end of 2007. In other words, the merger parties not only enjoy dominant positions on both markets, but will have additional opportunities to influence competitors in the not far distant future. Moreover, for some time now Verbund has been expressing increased interest in acquiring additional interests in some of its competitors (e.g. ESTAG).

The links between the companies' electricity and gas businesses not only create dominant positions in the various markets, but also further opportunities for market abuse. These chiefly arise in two areas:

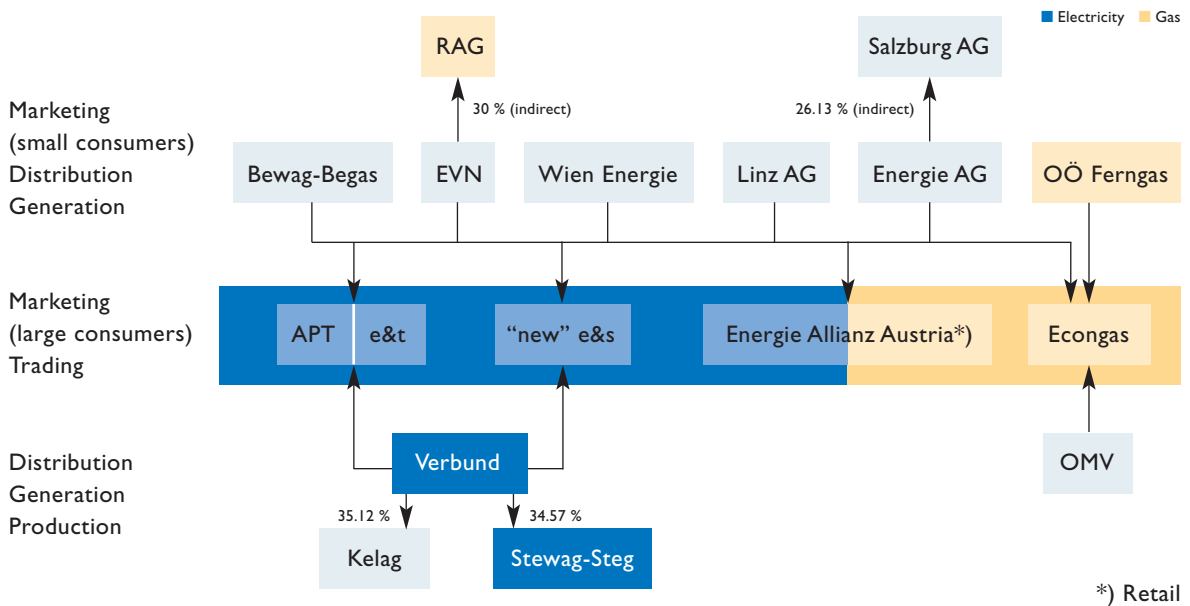
→ the ability of companies involved in electricity generation to influence gas price levels (OMV Gas as the main importer);

→ dominant positions in the sub-markets that are essential for a functioning electricity market (e.g. gas-fired power stations and the balancing market).

The first danger relates to the opportunity for the dominant company (in this case, EconGas, in part through its parent, OMV Gas) to increase gas prices and to discriminate on price between its own generating units and those of other market participants. This is compounded by the integrated companies' freedom to choose between making profits either in the upstream gas area or in the downstream electricity market. This could be used to prevent foreign companies from entering the Austrian generating market, resulting in higher prices for consumers than would be the case in a competitive market, and hence in a transfer of surplus from consumers to the vertically integrated producer.

### → National champions in the Austrian electricity and gas sectors

Chart 26



Source: E-Control



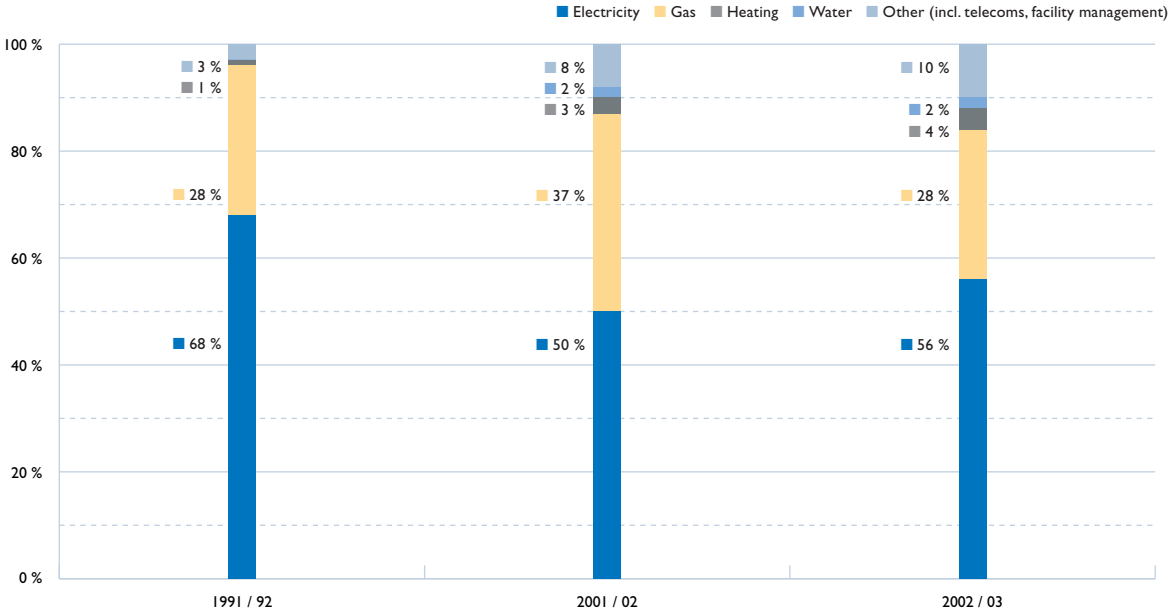
The second opening for an integrated company to influence the market concerns the storage and balancing markets. Even if other gas companies are free to make long-term agreements with producers, as the storage operator and the main supplier of the gas balancing market OMV Gas will be in a position to exploit its dominant position. However an investigation by E-Control into potential convergence between the Austrian electricity and gas balancing markets shows that at present there is no demonstrable connection between price and volume trends on the two. In order to exploit their potential cost advantages as integrated companies in the downstream area, the merger companies

have been outsourcing their customer care services for private and commercial consumers or building joint customer service centres (e.g. Wienenergie service centre for electricity, gas and district heating customers). The use of a single name is intended to enhance consumer awareness and thus customer loyalty.

As Chart 27 illustrates, the provincial utilities are increasingly moving into activities outside electricity and gas (see section Strategic behaviour of electricity and gas companies). For instance, EVN's district heating, water and "other" revenue now represents 16 % of the total, compared to only 4 % in the early 1990s.

→ EVN's sales revenue by business areas

Chart 27



Source: EVN



Advertising is a normal part of business life. The channels by which it reaches consumers include radio, TV, posters, newspapers and magazines. Given the range of media, it is thus not surprising that, like others, the electricity and gas industries spend heavily on advertising. In 2003 the advertising expenditure of Austrian electricity and gas companies totalled some € 17.5 m (electricity € 12.2 m; gas € 5.3 m).

The companies' advertising activities have a variety of aims. The literature distinguishes between three different forms of advertising:<sup>42</sup>

1. persuasive advertising (aimed at changing consumer preferences or enhancing consumer loyalty);
2. informative advertising (reduced search costs);
3. advertising as a complement to consumption.

The first approach to advertising aims to influence customer preferences, build up loyalty to the product, and differentiate it from others, resulting in increased demand inelasticity. Advertising can also be seen as a barrier to entry, since there may be economies of scale and scope (simultaneous advertising of a number of products). This is the more so because the ad-

vertising expenditure of new competitors represents sunk costs when they enter the market. Advertising can restrict competition, as it does not represent any "real value" for the consumer, but merely creates artificial differentiation, and can thereby lead to increased market concentration, and higher prices and profits.

The second approach relates to the fact that many markets are characterised by imperfect information – especially on the part of consumers. Obtaining information costs time and money (time = money), and highly imperfect information can result in inefficient market outcomes. Advertising in this sense can be seen as an endogenous product used to arrive at a more efficient market outcome by reducing search costs. Here, it has a pro-competitive effect if consumers respond to it. However, in a perfectly competitive market advertising activities would be unnecessary, as consumers would have access to perfect information, and advertising would have no influence on their consumption behaviour or preferences.

In the third approach, advertising complements the product acquired by the consumer. Here, it does not change the consumer's preferences, neither must it contain any information. Rather, it is assumed that the consumer's preferences

<sup>42</sup> Bagwell, 2003, *The Economic Analysis of Advertising*.

are stable, and can be reinforced by advertising. For instance, appropriately advertised products may be purchased as a means of gaining social approval.

The third approach can safely be ignored in the electricity and gas sectors, as neither power nor gas are marketed as prestige products. Neither does product quality change when a consumer switches suppliers. However, in the electricity sector there is a difference between power derived from renewable energy sources and from fossil fuels, so that there is a certain product quality aspect. It has not yet proved possible to establish green electricity as a prestige product, as it is hard to image how its consumption could be made conspicuous, which would be necessary if prestige were to be attached to it.

The remaining two advertising approaches – persuasive and informative advertising – call for closer attention. In reality, a strict distinction cannot be drawn between them.

Together with prices, quality features form part of the information that a consumer needs in order to take a purchasing decision. Unlike the mobile phone providers, electricity and gas companies seldom include price information in

their consumer advertising (e.g. outdoor and print). Consumers have to search for this information themselves, for example by directly soliciting offers, visiting suppliers' websites or using the E-Control tariff calculator. However, some companies do use advertising as a means of informing consumers about quality. This is mainly the case with suppliers that offer electricity derived from renewable sources (mostly hydro power which is often advertised as "clean energy"). This does not occur in the gas sector because of the lack of possibilities for differentiating the product.

However, most Austrian companies do not pursue active marketing strategies aimed at winning new customers. Advertising is primarily used not as a means of conveying information but to cement brand loyalty and portray the company in a favourable light (image advertising, e.g. extensive advertising activities by Verbund which is no longer present on the retail market) or to warn against others (see section Doorstep selling). Here, advertising has an anti-competitive effect. The main objective is not to win new customers but to hold on to existing ones, which has a negative impact on demand elasticity (demand becomes more inelastic).

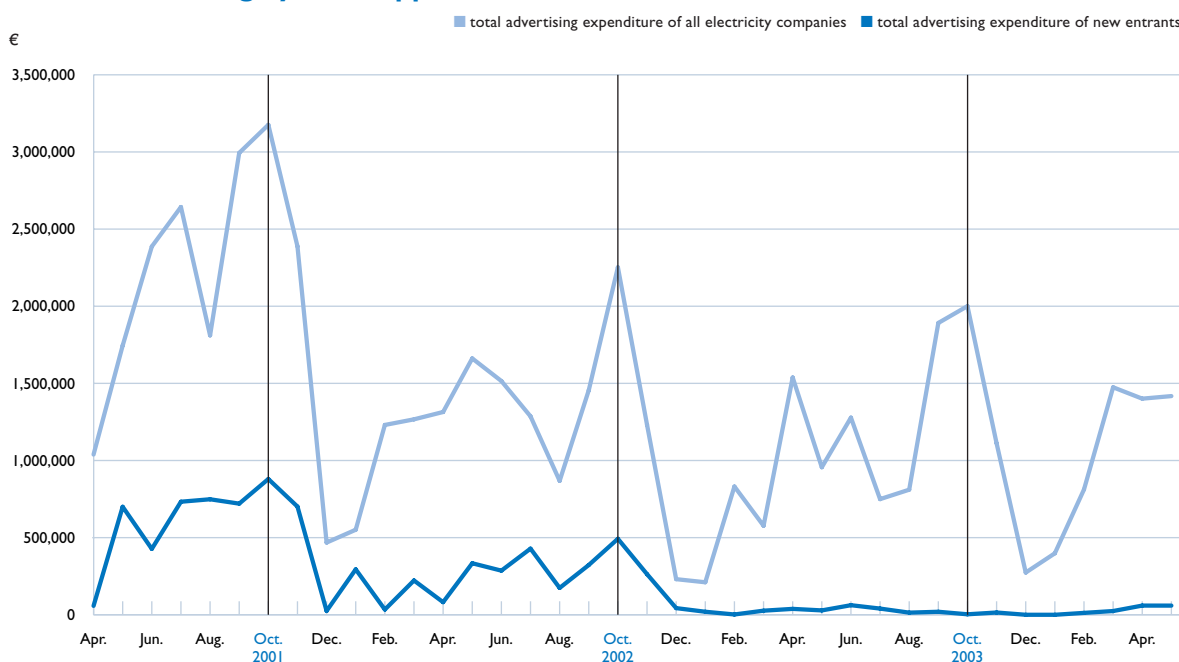
Product differentiation by means of advertising – obscuring the fact that electricity and gas are homogeneous commodities – and the high degree of consumer awareness of the incumbents’ brands together create barriers to entry that are a deterrent to potential competitors. Strong customer loyalty means that the incumbents can charge higher prices and make higher profits than would otherwise be the case without having to fear the arrival of new entrants. New suppliers face higher entry costs (marketing costs) than incumbents, which have already built up their brands. There is also a second reason why advertising aimed at brand development constitutes an obstacle to market entry – na-

mely, the fact that in the event of market exit advertising expenditure normally represents sunk costs.

As has been said, companies use advertising to create a given image for their products, thereby establishing lasting consumer preferences. New entrants must, as a minimum, spend as much as their competitors in order to achieve the same level of brand awareness. However, given the narrow customer base, they cannot expect a fast payback on these investments. Advertising can thus lead to “reputational monopolies”<sup>43</sup>, since the resultant limited product substitutability represents a barrier to entry.

→ Total advertising expenditure by electricity companies, and advertising by new suppliers

Chart 28



Source: Media Focus and E-Control

<sup>43</sup> Bagwell, 2003, The Economic Analysis of Advertising.

### Advertising in the electricity sector

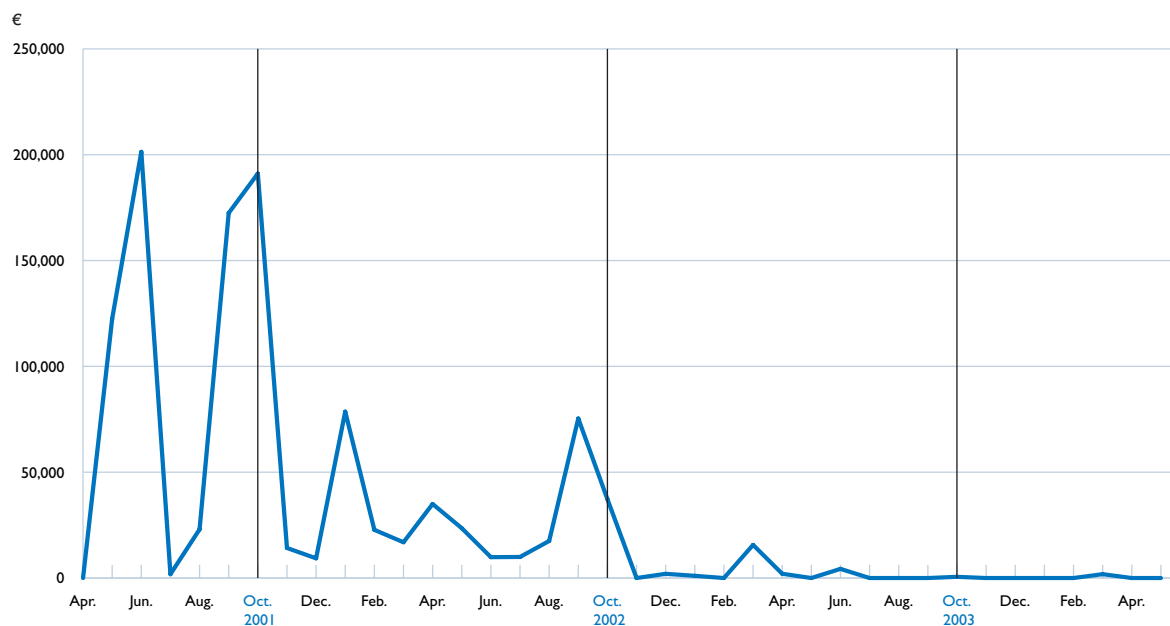
The trend in overall advertising expenditure by Austrian electricity companies (Chart 28) shows a decline after the immediate post-liberalisation period. Spending remained at about the same level in the following two years. Not only the overall advertising spend but also the number of companies advertising has shrunk since initial post-liberalisation period. The peaks in expenditure in mid-2003 and at the start of 2004 are attributable to a small number of companies, and primarily reflect image advertising, partly connected with mergers or aimed at indirectly influencing the climate of political opinion.

Advertising by new entrants (new suppliers and provincial utilities' sales companies) has been waning since late 2002, and has now virtually dried up. The new entrants advertised heavily in the immediate aftermath of liberalisation and in the following year, but spending contracted

sharply after December 2002. The decline in advertising expenditure, especially by new suppliers, points to a reduction in competitive intensity, since it was precisely the entrants that stimulated competition at the outset of liberalisation, leading to a marked drop in energy prices. This suggests that advertising effectiveness is limited, and that advertising activities seldom prompt consumers to switch suppliers. A look at the advertising expenditure of new entrants alone (excluding the provincial utilities' sales subsidiaries) reveals a much more pronounced decline after the first year of full market opening (see Chart 29). The overall amount spent by new suppliers recovered slightly up to 1 October 2002, but thereafter advertising activities almost completely ceased. Both the trend in advertising expenditure and the very low market shares demonstrate that it is difficult and costly for a new company to break into the electricity market. The strong positions of the

### → Advertising expenditure by new suppliers (excluding provincial utilities' sales companies)

Chart 29



Source: Media Focus and E-Control

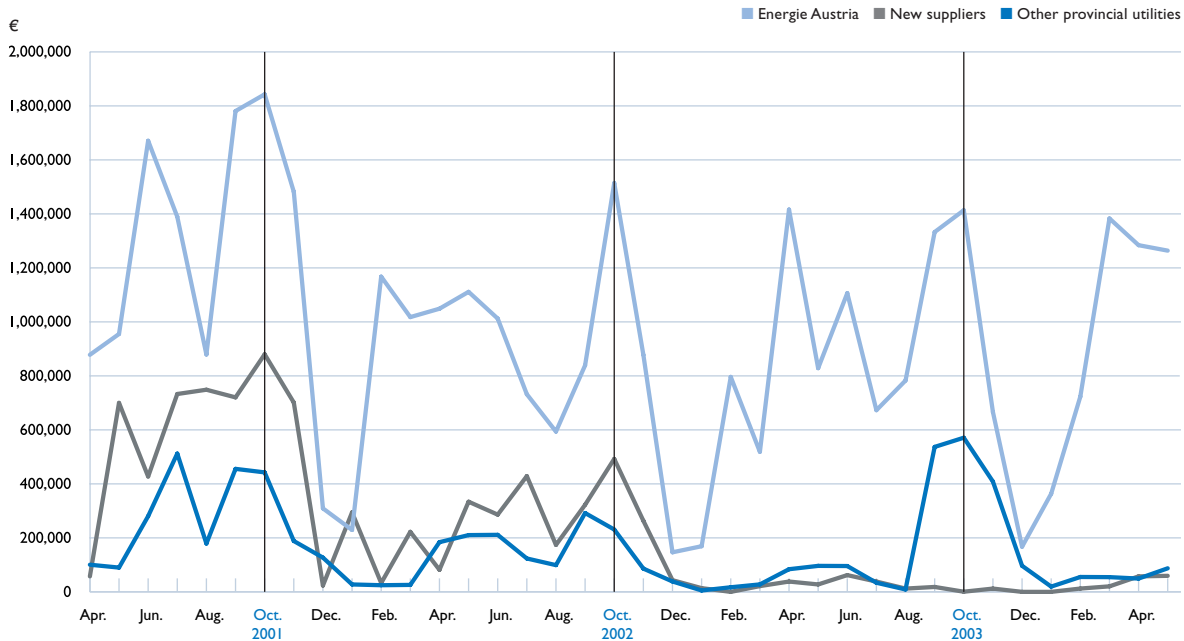
incumbents, the reluctance of consumers to switch and the lack of awareness of the new suppliers' brands indicate that, despite entrants' relatively high advertising budgets in the immediate post-liberalisation period, entry to the Austrian electricity market bore little fruit (low churn rate) and required very heavy expenditure. Perhaps in response to the failure of advertising to bring the desired results, most of the new suppliers have resorted to doorstep selling in an effort to win customers. The fall in advertising expenditure was linked to the increased use of door-to-door selling from mid-2002 onwards. However, in the third post-liberalisa-

tion year, doorstep selling activities also dropped off markedly.

A further breakdown by Energie Austria members, other provincial utilities and new suppliers (incl. provincial utilities' sales subsidiaries) shows clearly that the Energie Austria partners are the highest spenders – partly because of their size. Advertising activities bunched around the anniversaries of liberalisation and the period when Brussels was investigating the Energie Austria merger (spring 2003). Spending by the other provincial utilities and the new entrants decreased sharply after the full liberalisation of

→ Advertising expenditure by Energie Austria, other provincial utilities and new suppliers

Chart 30



Source: Media Focus and E-Control

the electricity market. Only in and around October 2003 did the advertising expenditure of the non-Energie Austria provincial utilities pick up; that of the new entrants remained low.

The large companies (including the Energie Austria partners) primarily run image campaigns (e.g. campaigns heralding “Austrian electricity solution” and promoting “clean” Austrian hydro power, and advertising by Verbund which is not a retailer). As argued at the start of this section, these strategic activities result in increased barriers to entry, lower demand elasticity and reduced competitive intensity.

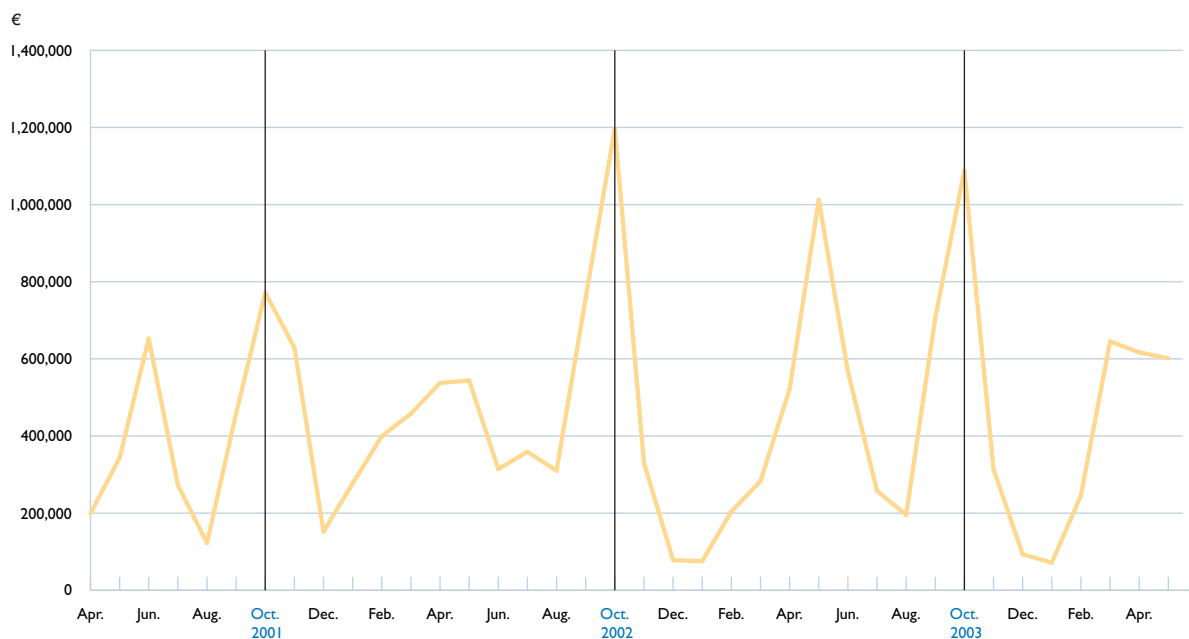
### Advertising in the gas sector

As in the electricity sector, advertising expenditure in the gas industry exhibits unmistakable peaks on the anniversaries of liberalisation. The companies stepped up their advertising activities at the time of electricity liberalisation. There were also sharp rises in some other months. The EconGas companies were largely responsible for these.

Chart 32 compares advertising spending by the EconGas companies with that of the other provincial utilities. The EconGas partners boosted their advertising at time of liberali-

### → Advertising expenditure by gas companies

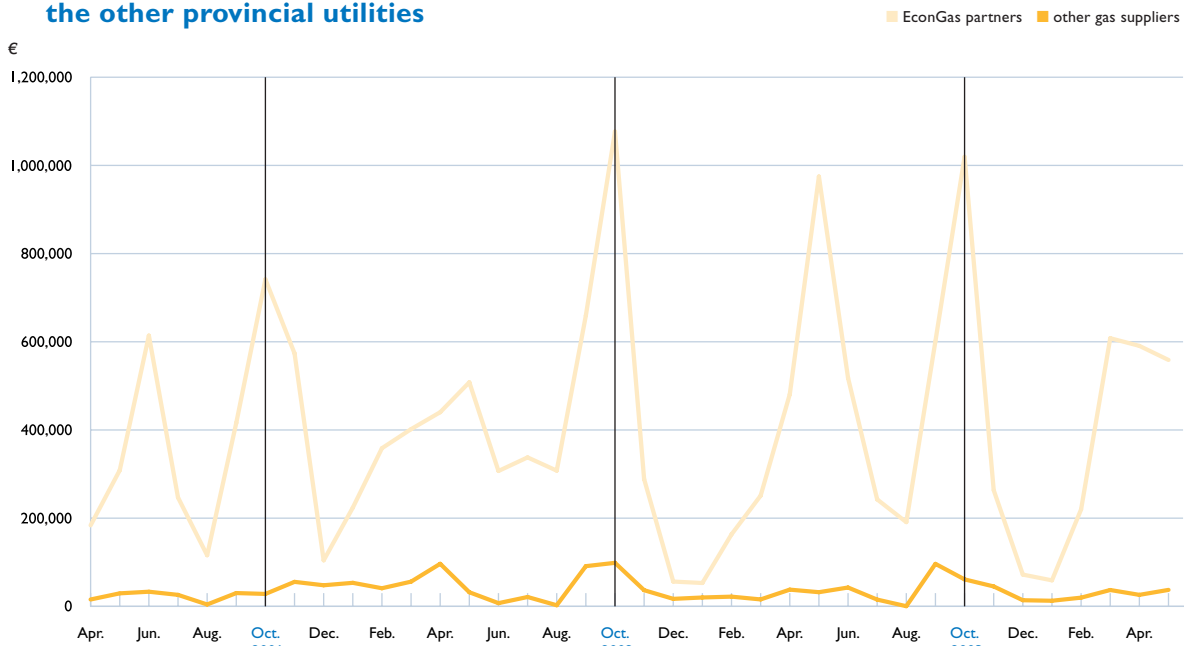
Chart 31



Source: Media Focus and E-Control

→ Advertising expenditure by the EconGas companies and the other provincial utilities

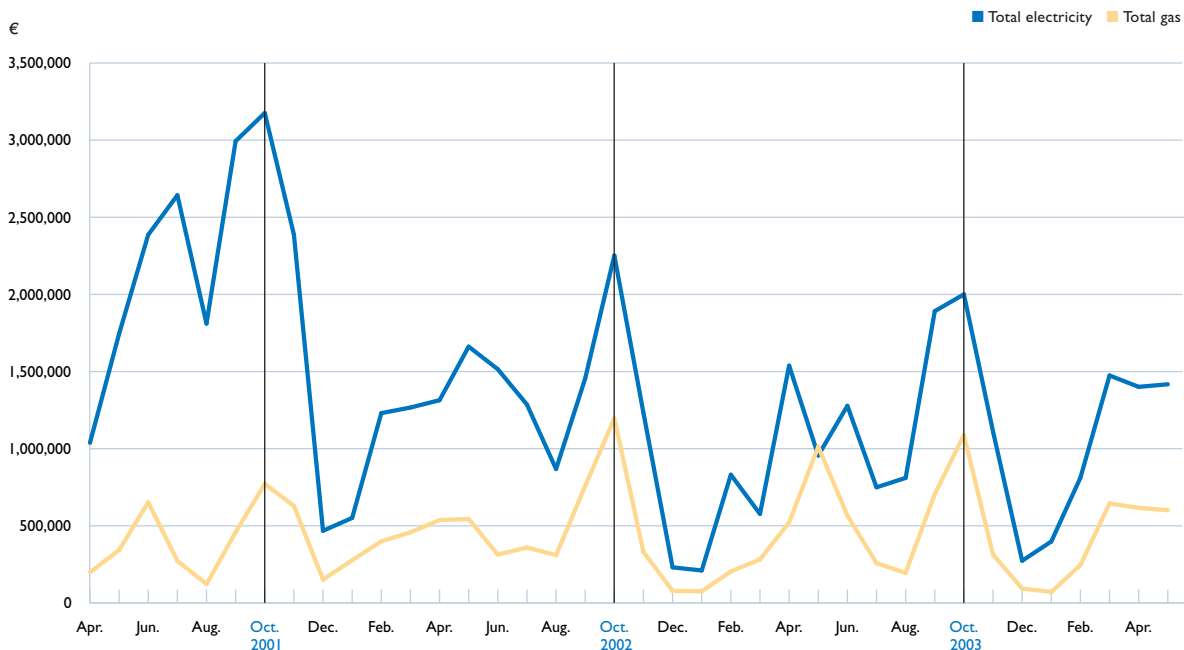
Chart 32



Source: Media Focus and E-Control

→ Comparison of advertising expenditure by electricity and gas companies

Chart 33



Source: Media Focus and E-Control



sation in October 2002, and during the period when the joint venture was being formed, in 2003. Here, too, image predominates over informative advertising (e.g. information on price or quality). As in the electricity sector, advertising has an anti-competitive effect and increases customer loyalty by influencing consumer preferences, resulting in a reduction in demand elasticity.

The non-EconGas provincial utilities mostly boosted their advertising at the time of liberalisation and on its first anniversary, but their overall level of spending has remained very low.

#### Comparison of advertising expenditure in the electricity and gas sectors

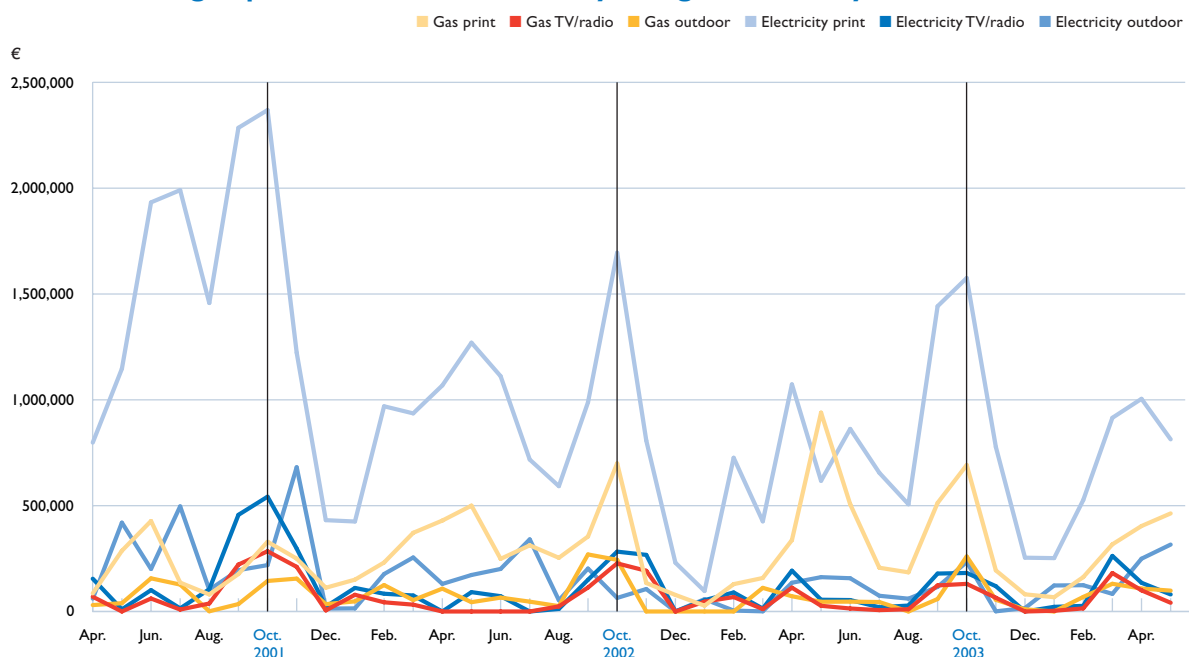
Advertising expenditure in the electricity sector continues to be considerably higher than in

the gas industry. The fact that electricity liberalisation took place one year earlier accounts for this trend between April 2001 until mid-2002. However, the difference can also be attributed to the weaker competition and lower number of companies in the gas market.

The main media used by electricity and gas companies for their advertising are daily newspapers, weeklies and trade magazines. Most of them also employ outdoor (poster) advertising. The electricity industry's outdoor advertising spend has been relatively constant, with only slight rises on the anniversaries of liberalisation. In the gas industry, the use of outdoor advertising has tended to increase in October. In both sectors, radio and TV advertising placements have generally been confined to the liberalisation anniversaries, and to a small number of companies.

### → Advertising expenditure in the electricity and gas sectors by media

Chart 34





## Market behaviour

→ Doorstep selling

→ Multi-utility strategies

### → Doorstep selling

Like the companies' advertising budgets, which with few exceptions have retreated markedly in recent quarters, the door-to-door selling activities of the sales companies and new entrants such as Unsere Wasserkraft and MyElectric have fallen off.

For the entrants doorstep selling is currently the best way of winning new customers. On the one hand it is a means of obtaining the information needed for supplier transfers directly from consumers – and at present there is no generally accessible database with all the customer data required for switching (e.g. the metering points). On the other, experience in the early post-liberalisation years has shown that activities such as poster, radio and TV advertising have little impact on consumers' churning behaviour.

The incumbents have mainly responded to the new suppliers' doorstep selling methods with press releases, articles in their customer magazines, direct mail and notices in hallways, as well as legal action. The incumbents' websites mostly carry prominent warnings against field staff who attempt to persuade customers to sign supply agreements at the door ("criminal methods", "dubious salesmen", and so on). Readymade, downloadable cancellation forms and multilingual information are posted on some sites.

If a customer nevertheless decides to switch suppliers, he/she can cancel the agreement in writing during the one-week cooling-off period that applies to doorstep transactions. However, it should be noted in connection with the successful actions brought by some provincial utilities against external sales companies whose staff have, among other things, passed themselves off as employees of the utilities, that the regulator naturally rejects such practices.

Many consumers are ill informed about energy liberalisation (e.g. freedom to switch and potential savings), and doorstep selling is a means of alerting them to the fact that new suppliers have entered the market and in some cases offer lower prices. The incumbents themselves seldom market outside their own grid zones. They appear to react defensively to the few new suppliers, rather than actively striving to attract new customers (see section Advertising activities by Austrian electricity and gas companies).

### → Multi-utility strategies

The horizontally integrated provincial energy suppliers and the municipal utilities are continuing to pursue multi-utility strategies. They are active not just in the electricity and gas sectors but also in district heating, waste disposal and telecommunications (internet providing and cable TV), and also offer supplementary services.

In recent years companies have been expanding their multi-utility services, and have also merged their operations in some markets (e.g. E. On and Ruhrgas). The main aims of this approach are:

- to enhance customer loyalty;
- to exploit economies of scale and scope in their energy supply operations (e.g. common marketing, customer service and hotline functions);
- to erect barriers to entry by creating the added value of a multi-utility product;
- to spread risk by means of product diversification.

Multi-utility strategies offer opportunities for subsidisation of businesses in competitive markets by others in sectors that have not been liberalised or in which there is little or no possibility of substitution. This can either be by means of higher prices in non-competitive markets or by way of transfer pricing that shifts



## Market behaviour

### → Consumer demand response

costs between operations. Where this occurs, regulators face difficulties in investigating costs and determining the reasonableness of transfer prices, as the various functions concern only one part of a company (e.g. in a gas or electricity business, the system operation function but not sales or district heating).

Multi-utility suppliers are better placed than less diversified companies to leverage economies of scale and scope. These cost advantages can be exploited for predatory competition, thus reducing the number of market participants and ultimately leading to a dominant market position to the disadvantage of consumers.

Multi-utility products are mainly used to tie residential consumers to a supplier, whereas large consumers generally issue separate invitations to tender for the various products (e.g. electricity and gas) and services. The offers to residential consumers usually include additional credits or discounts if a number of products are taken (e.g. electricity and gas). Multi-utility products using an umbrella brand are generally employed to defend and expand market shares, and to make it harder for new suppliers to enter the market because awareness of their brands is weak or non-existent.

Electricity companies are increasingly offering “internet through the power socket” services in order to exploit umbrella brands as part of multi-utility strategies. For instance, Linz AG and EVN provide internet services across their electricity networks. Wienstrom, too, offers internet access, under its Powerline brand, but this is via optical cabling laid in addition to power lines.

Some energy companies also provide supplementary services and bonus products that are not directly connected with the core business of a utility. For instance, Kelag offers its Kärnten Card (Carinthia Card) as an add-on service.

This mainly gives holders access to tourist services provided by Kelag’s owner, the Carinthian provincial government.

Table 15 gives an overview of the multi-utility marketing methods employed by the electricity and gas companies, and the new sales companies. Apart from electricity and gas they often offer district heating, water, waste and wastewater disposal, and telecommunication services. Customers receive discounts if they take a number of services. Since the utilities can exploit synergies by using the same marketing and customer care functions for different services, and multi-utility strategies also lead to increased customer loyalty and hence reduced willingness to switch, the benefits more than make up for the price reductions.

### → Consumer demand response

Comparison of consumer behaviour in the mass market with that in the large commercial and industrial consumer segments shows a particularly big difference with regard to switching. In both the gas and in electricity markets, the switching rate is significantly higher in the large than in the small consumer segment. However, the private consumer segment represents the greatest switching potential in terms of customer numbers, and could thus play a key role in stimulating competition. The motives for switching or otherwise are an important source of information about any barriers to competition.

In June 2004 Österreichische Gesellschaft für Marketing (OGM) for the third time conducted survey on this subject, commissioned by E-Control. A total of 1,888 households were asked about aspects of the electricity and gas markets relevant to their switching decisions. The main results of the poll with regard to willingness to switch and the motives for doing so are discussed below.

→ Electricity companies' multi-utility marketing strategies  
(aimed at private consumers)

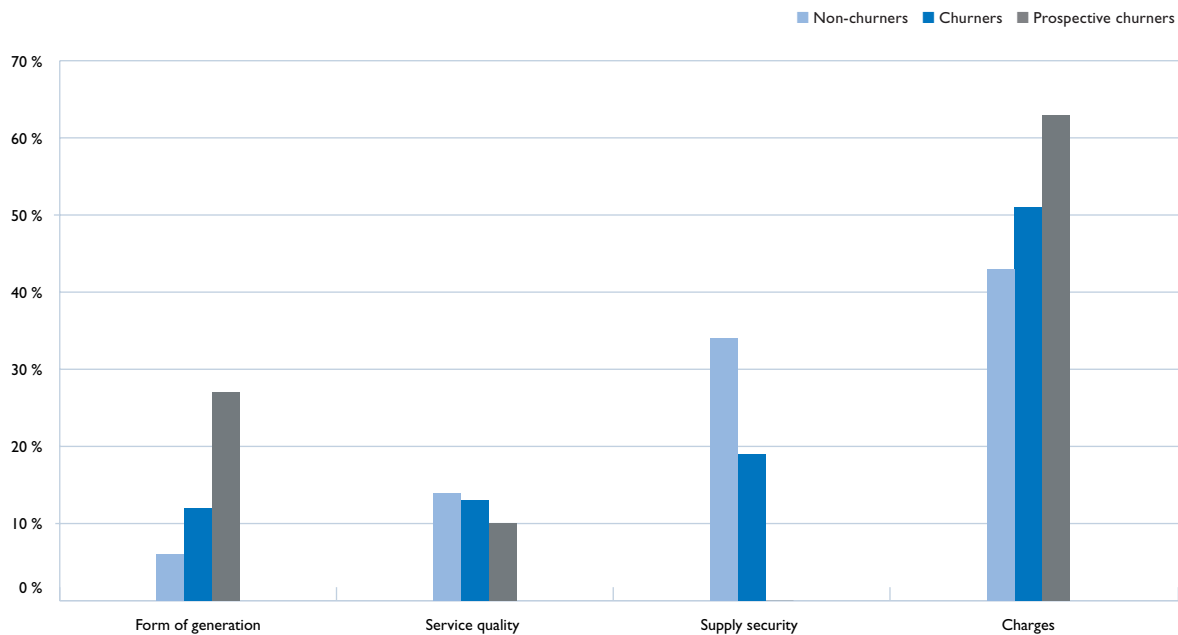
Table 15

Company	Electricity	Gas	District heating	Sewerage & water	Waste disposal	Telecom & cable TV	Transport
Bewag/Begas	■	■					
Energie Graz	■	■	■				
Energie OÖ AG	■	■	■	■	■	■	
EVN AG	■	■	■	■	■		
IKB	■	■		■	■	■	■
Kelag	■	■	■				■
Linz AG	■	■	■	■	■	■	■
My Electric	■	■					
Salzburg AG	■	■	■	■	■	■	■
Select	■	■					
Steweag-Steg	■						
Switch	■	■					
Tiwag	■	■					
Unsere Wasserkraft	■	■					
Verbund	■						
VKW	■						
Wienstrom	■	■	■			■	■

Sources: Company websites and press reports; E-Control

→ Motives for choice of electricity supplier in %, 2004

Chart 35



Source: OGM

In the case of the electricity market it is now possible to look back over a three-year period. Since liberalisation the readiness of small consumers to switch has steadily declined. In June 2002 some 8 % of all households intended to switch, but by June 2003 the proportion had fallen to 5 %, and by June 2004 only 3 % were prepared to contemplate changing suppliers.

As to the main consideration determining the choice of electricity supplier, in June 2004 some 51 % of the switchers and 43 % of the non-switchers named tariffs (prices). The second most frequently mentioned reason for switching was security of supply, and the third customer service. The type of electricity generation (i.e. environment friendly energy sources or atomic power) came afterwards. The lead of tariffs over security of supply as the main reason for the choice of supplier narrowed between June 2003 and June 2004. It is interesting that most of those planning to switch give the tariff as the reason, but unlike the actual churners their second most frequent reason is the type of power generation.

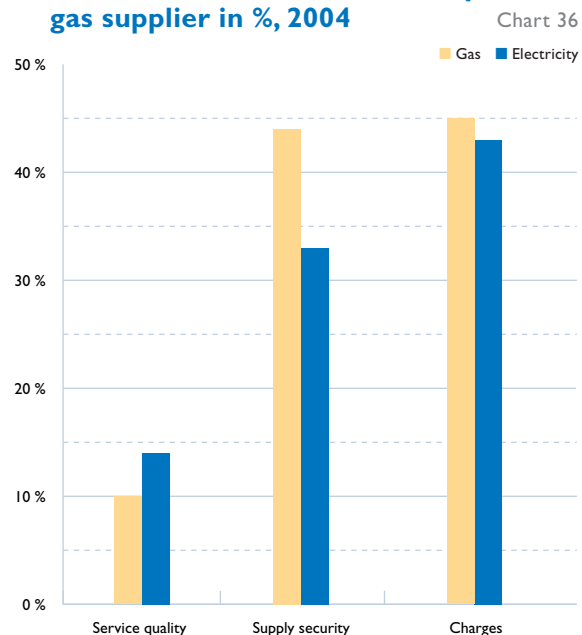
Gas consumers have other priorities. Especially for older and better educated people, the prime concern is security of supply. There is also a pronounced East-West divide. Viennese and Lower Austrian gas consumers tend to give pride of place to security of supply, whereas the overall price is the main factor named by those in Tyrol and Vorarlberg.

The reasons for actual electricity supplier transfers remain very one-sided. For 97 % (2003: 96 %) of all churners, electricity costs were a particularly important factor. The picture was similar with households that were planning to change suppliers but had not yet done so. Supplementary services and corporate image appear to play a greater role for prospective switchers, but actual churners no longer mention these criteria as motives for switching. Prospective churners are much more likely to say

that switching is a matter of principle than those who have already made the move. As earlier surveys show, only a fraction of the so-called “planners” actually switch. This qualifies the statement of 23 % (2003: 32 %) of the “planners” that they intended to switch as a matter of principle, but 14 % (2003: 11 %) of the actual churners also said that they switched “as a matter of principle, to be independent of their longstanding supplier” (protest switchers).

Likewise, the most recent survey by E-Control on switching and contract renegotiation, conducted towards the end of 2003 and covering the period from 1 January 2001 to 30 September 2003, shows that prices and savings in absolute amounts played a central role in switching decisions. The results also indicate that the larger the amount consumed is, the greater the savings will be and the more often consumers will change suppliers.

#### → Motives for choice of electricity and gas supplier in %, 2004



Source: OGM

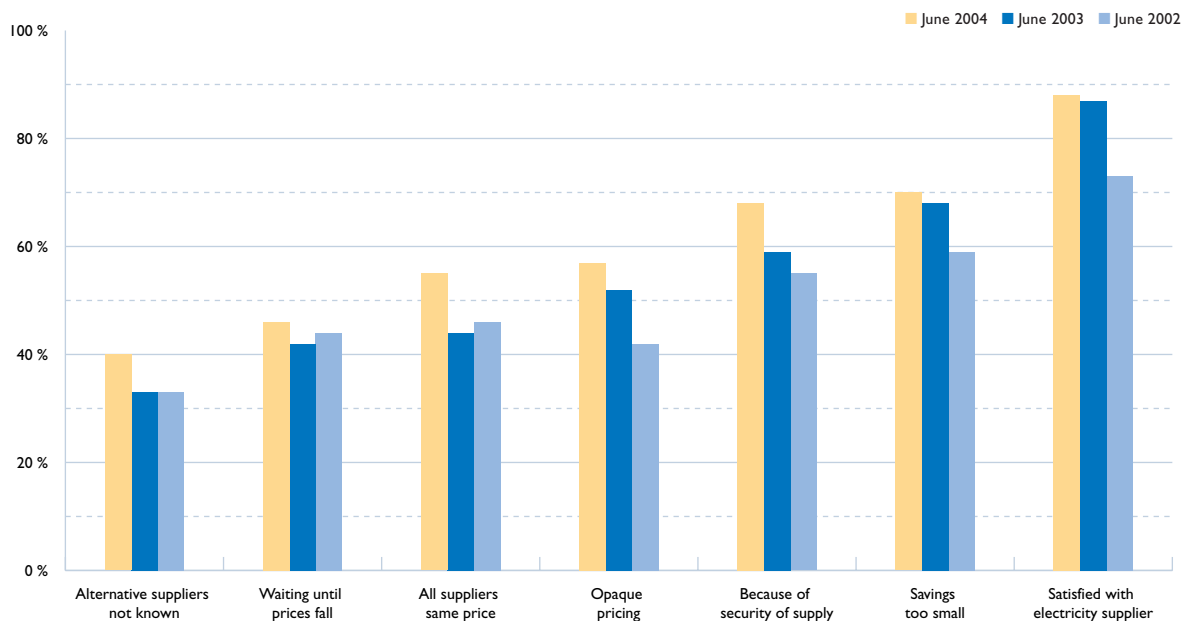
As to the price threshold beyond which a residential consumer would be willing to switch electricity or gas suppliers, as with previous surveys no clear picture emerges. At first sight, electricity consumers appear to be prepared to switch even when the potential savings are small. However, experience shows that most electricity consumers are ill informed about their own bills. Electricity consumers are only likely to switch in great numbers if they can achieve a noticeable reduction in their bills – at least 10 %. This interpretation is confirmed by non-churners' motives: one of the main reasons for remaining with the existing supplier is the small savings promised by a change.

To cut the overall electricity bill by 10 % a new supplier would have to offer a household with average demand an energy price a good 40 % lower than its predecessor. Consumers who would not be prepared to switch even if they could cut 10 % of their costs are unlikely to be influenced by higher reductions.

Electricity and gas consumers had not yet come to terms with itemised billing even in the second year of gas liberalisation, and are only now beginning to get a feeling for this. It is to be suspected that a 10 % reduction in gas charges would also be needed to prompt consumers to switch. For an average household, this would require a cut of almost 30 % in the energy price alone.

### → Motives for changing electricity suppliers

Chart 37



Source: OGM

As would be expected, the main reason given for not switching is satisfaction with the existing electricity supplier. In contrast to earlier surveys, insufficient savings and difficulty in comparing tariffs have grown considerably in significance, and are cited as the main obstacles to churning. It is interesting to note that one-third of all residential consumers still say that they are unaware of the existence of alternative suppliers.

The 2004 OGM survey showed a significant change from 2003 with regard to security of supply. More importance is now attached to this – presumably because of the major electricity outages in Italy and the USA in autumn 2003 – as a reason for staying with consumers' wonted suppliers. It is also noticeable that the wait-and-see attitude with regard to falling prices has become still more prevalent. The number of consumers saying that they had not switched because of small price differences or opaque pricing increased considerably in 2004. Moreover, in the third post-liberalisation year consumers were even less aware of the existence of alternative electricity suppliers. This could be a direct consequence of the sharp reductions in new suppliers' advertising budgets and

the heavier spending by incumbents, mainly on image maintenance.

Survey data on churners shows that gas market liberalisation has yet to have an impact, in its second year. The churn rate is barely discernable, and once again this year only 3 % of the gas consumers surveyed intend to switch suppliers. As in 2003, most of these respondents are from Vienna.

As regards motives for not switching, there is little difference from the answers given by electricity consumers. Most Austrian residential consumers have still not noticed the splitting of the electricity and gas markets.

Perceptions of energy suppliers' services have tended to improve during the past year, private consumers intending to switch being most critical. In June 2004 some 99 % of all Austrian consumers were highly satisfied with security of supply, and respondents again felt that their electricity suppliers' performance had improved as compared to the previous year (2003: 98 %). Minor power cuts are accepted as a fact of life. Almost 50 % of all electricity consumers surveyed said that they would regard an outage of up to one hour as acceptable.



## Market behaviour

### → Summary and conclusions

#### → Summary

- Mergers and joint ventures in the Austrian electricity and gas markets have reduced the number of suppliers and increased market concentration.
- Companies' strategic objectives are in many cases still established by owners in the public sector.
- Electricity and gas companies are seeking to leverage synergies by adopting multi-utility strategies.
- A growing number of Austrian electricity and gas companies are focusing on their core business (utility services), and are exploiting the export opportunities presented by liberalisation.
- Austrian electricity and gas companies are largely inactive outside their own supply areas.
- Electricity companies have been investing heavily in the protected green electricity market.
- Austrian electricity and gas companies' advertising expenditure has fallen.
- Most advertising is devoted to image maintenance.

#### → Conclusions

- Close monitoring of fulfilment of merger conditions will be required.
- Ongoing assessment of the impact of the mergers is needed.
- The creation of cross-border electricity markets and at least national gas markets will be the next step towards increased choice of suppliers and stronger competition.
- Central provision of consumer information relevant to switching (especially relating to new connections) open to all suppliers would stimulate competition.





Market outcomes



## Market outcomes

### → Price trends on the electricity and gas markets

An examination of the market outcomes of liberalisation needs to deal with both the supply and the demand side. Important measures of market outcomes are price trends, companies' financial performance (e.g. rates of return and profit margins), product diversity and quality, and consumers' ability to take decisions on the basis of objective and comprehensive information, which is a factor of market transparency.

#### Price trends on the electricity market

##### Trends on the electricity wholesale market

Most of the regional wholesale markets in Central Europe consolidated their positions in 2004. This applies both to bilateral and exchange-based electricity trading. Spot trades are increasingly shifting to the electricity exchanges, and in consequence quoted prices are increasingly driving price formation on the OTC market. To take one example, turnover on the EEX

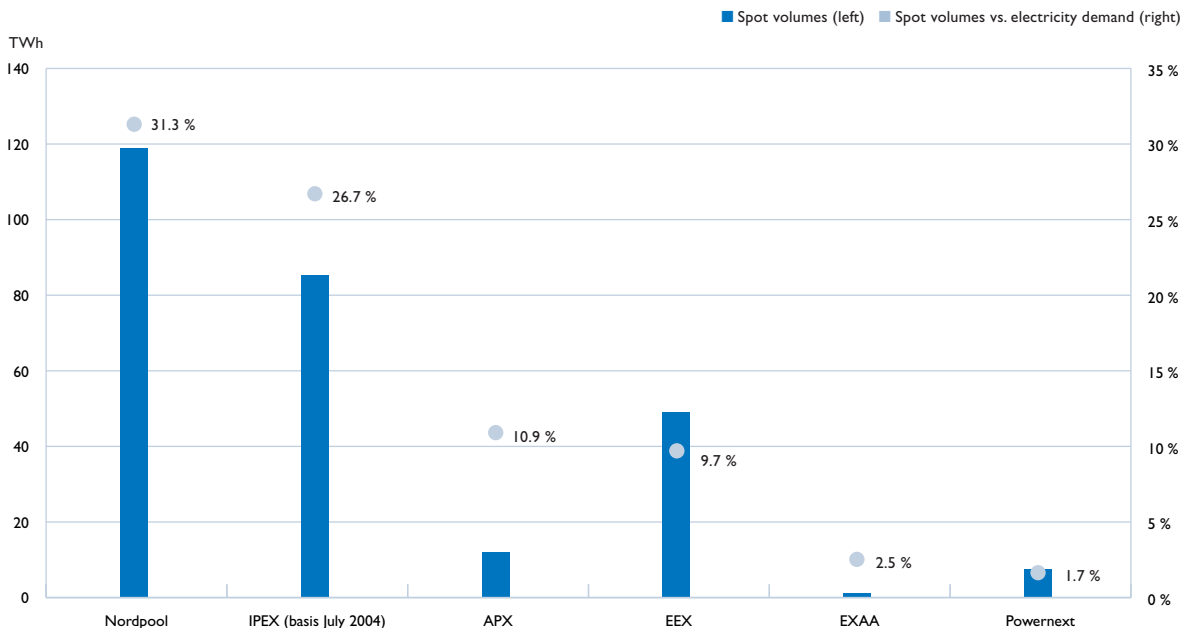
now represents about 10 % of German annual electricity demand. Among the established European electricity exchanges only Nord Pool has a higher market share, at over 30 % (see Chart 38). The Leipzig EEX has more than 100 members, some 30 of which trade on a regular basis.

The structure of the market for longer-dated contracts is different. The vast majority of the trades are made on the OTC market, and as a result the EEX futures market tracks OTC price trends. Chart 39 shows trading volume on the German forward market over time.

Market watchers in Germany currently expect forward volume to range between 1,800–2,500 TWh – four to five times annual German electricity demand. Since the German and Austrian wholesale markets are closely interlinked, it can be assumed that the relative size of the

#### → Volumes traded and market shares of selected electricity exchanges, 2003

Chart 38



Nord Pool, European Energy Exchange (EEX), Amsterdam Power Exchange (APX), Energy Exchange Austria (EXAA), Italian Power Exchange (IPEX) and Powernext

Austrian forward market is similar. This would place traded volume in a range of 200–250 TWh/year.

Spot contracts have been traded on Austria's electricity exchange – the Graz based Energy Exchange Austria (EXAA) – since 21 March 2002. As with the EEX, traders can deal in single hours and blocks of hours. This year a daily average of 4,920 MWh were traded up to mid-August; this was equivalent to about 3.3 % of power demand on the public grid. Though turnover has been rising, this is still modest compared to the leading European markets. The reasons lie in the facts that the EXAA is of more recent origin than the EEX, that the two exchanges serve closely linked markets (Austria and Germany) and that they are in direct competition with each other. Generally, it can be said that those markets that attract greater liquidity have the better long-term chances of survival. High levels of liquidity attract new market players (financial traders, banks and speculators), further increasing liquidity and thus adding to the attractions of an exchange.

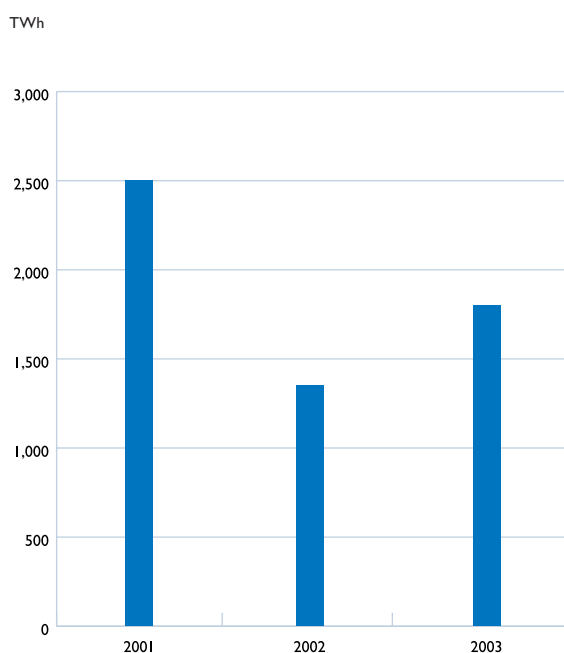
In order to extend its product range the EXAA launched a new product by the name of eSpread at the end of October 2003. These contracts are purely financial instruments which are designed as hedges against movements in the arbitrage between identical electricity products traded and delivered at different locations. eSpread contracts for an underlying 0.27 TWh of electricity were traded up to August 2004. The EXXA also has a proprietary platform<sup>44</sup> for auctioning of Austro-Czech interconnector capacity.

<sup>44</sup> www.auction-office.at

Price trends on the spot and forward markets diverged during the first half of 2004, reflecting the differing factors that influence the two markets. While spot prices are driven by temperature changes, water supply, wind conditions and power station availability, forward prices are determined by expectations with regard to these factors, as well as primary energy price trends.

#### → Forward trading volume on the German OTC market

Chart 39



Source: Vattenfall

In 2003, there was a strong spot price run-up due to supply (low water levels) and demand side factors (rapid demand growth). Prices stabilised in the first half of 2004, due to increasing hydro power generation in the second quarter and growing wind power injection. The spot baseload price on the EEX on 1 August 2004 was € 1/MWh down year on year, at € 27.47/MWh (see Chart 40).

However, spot prices have generally been trending upwards after the initial collapse triggered by liberalisation. The reasons for this are steadily growing consumption and shrinking surplus generating capacity. Of late, the steep rise in primary energy prices has also probably played a part. Chart 41 uses average monthly prices on the EEX to illustrate this trend.

Prices on the forward market have been rising continuously since spring 2003. This is primarily related to two fundamental factors: firming coal prices and the anticipated cost burden imposed by CO<sub>2</sub> allowances.

After a long period of stability coal import prices climbed to record levels in 2004, and were more than double the long-term average by July 2004, at almost \$ 80/t. This trend is explained by soaring demand from the booming Chinese economy. Exploding shipping rates also added to the cost of South African and South American coal imports in Europe. CO<sub>2</sub> allowance prices likewise appear to be influencing forward electricity prices (see Text box 9 CO<sub>2</sub> allowance prices and their impact on electricity prices), but the link is less clear than with coal prices. The influence of coal futures on forward electricity prices is revealed by Chart 42.

→ Spot baseload prices on the EEX in 2003 and 2004

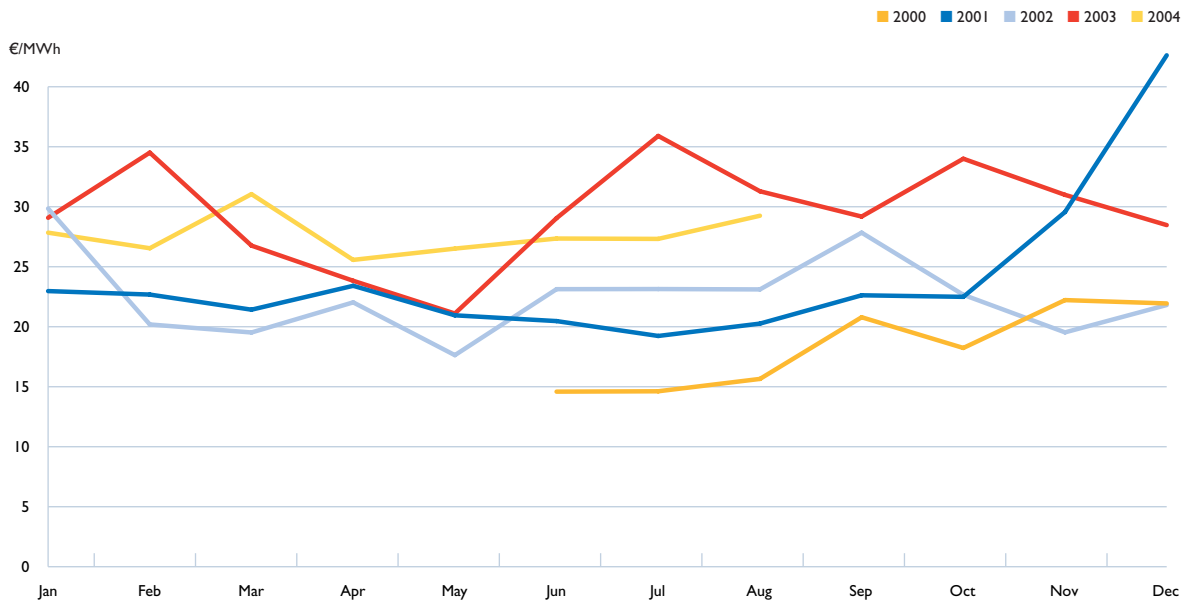
Chart 40



Source: EEX

→ Average spot baseload prices on the EEX, 2000–2004

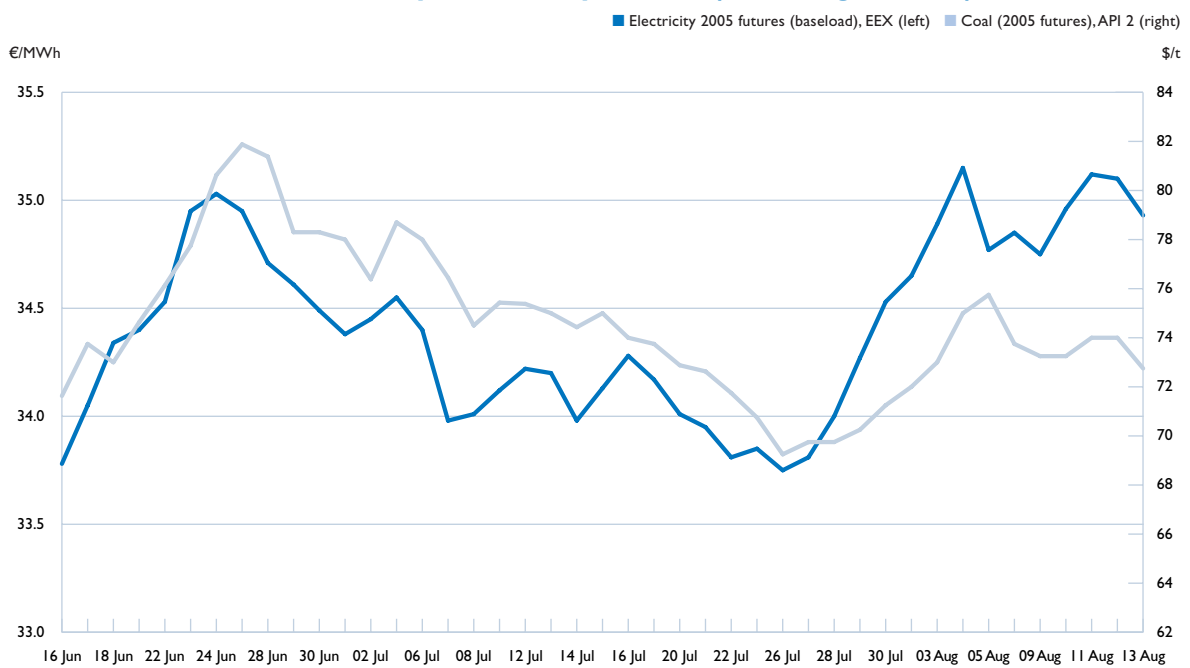
Chart 41



Source: EEX

→ Prices of coal and electricity for delivery in 2005 (June–August 2004)

Chart 42



Source: EEX and Platts

The forward market has a typical timing pattern. Leaving aside seasonal influences, contracts for outer months tend to be higher priced than those for nearer delivery dates. For instance, on 17 August 2004 fixed quantity one-year contracts for delivery in 2005 cost € 34.44/MWh on the EEX, while the same contracts for 2007 were priced at € 35.23/MWh. This market configuration is known as a “contango”. It indicates that market players expect meeting the demand for electrical energy to be more expensive further out into the future than in the nearer term. A change in expectations or unexpected developments on the spot market can tip the market in the reverse situation, called “backwardation”. Chart 43 shows the price history of the 2005 forward baseload contract and its movements relative to the 2006 forward baseload contract.

**Trends on the balancing power market**

Balancing power serves to maintain a constant equilibrium between generation and demand in a control area, and is thus an integral part of a developed electricity market.

For the sake of convenience the following remarks largely confine themselves to the balancing regime in the Verbund APG control area. Strictly speaking, the supply of balancing power to the market is restricted to the utilisation of minute reserve.

Market participants can submit tenders to the settlement agent to supply or withdraw minute reserve on the following day on a daily basis up to 4 pm (except on weekends). A so-called “merit order list”, ranking offers and bids separately by price, is compiled from the tenders. The

→ **Forward prices for 2005 vs. 2006**

Chart 43



## → CO<sub>2</sub> allowance prices and their impact on electricity prices

Text box 7

From 2005 onwards, electricity wholesale prices will be influenced by a new cost component. The market price of emission allowances will raise the costs of thermal generators, which account for a large part of marginal generating capacity in Central Europe, potentially resulting in higher price. The extent to which the anticipated price increases actually transpire will principally depend on two factors:

1. the market price of emission allowances; and
2. the predominant form of generation in a given regional market.

The CO<sub>2</sub> allowance price should ideally be determined by the cost of avoiding an additional unit of CO<sub>2</sub> emissions. However, in the beginning this logic will

have little to do with allowance price trends, since the initial allocations of allowances have effectively been free of charge in all EU member states. Because the emission limits are set at national level there is an incentive to make excessive allocations, since every country will attempt to avoid competitive disadvantages for its industry. Ultimately, it will be for the European Commission to prevent market distortions from being caused by unfair allowance allocations under National Allocation Plans. Chart 44 shows clearly that certificate prices collapsed in March 2004 after the generous allocation plans became known.

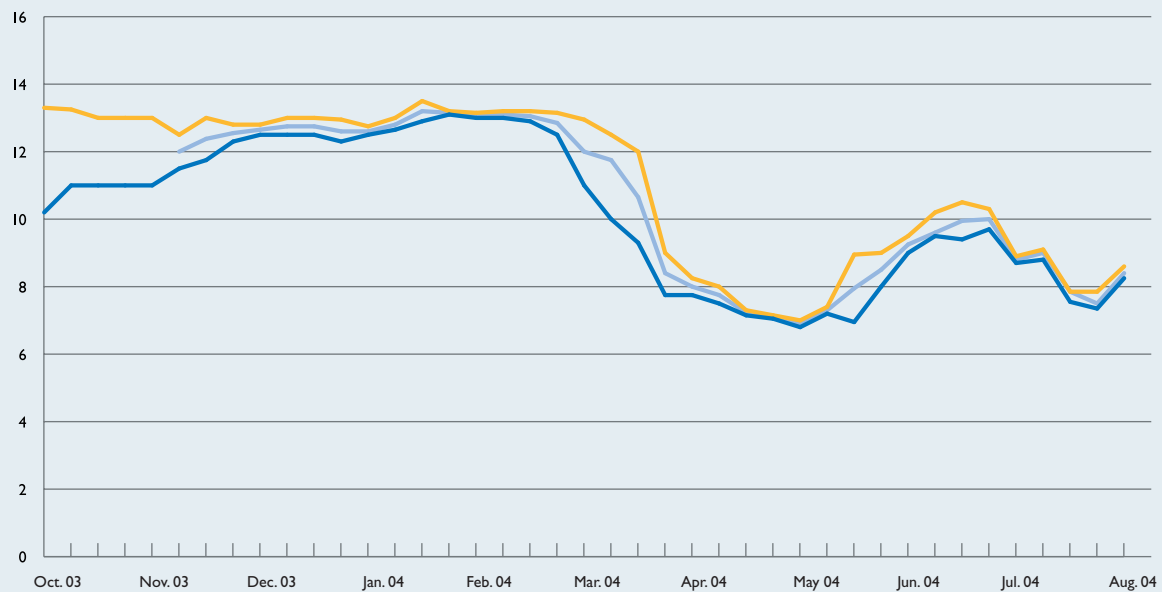
At least in theory, it makes no difference to potential electricity price increases whether the allowances

## → Allowance prices for 2005

Chart 44

€/tCO<sub>2</sub>

Offer 2005 Bid 2005 Close 2005



Source: Pointcarbon

are distributed free of charge or must be purchased, since the free allowances, too, have a market price. Generators that do not include the market price of the allowances in their price calculations will incur opportunity costs in the form of the lost proceeds from sales that could have been made on the allowance market if they had halted production.

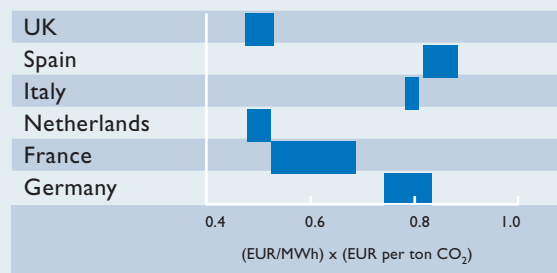
In practice, however, there are a number of considerations (political environment, demand elasticity and uncertainties attaching to allocations in the second phase of the Emission Trading Scheme) which make it unlikely that the opportunity costs will be passed on, and the cost of allowances fully priced into the wholesale prices.

The structure of marginal generating capacity (and hence its CO<sub>2</sub> intensity) differs from one wholesale market to another, and the sensitivity of generating costs to allowances prices in the various markets will vary accordingly. Chart 45 shows that in Germany every € 1/t allowance price increase is accompanied by a cost increase of approx. € 0.80/MWh. In other words, an allowance price of € 10/t CO<sub>2</sub>

raises the opportunity cost of electricity generation by € 8/MWh. Since the German and Austrian wholesale markets are closely interrelated all changes in costs would feed through to Austrian wholesale electricity prices. However, analysis of forward price trends reveals that at present allowance prices are not entirely reflected in electricity prices.

→ **Impact of certificate prices on wholesale prices in various countries (markets)**

Chart 45



Source: Cera



control area manager, APG, can then call off minute reserve in order of merit where necessary. In the event of call-off the provider receives the unit charge offered.

In order to maintain a minimum of minute reserve, apart from the above day-ahead market the function of the – somewhat misleadingly named – market maker has been introduced. Here, monthly tenders are held for a given amount of minute reserve in the form of three-hour blocks, the amount of which is determined in consultation with APG (e.g. 100 MW of offers and 125 MW of bids in September 2004). If their offers are accepted providers receive the capacity charge offered or, in the event of call-off, the unit charge. The market maker's tenders are ranked in the merit order list every day in accordance with the unit charge offered.

The cost of the balancing power utilised is settled with the balancing group representative by way of the monthly clearing procedure. Under this, not only the cost of the minute reserve used but also “related” cost components are settled. The total amount is composed of the following components:

- minute reserve called off;
- compensation in kind for secondary balancing power;
- involuntary UCTE exchanges; and
- the market maker's fees.

The main cost component apart from the market maker's fees is the settlement in kind of exchanges of secondary balancing power. This is the cost of/income arising from the supply of energy for in-kind power exchanges with Verbund APT in its role as the standby provider of secondary balancing power. The power injected or withdrawn is separately determined and the balance tendered by APCS. Since the control area was generally short in the summer months of 2003 and 2004, secondary balancing power represented the lion's share of the overall balancing power costs. During such periods the control area manager uses the standby secondary balancing capacity as well as the minute reserve. Parallel to this trend, there has been a tendency for the absolute amount of the market maker's fees to decline. Chart 46 shows the composition of the balancing power costs in the Verbund APG control area.

The balancing power expenses and income of a balancing group arise from the quarter-hourly deviations between supply (generation or scheduled procurement) and demand (customer demand or scheduled deliveries) as well as the balancing power settlement prices (clearing prices). The total monthly costs of the balancing power system must be exactly equal to the cleared balancing power expenses and income of all balancing groups.

The settlement agent sets the clearing price for each quarter of an hour. The price is calculated

on the basis of the so-called “clearing formula” which is made up of the above cost components. If minute reserve is called off the clearing price is based on the price yielded by the merit order list for the respective quarter of an hour. In a second stage, all the other cost components are added to/subtracted from the base price.

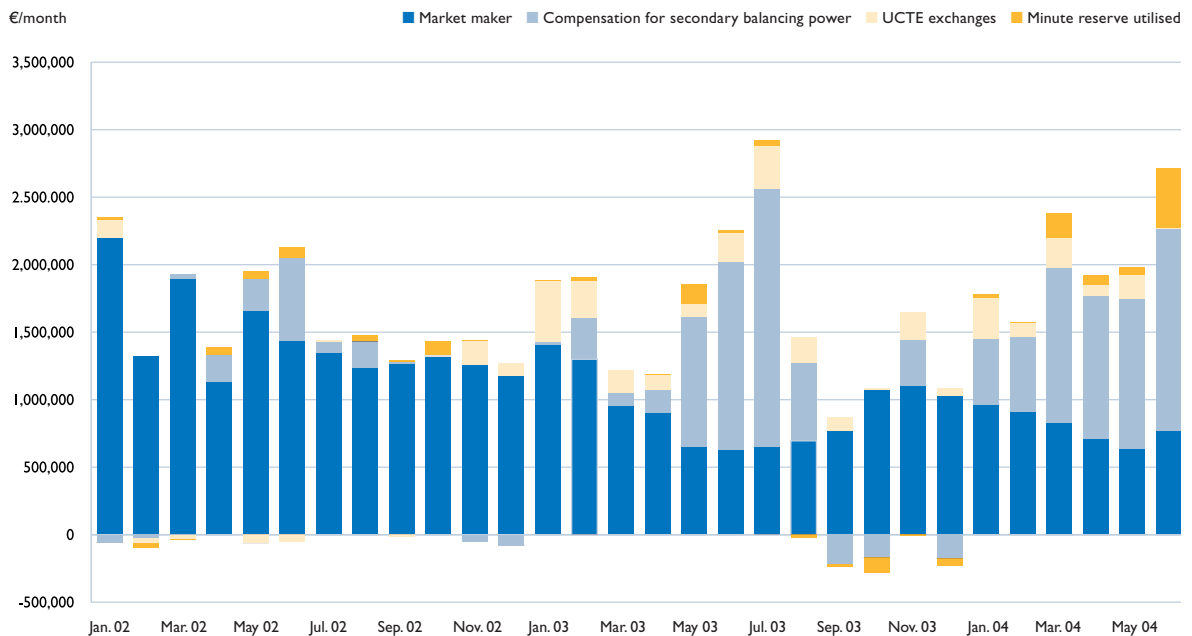
Charts 47 and 48 reveal the underlying link between the amount of the deviations from schedules in the control area and movements in the clearing price. Negative deviations indicate that a control area is short. In this case the control area manager must call off the missing power from the standby power stations. The greater the shortfall in the system the higher the clearing price will be.

It is noticeable that the Tyrol control area tends to be short, whereas the APG control area frequently moves from short to long and back again, depending on the balancing groups’ behaviour. Here, the green power balancing group representatives are playing an increasingly important role. Unavoidable inaccuracies in forecasts can even determine whether an entire control area is short or long.

Clearing prices may fluctuate widely within a given day, and may even be negative, meaning that a balancing group may actually have to pay the control area manager for accepting its surplus power.

→ **Monthly amount and breakdown of balancing power costs in the Verbund APG control area**

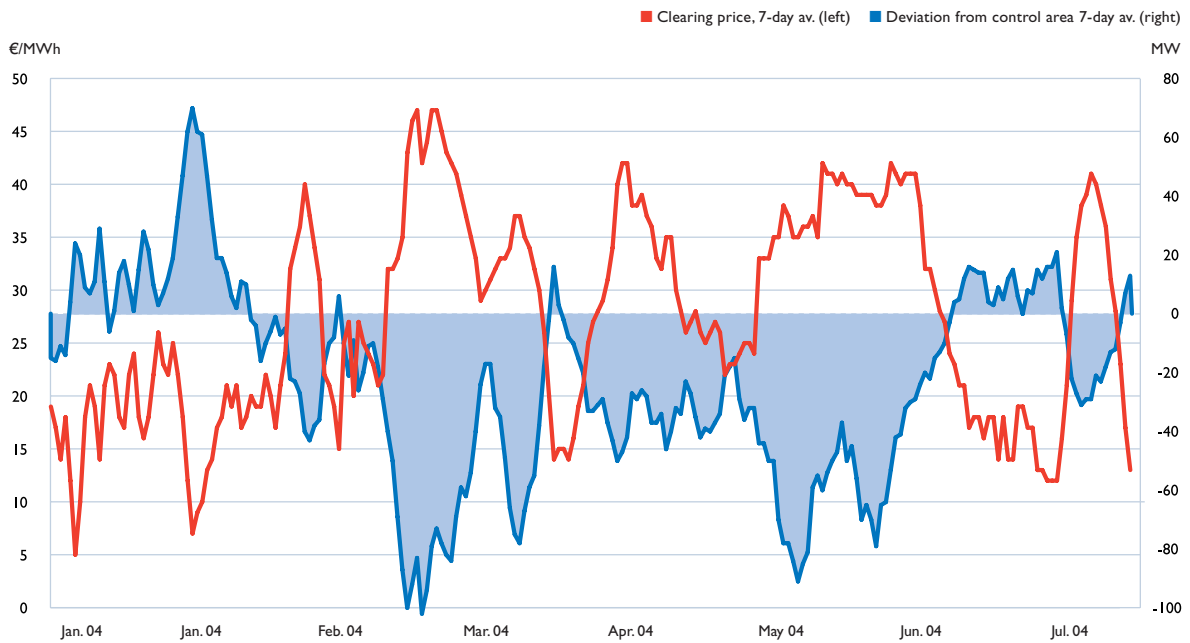
Chart 46



Source: APCS

→ Deviations from schedules and clearing prices in the APG control area

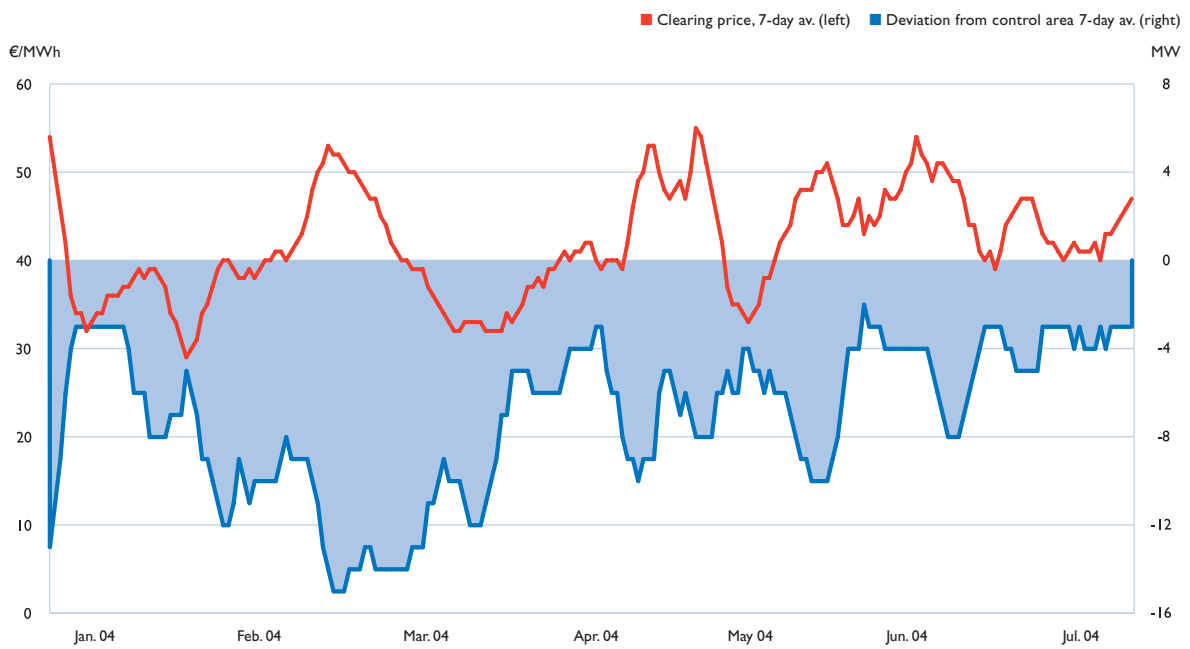
Chart 47



Source: APCS

→ Deviations from schedules and clearing prices in the TIRAG control area

Chart 48



Source: a&b

## Price trends in the electricity retail market

### Evolution of overall electricity prices

Chart 49 depicts the evolution of overall electricity prices (system + energy + taxes) since 1999. The initial phase of electricity market liberalisation is seen to have brought marked price reductions, particularly for large-scale consumers. Some retail prices were far below wholesale levels.

The index jumped as a result of the doubling of energy tax (from 0.75 cent/kWh to 1.5 cent/kWh) in July 2000. Only with the second phase of liberalisation – full market opening – did the electricity prices charged to small-scale consumers decline. These gains for consumers were partly offset by the introduction of green power and CHP surcharges.

Price movements up to July 2002 were driven by liberalisation, and there were substantial reductions. The rise in the index at the start of 2003 was due both to the surcharges provided for by the Green Electricity Act and to higher wholesale prices. The latter factor has since been behind a number of increases in electricity prices. Some suppliers have already announced further price increases in autumn 2004.

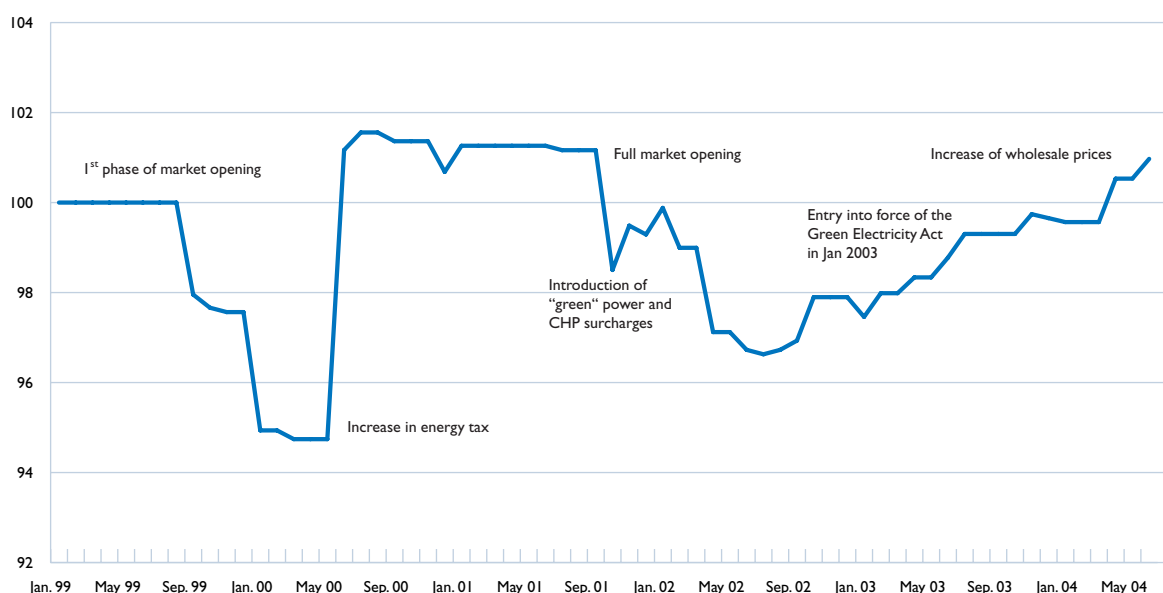
### Industrial electricity prices

The prices charged to industrial consumers continued to rise in 2003 and 2004. Pricing in the retail market was largely shaped by two factors: competitive intensity and wholesale market trends. The former has declined since the initial post-liberalisation period, as regards the number of suppliers. It is to be feared that the foundation of Energie Austria (the “Austrian

## → Residential electricity CPI, 1999–2004 (1999 = 100)

Chart 49

links: Index 1999 = 100



Source: Statistics Austria

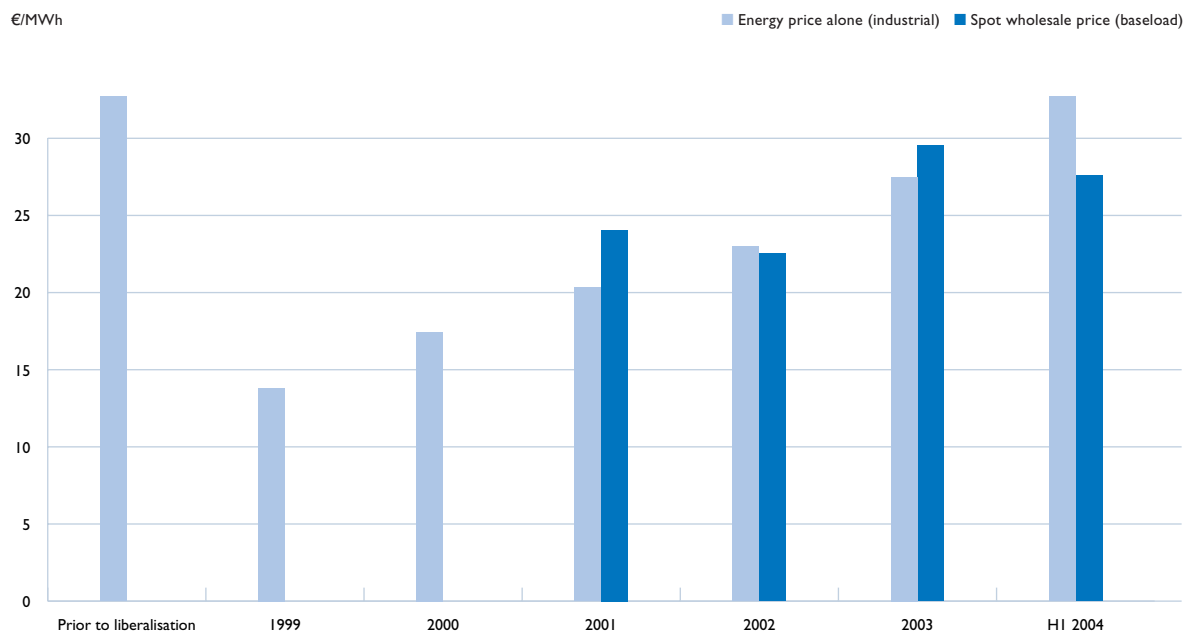
electricity solution”) will make matters worse, or at least not improve them. However, parallel to market consolidation a more rational approach to pricing has taken hold. Industrial consumers are not longer being offered prices below wholesale rates as was often the case at immediately after liberalisation. Suppliers are increasingly going over to basing their offers on forward prices. This change, along with increased wholesale prices, has led to higher power prices for industrial consumers. However, it should be noted that there are few price agreements with variable elements, i.e. indexed to spot prices. Such contracts are by no means uncommon in highly developed electricity markets such as that of Scandinavia. Chart 50 compares the evolution of wholesale electricity prices to that of industrial power prices (excluding system charges).

It is difficult to track price trends in the industrial segment with any degree of precision. There are few reliable primary sources, and those that exist do not break the overall price down into its main components (energy and system charges, and taxes.) E-Control therefore decided to collect this information (particularly energy prices) directly from industrial consumers, starting in 2003. Table 16 shows the results of the surveys conducted to date, presented according to different consumption criteria.

Many industrial consumers are exposed to international competition. They depend on affordable electricity prices to remain competitive. It is not just energy prices but the overall prices paid for electricity that matter to businesses. Chart 51 shows that Austrian prices are middling in international terms.

→ Wholesale and industrial electricity prices, 1999–2004

Chart 50



Source: E-Control and EEX

### Residential electricity prices

For residential consumers, too, 2004 brought higher electricity prices. The reason for this –

apart from the passing on of higher wholesale prices – was the 0.1 cent/kWh surcharge to finance support for green power generating

### → Results of the industrial electricity price survey\*

Table 16

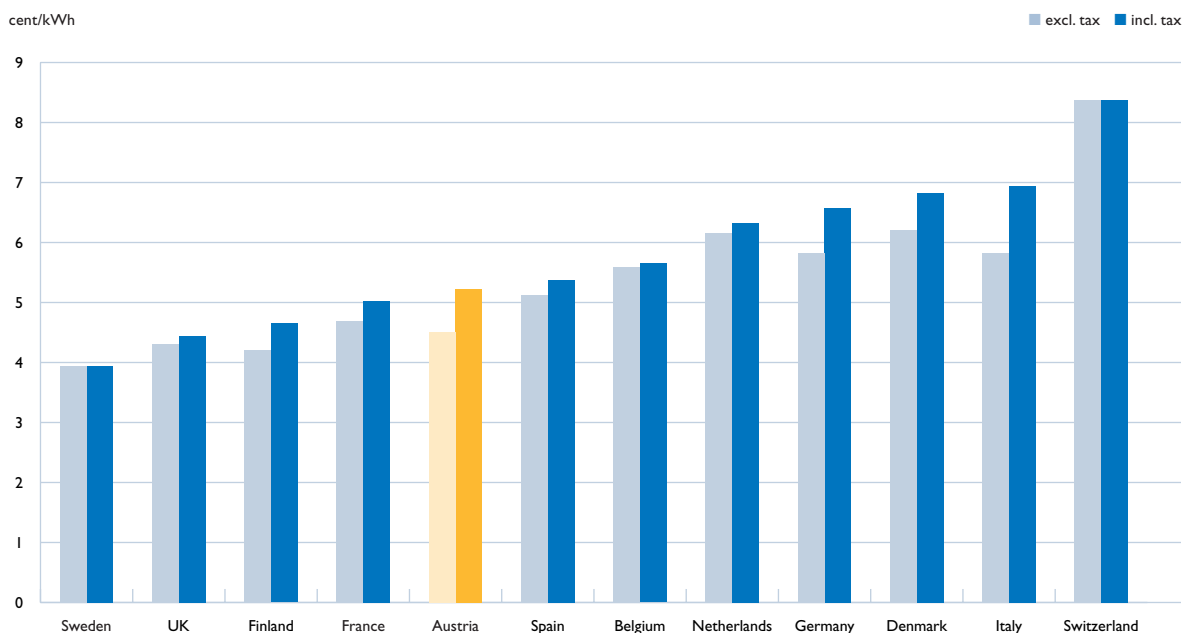
	Cent/kWh	Full-load hours < 4,500 h/a	Full-load hours > 4,500 h/y	No full-load hours category
Annual demand < 10 GWh	Q3 2003	2,93	2.69	2.84
	HI 2004	3,59	3.21	3.43
Annual demand > 10 GWh	Q3 2003	2,61	2.58	2.64
	HI 2004	2,82	2.90	2.98
No demand category	Q3 2003	2,90	2.63	2.75
	HI 2004	3,51	3.04	3.27

Source: E-Control

\* excluding system charges and tax inc. any green power surcharges

### → Comparison of European industrial electricity prices including system charges, Q1 2004 (35 GWh/y)

Chart 51



Source: Energy Advice

plants, introduced on 1 April 2004. The system charges have been unchanged since November 2003.

A look at the longer-term residential electricity price trend reveals that real prices have been constant over time despite price and tax increases. The introduction of, and subsequent increase in energy tax, and this year's higher energy prices have brought appreciable nominal price rises.

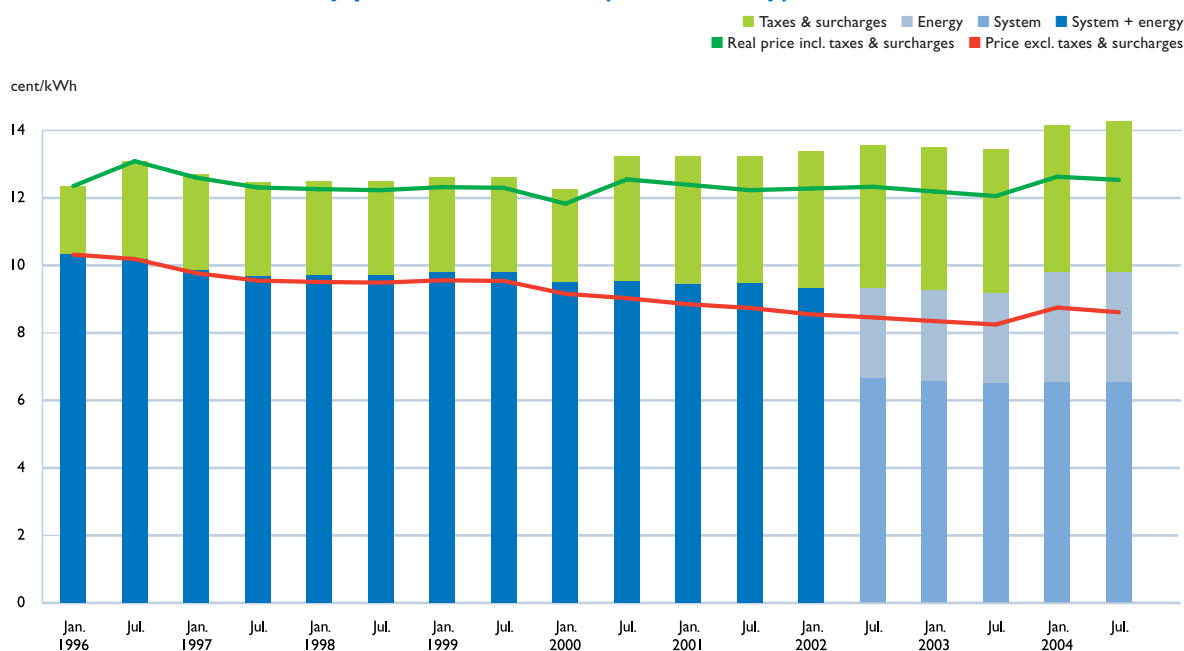
However electricity prices (system and energy charges) exclusive of tax and surcharges have been declining for some time in both nominal and real terms. The reductions in system charges imposed by the E-Control Commission on several occasions since 1 October 2001 have played a part in this (see section on electricity system charges).

Trends in overall electricity prices in Austria have been mixed, and exhibit wide geographical variations, most of which are attributable to the different system charges in the various grid zones (former supply territories of provincial utilities). Chart 53 shows that residential consumers in BEWAG's grid zone pay most, while electricity is cheapest in the Stadtwerke Klagenfurt grid zone. It is noticeable that most power suppliers responded to the E-Control Commission's reductions in system charges in November 2003 by increasing their energy prices rather than passing on the benefits to their customers.

A comparison with the corresponding wholesale prices provides indications as to whether the energy prices charged by suppliers are fair. In principle, suppliers are free to source the electricity required by their customers on the

→ Residential electricity prices, 1996–2004 (3,500 kWh/y)

Chart 52



Source: E-Control and Eurostat

spot or forward markets. Even if a company has power stations of its own and their generating costs are below the wholesale price, it will thus – at least in theory – take its cue from the wholesale market when calculating the prices offered to customers. A company acting on purely commercial considerations will sell its product on the market where it can obtain the highest price. Otherwise, suppliers and their generators would face opportunity costs. The temporary acceptance of opportunity costs may however make sense for strategic reasons. Lower prices can be used to force competitors off the market or deter them from entry, so as to use the market position thus acquired to put prices back up at a later date.

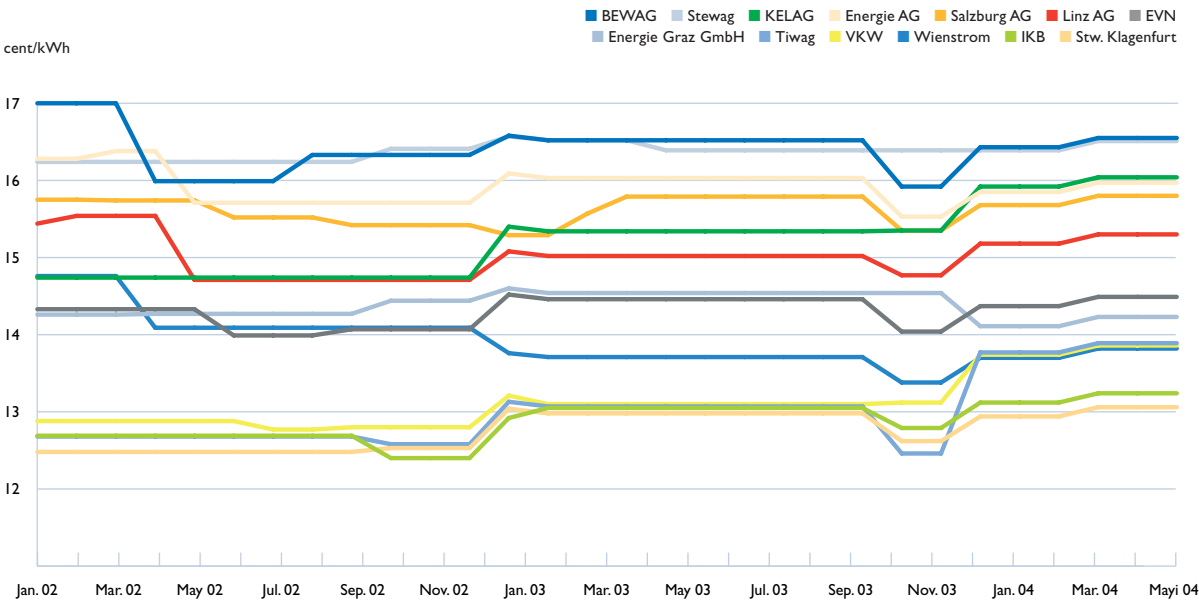
Since suppliers are free to procure the power required for their customers as they see fit, it is difficult to establish a reliable price benchmark. The assessment here is based on a combination of spot and forward prices. Chart 54 shows the

prices offered by the various electricity suppliers. The striped bars are offers restricted to residential consumers in a supplier's "home" grid area. For instance, BEWAG's Optima Komfort tariff is only billed to customers connected with the company's own grid. All the other products are supplied on a nationwide basis. Price distribution falls within a relatively wide range. While the energy prices of some companies are well above the wholesale price benchmark (e.g. 33 % in the case of Linzstrom's Klassik Haushalt tariff), the price difference (margin) is considerably lower or even negative for some nationwide suppliers.

Austrian residential electricity prices are mid-range for Europe. Some Austrian final consumers pay considerably less for their electricity (energy and system charges), both inclusive and exclusive of tax, than counterparts in the large neighbouring counties, Germany and Italy (Chart 55).

→ Residential electricity prices incl. taxes and surcharges by grid zones (cheapest supplier, 3,500 kWh/y)

Chart 53

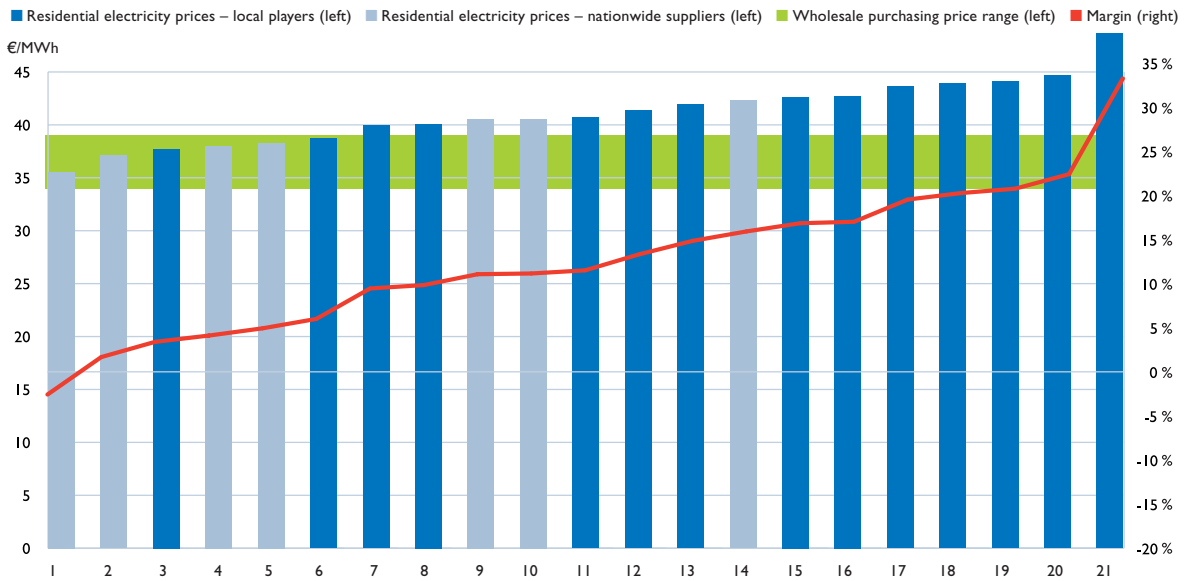


Source: E-Control



→ Residential electricity prices and margins in July 2004 (energy prices only, excl. system charges and taxes; 3,500 kWh/y)

Chart 54

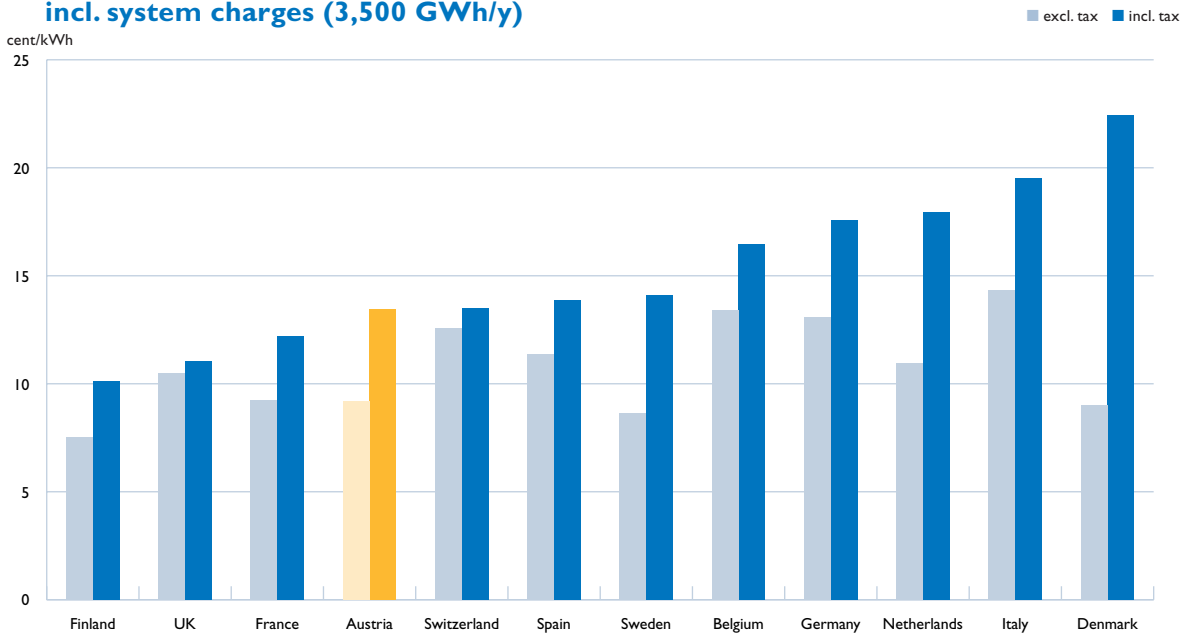


1. Kärnten Pur Austria, 2. Der GuteStrom (UWK), 3. VKW-Home, 4. Switch, 5. My Electric, 6. Kärnten Pur 1, 7. Fairplus Privat, 8. H + L – STW Klgt, 9. Unsere Wasserkraft, 10. VKW-Hit, 11. Stadt + Strom Privat – IKB, 12. Optima – Wien, 13. Komfort Energie – Energie AG, 14. STW-Strom Privat, 15. Select Home – SSG, 16. Optima – EVN, 17. BEWAG – Optima Komfort, 18. Select Home – Graz, 19. Privat OK – Salzburg AG, 20. Optima – Linzstrom, 21. Klassik-Haushalt – Linzstrom

Source: E-Control

→ Comparison of European residential electricity prices incl. system charges (3,500 GWh/y)

Chart 55



Source: Energy Advice

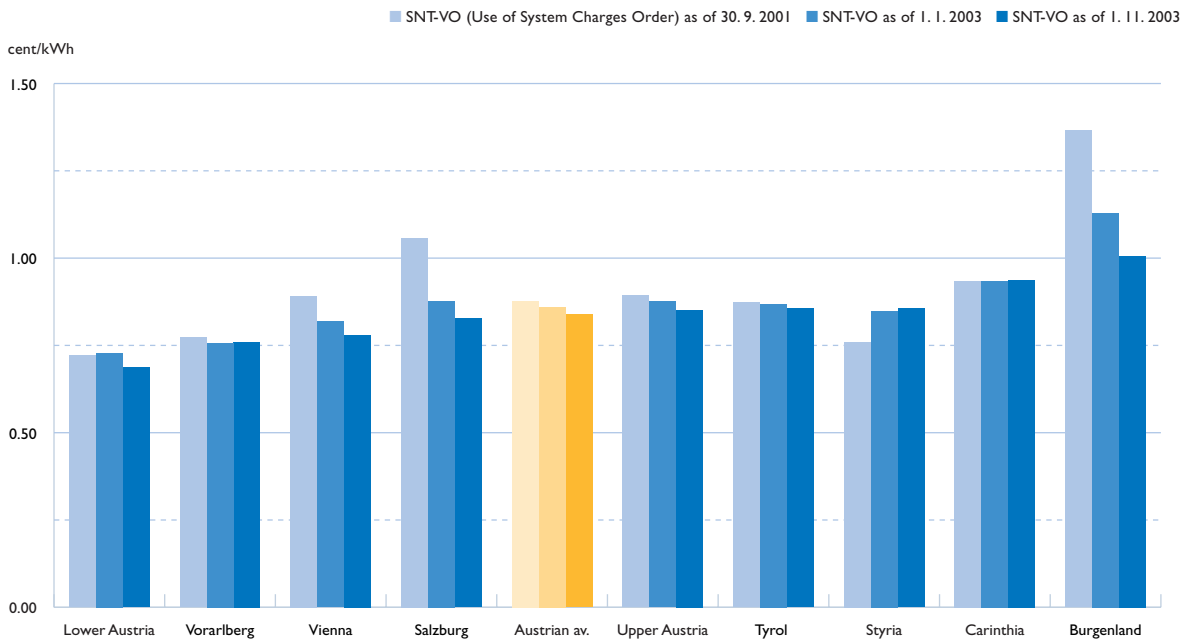
### System charges for electricity

With liberalisation the components of overall electricity prices were for the first time unbundled, and the system and energy charges itemised on bills. While the energy prices are formed by the operation of supply and demand on the market, system charges are determined by the regulatory authority (the E-Control Commission).

Charts 56–58 show that the use of system charges have been significantly reduced at all grid levels since liberalisation. The differences between grid zones have been narrowed by the tariff reductions, but still exist. The system charges of Stadtwerke Klagenfurt are 40 % below those of BEWAG (Grid Level 7, non-metered). There has been a marked convergence of the use of system charges at the higher grid levels in comparison to the situation at the outset of liberalisation, particularly at the higher grid levels (see Chart 56).

### → Use of system charges at Grid Level 3 in cent/kWh (6,500 hours of use)

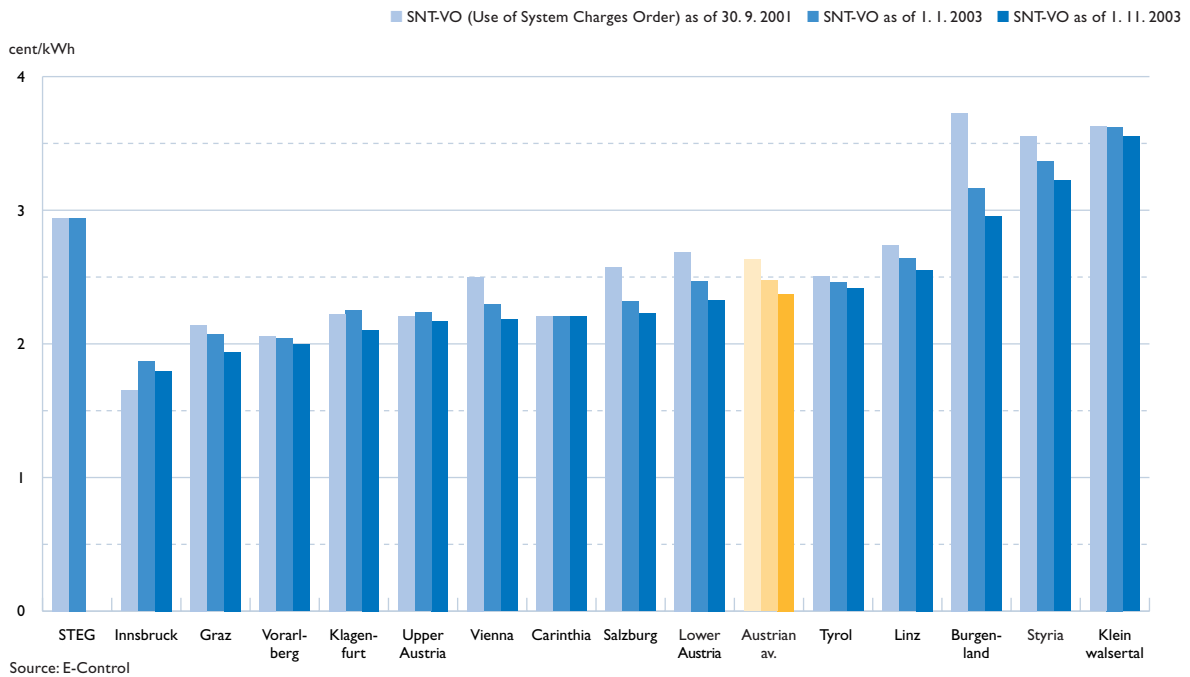
Chart 56



Source: E-Control

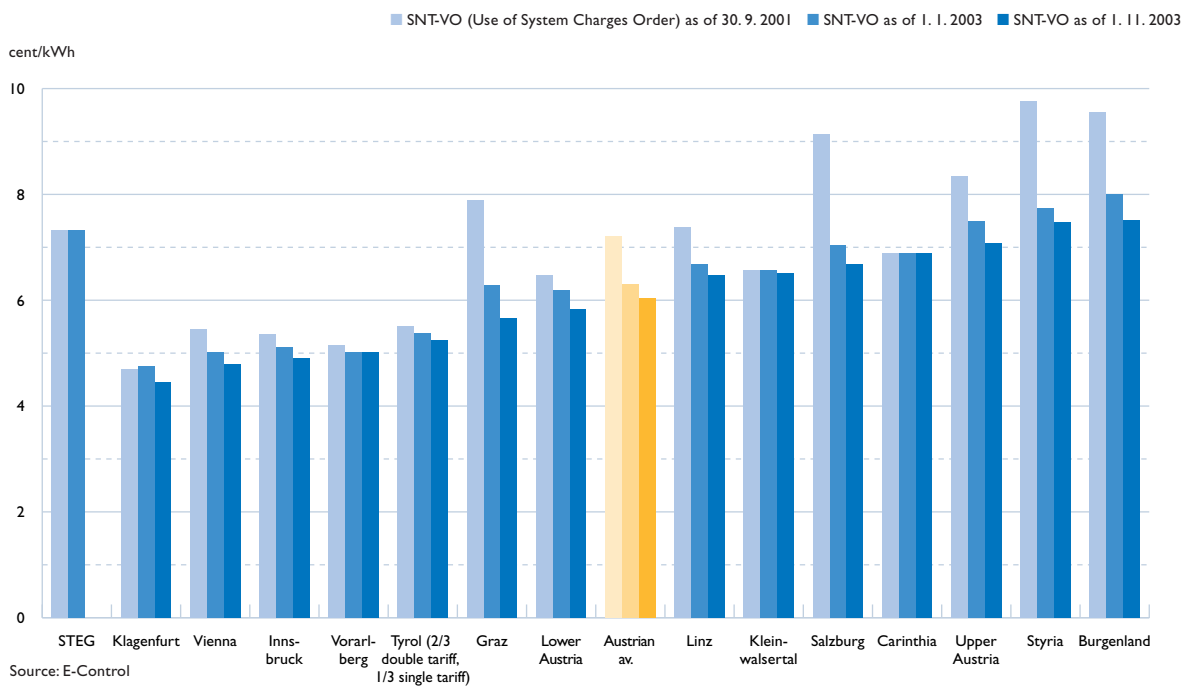
→ Use of system charges at Grid Level 5 in cent/kWh (3,500 hours of use)

Chart 57



→ Use of system charges at Grid Level 7 in cent/kWh (3,500 kWh/y, non-metered)

Chart 58



### Natural gas price trends

#### Overall price trends

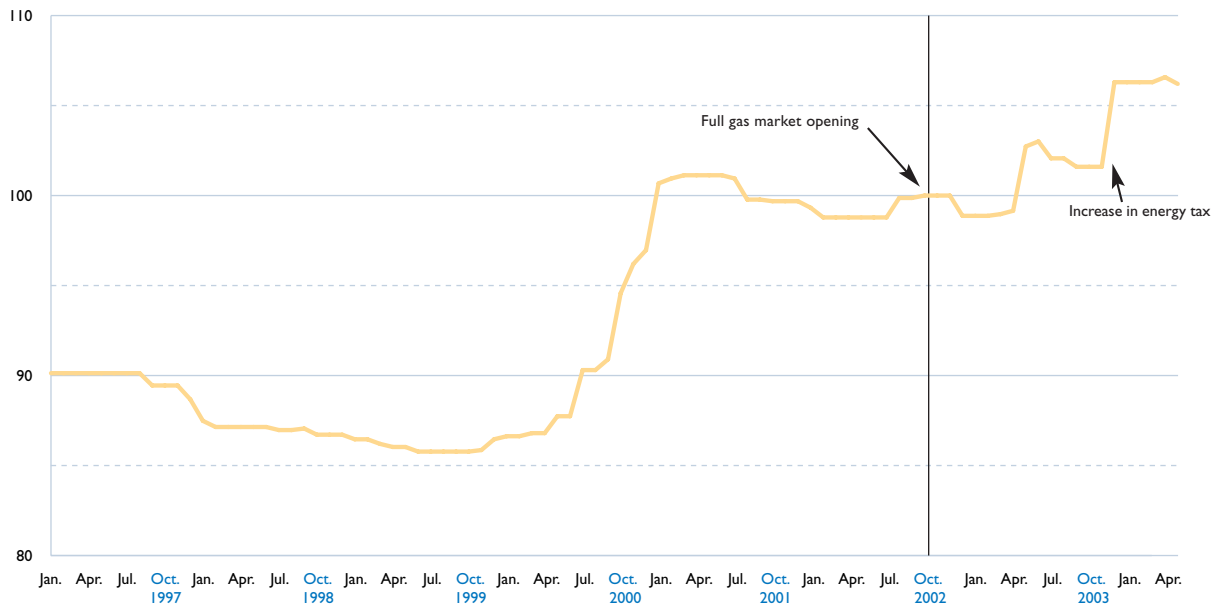
The main influence on gas prices is oil price indices. Most import contracts are linked coupled to oil prices, as oil is the principal substitute for natural gas. In consequence – unlike the electricity consumer price index (CPI) – developments on the Austrian gas market are only partly reflected in movements in the gas CPI (Chart 59). Shortly before and after the full opening of the gas market there was a slight decline in the index. The subsequent rises in the gas CPI in July 2003 and at the start of 2004 chiefly reflected increases in energy prices. The most recent sharp rise, in January 2004 was occasioned by the increase in natural gas tax.

#### Gas import prices

Gas import prices track trends in world crude oil prices, but the movements are lagged. There was a sharp drop in gas import prices in spring 2003, but since last summer they have been advancing in line with constantly climbing crude prices. The estimated trend in coming months shows further increases in the gas import price index, which consistently exceeds its level at the time of full market opening. A decline in the import price index currently appears unlikely before the start of next year at the earliest. Should crude prices remain high in coming months a fall in gas import prices will become increasingly unlikely, and this could lead in turn to higher retail prices. An examination of the netback pricing mechanism shows why and how gas prices follow those of the main substitute (see Text box 8).

→ Gas CPI (October 2002 = 100)

Chart 59



Source: Statistics Austria

Comparison of the gas import price index and the gas CPI shows only a weak correlation between the two. This is mainly explained by the fact that the gas CPI is influenced not just by energy prices but also by changes in taxes and surcharges, as well as system costs. The behaviour of the two indices since full market opening in October 2002 (the base month) reveals that the initial rise in gas import prices was passed on to consumers somewhat later. By contrast there was no – even lagged – response of retail prices to the subsequent sharp fall in import prices in the second quarter of 2003. Gas import prices have been on the upturn since summer 2003, and supplier announcements indicate that retail prices will again be increased in coming months.

Gas market liberalisation has not resulted in any delinking of gas and oil prices. Gas-to-gas competition has yet to make itself felt. In the medium term however, a greater number of suppliers – especially through more gas imports via LNG terminals and increased trading at gas hubs – could mean that gas prices begin to cut free from oil prices, at least in part.

Chart 62 shows that gas import price trends have so far been strongly correlated with those in oil prices. The impact of fluctuations in oil prices on gas import prices is lagged by three months. Given recent oil price trends gas import prices are thus likely to rise in coming months. However it remains to be seen which way crude prices will now move. Persistently high crude prices would in all probability lead to high gas import prices which could impact retail prices during the coming heating season.

→ Gas import price index (October 2002 = 100)



Source: Statistics Austria

### Industrial gas prices

There is still a shortage of data on the gas prices charged to industrial consumers. A survey on the effects of liberalisation on the electricity and gas markets conducted by E-Control in cooperation with the ÖEKV (Austrian Energy Consumers Association) and OGM shows that industrial consumers have obtained significant savings with regard to the energy component of gas prices. However these have been

relatively small as compared to electricity (see section on industrial electricity prices, above).

Despite the fact that Austria has been ahead of other countries in fully liberalising its natural gas market, the overall prices (system and energy charges) paid by industrial consumers – both including and excluding taxes – are among the highest in the European Union. ).

### → Netback pricing<sup>45</sup>

Text box 8

Netback pricing emerged in the 1960s with the introduction of natural gas as an energy source for heating, the purpose being to ensure that pricing was competitive with the product's main competitor, heating oil. Competition between substitutes<sup>46</sup> is crucial to efficient price formation, since it is the only safeguard against opportunities for monopolistic pricing.

Netback pricing is an example of price differentiation in action. Price differentials arising from netback pricing result in lower welfare losses than simple monopoly pricing. The supplier gains most of the consumer's surplus, which would have been lost in the case of simple monopolistic pricing. Moreover, netback pricing results in total supply greater than that which a monopolist would have been prepared to make available at a uniform price.

Natural gas prices are linked to oil if the cost of using gas – taking all its advantages and disadvantages into account – does not exceed the usage and

system costs of the main substitute (e.g. for residential consumers, light heating oil). The linkage is thus determined by consumers' willingness to pay, which depends on the benefits for the individual, measured by the cost of the best available alternative. The calculation thus depends on the opportunity costs of individual consumers. The floor for the netback price is the marginal cost of gas supplies.

The linkage of gas prices with those of energy substitutes thus takes place in two stages: first, the determination of the base price, which also reflects the system costs of using the energy form in question, and second, the indexing of this base price, which is linked to that of the main substitute (e.g. the oil price).

Netback pricing is applied to all stages of the gas supply chain. In practice however gas price formation is not exclusively based on this principle, but on a mix of the latter and cost plus pricing.<sup>47</sup>

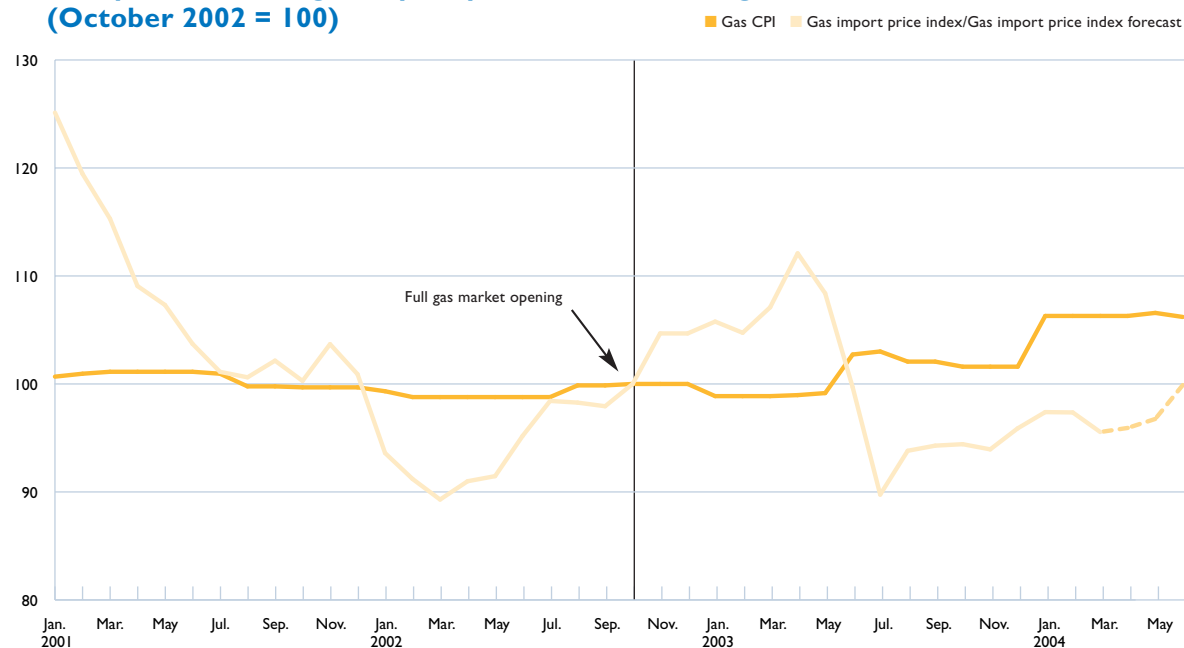
<sup>45</sup> Hans K. Schneider and Walter Schulz, 1977; Gerhard Schulz, 1996

<sup>46</sup> Unlike direct competition within given energy sectors, in the case of substitution competition it is the energy forms that compete (e.g. heating oil, natural gas, district heating and electricity in the heating market).

<sup>47</sup> Hans K. Schneider and Walter Schulz, 1977

→ Comparison of the gas import price index and the gas CPI (October 2002 = 100)

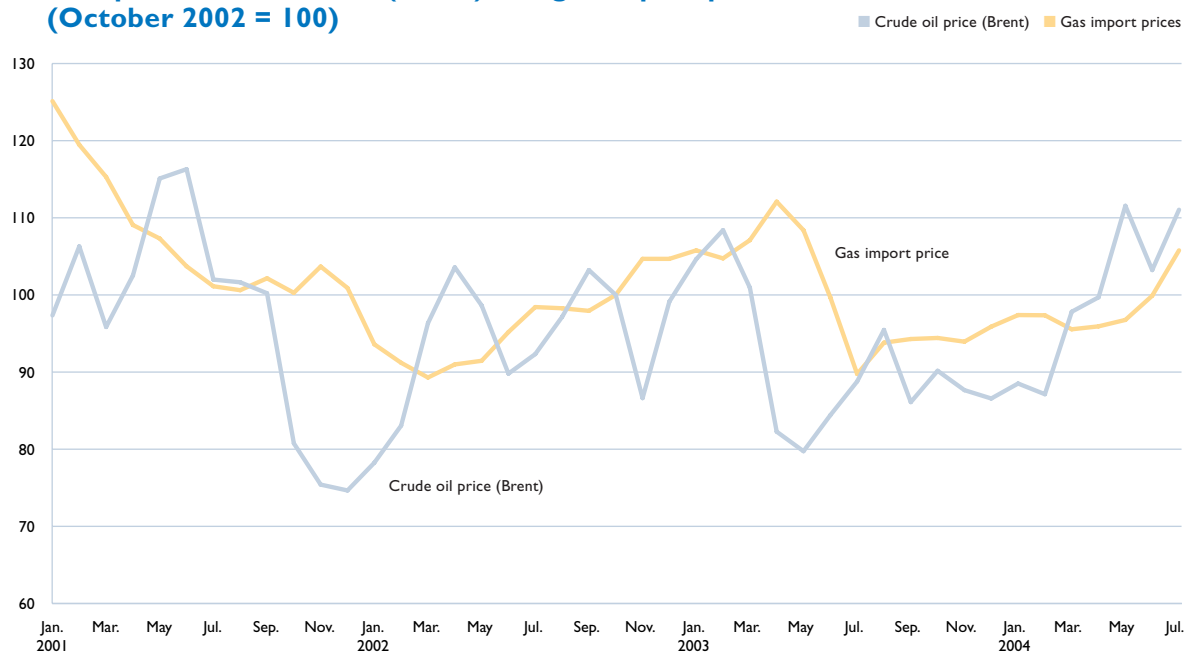
Chart 61



Source: E-Control and Statistics Austria

→ Comparison of crude oil (Brent) and gas import prices (October 2002 = 100)

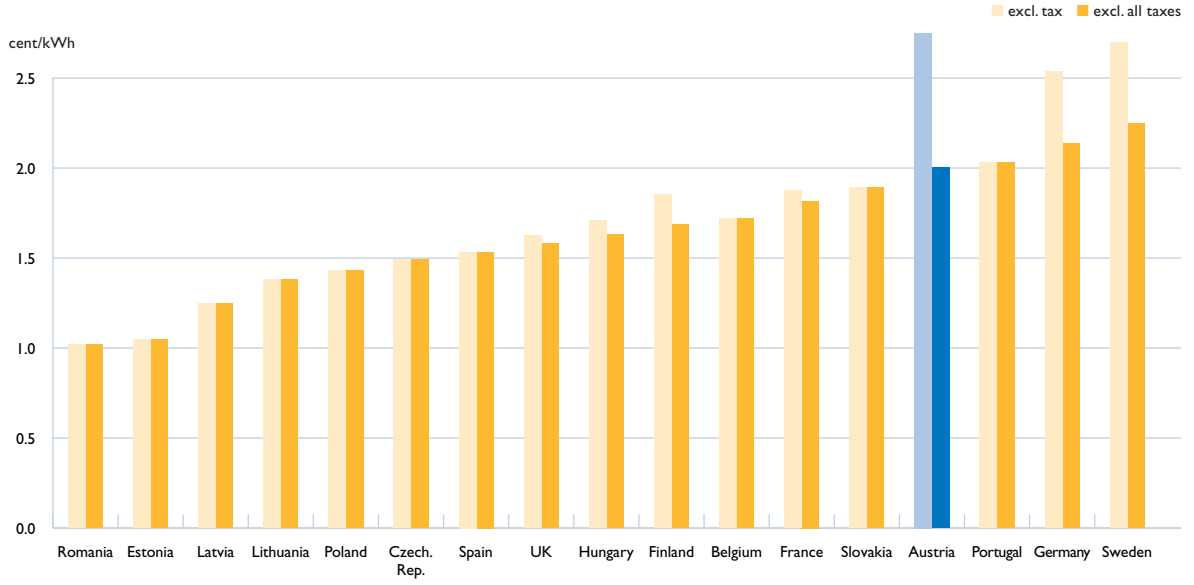
Chart 62



Sources: E-Control, Statistics Austria and EIA

→ Comparison of European industrial gas prices incl. system charges  
(11.63 GWh/y, 1 January 2004)

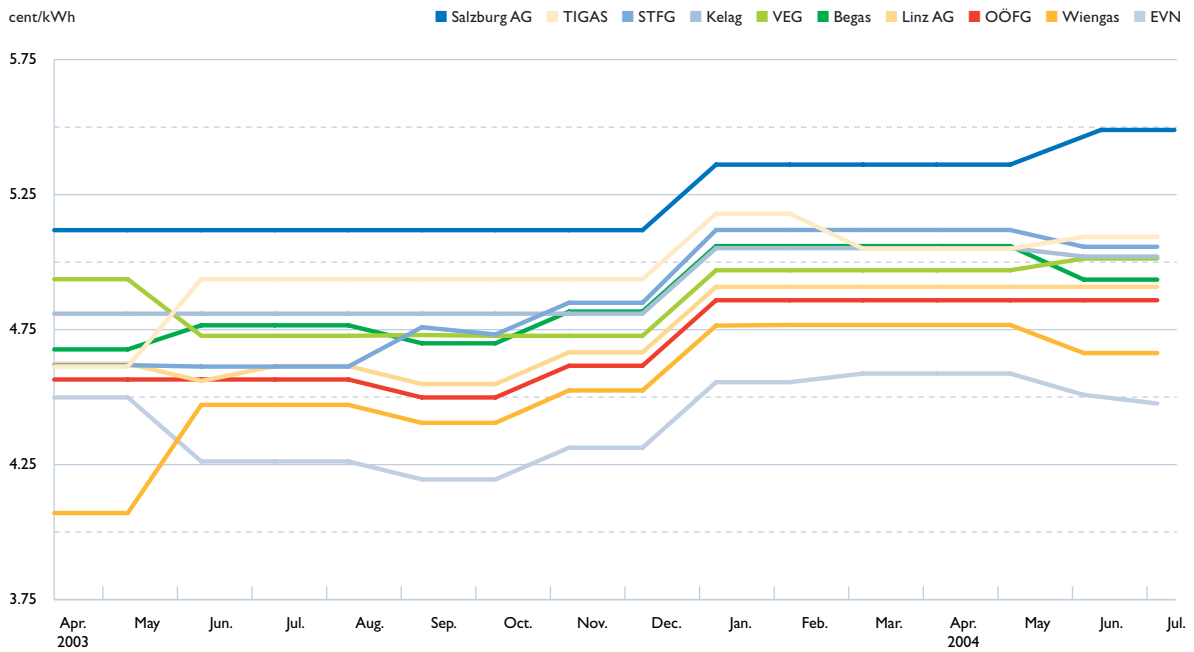
Chart 63



Source: Eurostat

→ Residential gas prices including taxes by grid zones, in cent/kWh  
(least-cost supplier, 15,000 kWh/y)

Chart 64



Source: E-Control



### Residential gas prices

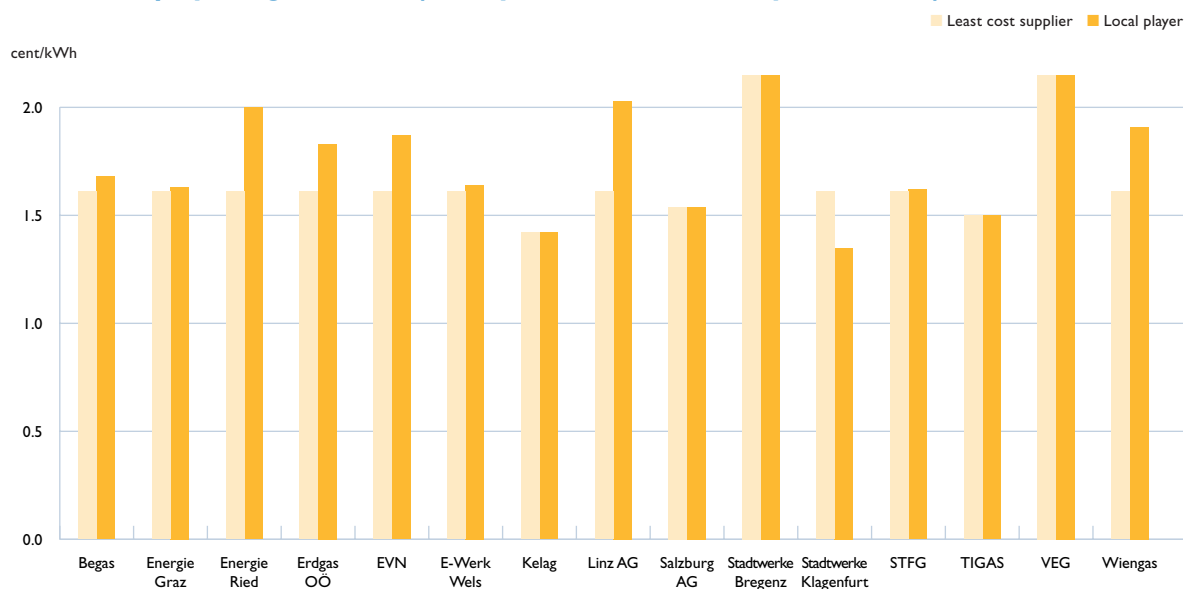
While the movements in overall Austrian residential gas prices (system and energy charges, and taxes) have been largely similar of late, price levels differ greatly.

For instance, the overall price of the least-cost supplier in the Salzburg AG grid zone was some 22% higher than that of EVN. The disparities mainly result from variations in system charges – those in the Salzburg AG grid zone are the

highest in Austria. Up to December 2003 overall residential prices – taking the lowest energy price offered as a basis – to some extent followed different patterns in some grid zones than in others. While overall prices fell in the VEG and EVN grid zones in mid-2003, the energy price rose sharply in the Tigas grid zone. The reduction in the EVN grid zone was largely attributable to the cut in system charges imposed by the regulatory authority.

### → Comparison of least-cost suppliers' and local players' energy prices in local players' grid zones (31 July 2004, 15,000 kWh/y, cent/kWh)

Chart 65



Source: E-Control

At the start of 2004 the finance minister increased natural gas tax, leading to rises in overall prices in all grid zones. In June 2004 the regulatory authority again reduced system charges in most grid zones, resulting in lower overall prices of least-cost suppliers in many grid zones.

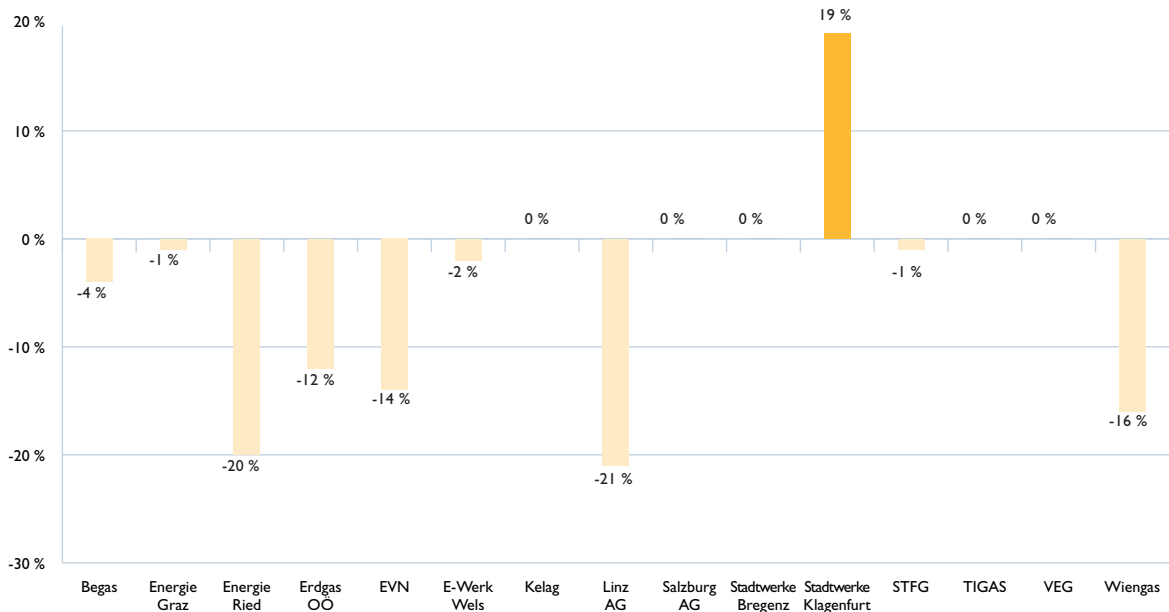
Charts 65 and 66 demonstrate that, with the exception of Stadtwerke Klagenfurt, the energy prices of local players were equal to, or in part significantly higher than those of the least-cost supplier. In some cases switching suppliers would bring consumers savings of up to 20% on the energy price. For instance, a customer of Linz AG could save over € 70 (inc. switching bonus) in the first, and more than € 50 in subse-

quent years (as of 1 September 2004, and given annual consumption of 15,000 kWh). Despite these price differences and the potential savings to be made, churn rates remain very low. It is also striking that the energy price of VEG is 6% higher than that of Linz AG – there is no alternative supplier in this grid zone.

The – in some cases marked – price differentials relative to the least-cost suppliers reflect the strong positions of the local players vis-à-vis new entrants, even though the latter are provincial utilities or the latter’s sales subsidiaries. The low churn rate and resultant lack of competitive pressure permit local players to charge higher prices than alternative suppliers.

→ Savings on energy prices from choosing the least-cost supplier as opposed to the local player (31 July 2004, 15,000 kWh/y)

Chart 66



Source: E-Control

Stadtwerke Klagenfurt is the only local player with lower energy prices than the least-cost outside supplier.

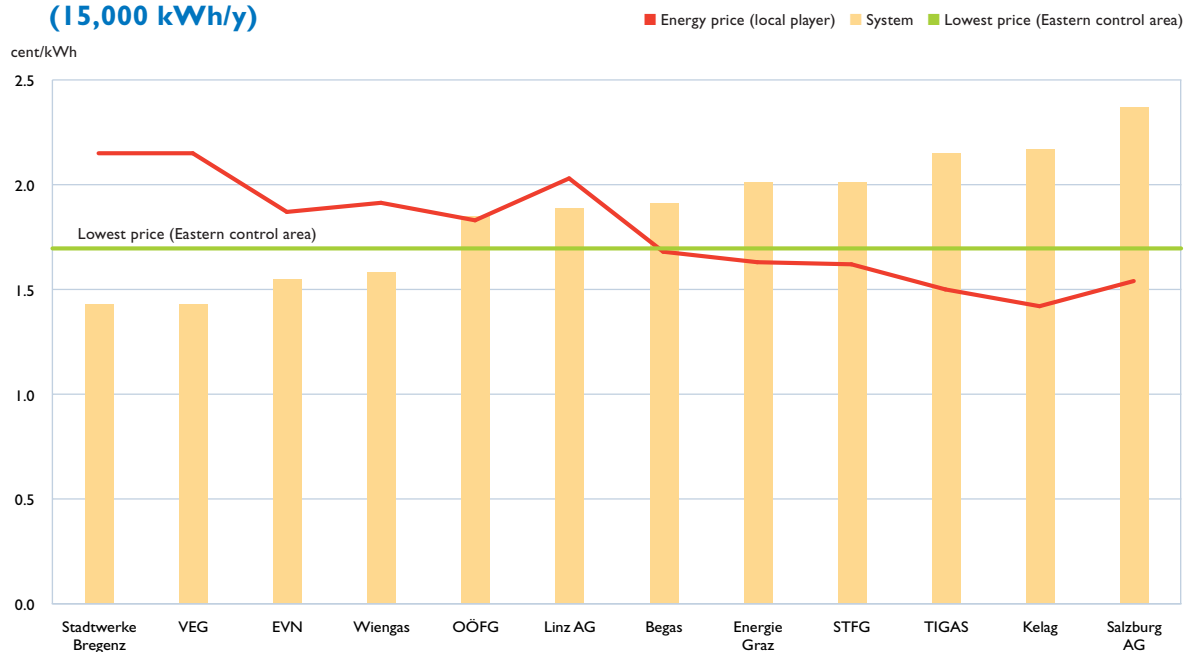
When energy and system charges are viewed separately it is seen that there are wide disparities between the various grid zones. While the system charges in Salzburg are 40% higher than those of Stadtwerke Bregenz, in terms of the energy prices the picture is the reverse. Salzburg AG's energy price is 30% lower than that of Stadtwerke Bregenz. Chart 67 shows that this interaction between system and energy charges is observable throughout Austria. System charges are low in grid zones with high

energy prices and vice versa. This suggests that cross-subsidisation may be occurring, and could indicate that the netback pricing system is resulting in low or negative margins.

A European comparison of residential gas prices reveals a similar picture to industrial prices, though the absolute price levels are significantly higher. Here, too, Austria is in the upper half of the European league table both in terms of prices including taxes and those net of tax. Only in Switzerland is the ex tax price above that in Austria. Owing to the higher taxes in Sweden, Denmark and Italy, Austria is ranked only fourth when taxes are taken into account.

→ Comparison of gas energy prices and system charges in June 2004 (15,000 kWh/y)

Chart 67

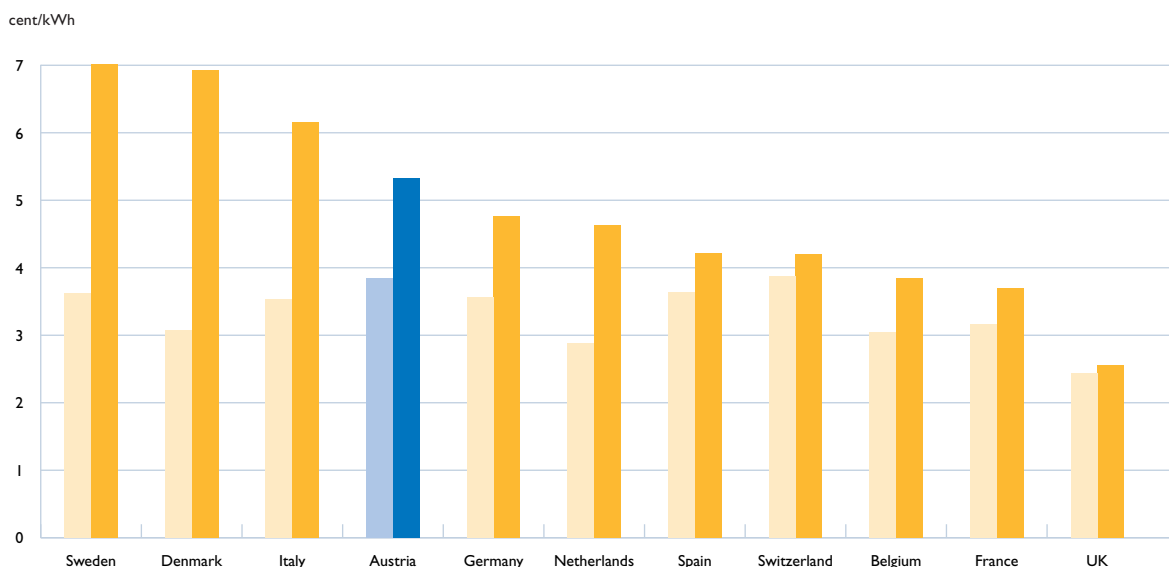


Source: E-Control

→ European comparison of residential gas prices incl. system charges  
(30,000 GWh/y, Q1 2004)

Chart 68

■ excl. tax ■ incl. tax



Source: Energy Advice

### Gas system charges

As with the electricity sector, system charges in the gas sector are set by the regulator. In June 2004 the regulatory authority reduced the system charges in all grid zones other than Tyrol and Upper Austria. This led to a convergence of system charges at virtually all grid levels and in almost all zones, but differences still exist.

There are wide variations at Level 2. While the cost of system use in the Salzburg AG grid zone (Chart 72), Band A, 2,800,000 kWh/y, 3,200 kWh/h) is approx. 1.7 cent/kWh, in the cheapest grid zone for this demand category it is some 0.6 cent/kWh. The position is different in the case of charges for consumers with higher demand at Grid Level 2, because the 2004 amendment to the Gas System Charges Order (GSNT-VO) introduced new tariff bands for very large consumers, and these have resulted

in very system low charges for large offtake volumes in the Salzburg, Lower Austria and Vienna grid zones. Gas-fired power stations in these grid zones have been the main beneficiaries (see Charts 76 and 77).

The picture at Grid Level 3 is similarly divergent. Here, system use is almost always cheapest in a different grid zone, depending on consumption. For example, a non-metered consumer with an annual demand of 15,000 kWh pays 2.26 cent per kWh in the Styria grid zone – 20 % more than the 1.32 cent per kWh paid by a like consumer in the Lower Austria grid zone (Chart 70). By contrast, at a demand of 80,000 kWh the highest system charges for non-metered consumers are in the Salzburg grid zone, where the cost is 80 % more than in Tyrol – the cheapest grid zone for this demand category (Chart 71).

## → System for the determination of charges for the use of gas pipelines in Austria

Text box 9

Pursuant to the Natural Gas Act (GWG), in Austria the use of system charges for domestic supply are determined by the E-Control Commission, while gas transit is not subject to these provisions. This means that a distinction must be drawn between domestic supply and transit, and the costs of the two areas of operations must be allocated. Only costs relating to domestic gas transportation are taken into account in the regulatory determination of system charges.

### Grid levels

Section 23b(1) GWG designates the following grid levels as the basis for the determination of the system charges:

1. Transmission pipelines (see section 6[15] in conjunction with section 23b [1][1]);
2. Distribution pipelines operating at a pressure of more than 6 bar (see section 6[60] in conjunction with section 23b [1][2]);
3. Distribution pipelines operating at a pressure of less than 6 bar (see section 6[60] in conjunction with section 23b [1][3]);

As the E-Control Commission is charged with determining use of system charges for Grid Levels 2 and 3, the cost of domestic supply on the transmission lines (Grid Level 1) is passed on to the lower levels.

### Postalised tariff system

The tariff system adopted by Austria in 2002 is a variant of the postalised system. This treats the Austrian gas network as a single “gas pool”, in which it should theoretically be irrelevant where the gas comes from and where the customer is located in Austria.

The tariffs for grid levels 2 and 3 are graduated in bands and tiers according to the number of kilowatt

hours consumed. The first seven of a total of 11 or 13 bands and tiers are applied to non-metered consumers, and the other four or six to consumers with load profile meters having an annual demand of over 100,000 cu m.

The amended GSNT-VO enacted on 1 June 2003 changed the system charges in the Lower Austria grid zone. A further amendment which entered into effect on 1 June 2004 adjusted the system charges of all Austrian system operators.

### Capacity system

The Austrian balancing group system is based on the assumption that the network is a single “gas pool”, the entries to which are injection points, and the exits withdrawal points on the transmission system. The capacity required by customers for system access and its management is determined by the principle whereby the capacity belongs to the customer and is not lost in the event of a supplier transfer. Customers’ capacity in the distribution network is imputed to the respective injection point assigned to them.

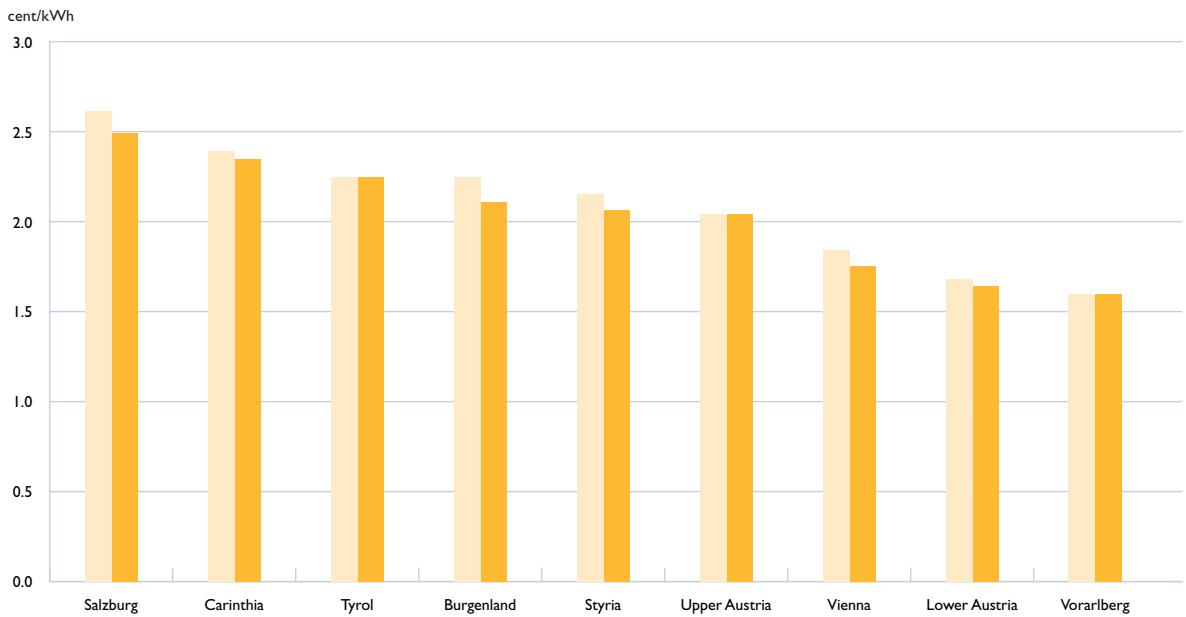
In the event of a transfer the former supplier of the balancing group informs the latter of the capacity to be assigned to the customer. Assignment of the customer to the new supplier reduces the aggregate customer capacity of the former supplier by the same amount.

Due to the above procedure, the former supplier effectively determines the injection point. It could thus select the injection point in such a manner that the new supplier has insufficient capacity there or must buy in all of this capacity, to the customer’s disadvantage<sup>48</sup>. Moreover, the reservation of capacity is free of charge and non-binding, so that there is little incentive to use the system efficiently.

<sup>48</sup> This is because, under the Austrian system, the free capacity and the costs at the former supplier’s injection point arising from it are not reduced. Moreover, the gas supplier does not bear the cost of the injection capacity, and hence has no incentive to conserve it.

→ Use of system charges at Level 3 in cent/kWh  
(8,000 kWh, non-metered consumers)

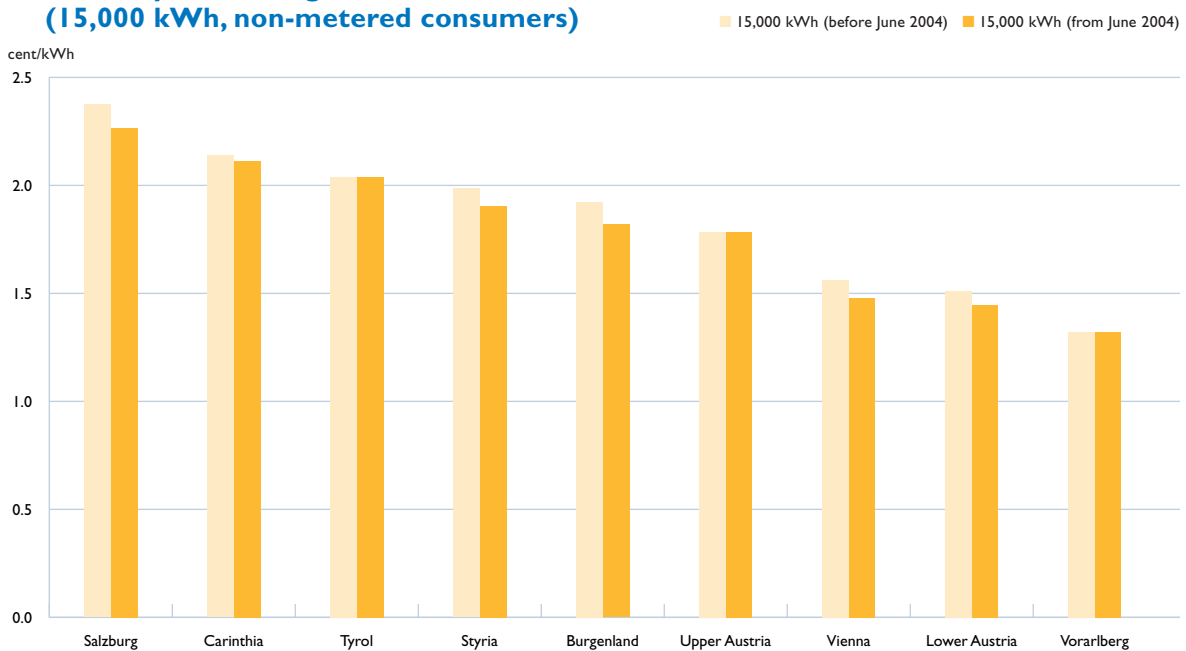
Chart 69



Source: E-Control

→ Use of system charges at Level 3 in cent/kWh  
(15,000 kWh, non-metered consumers)

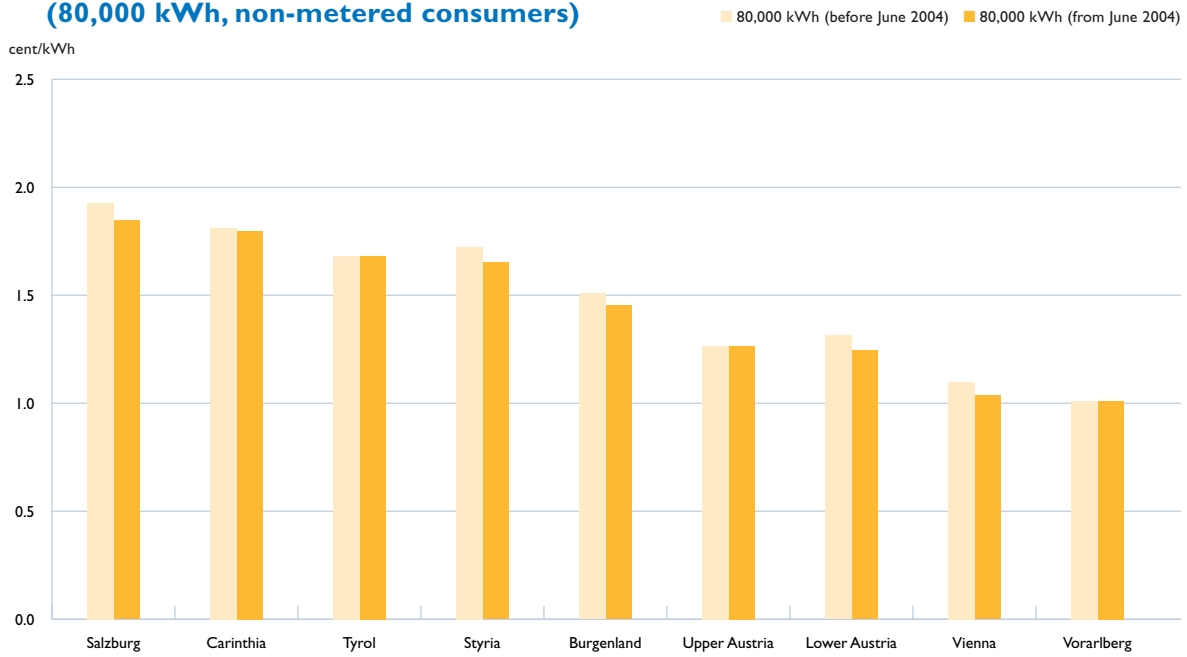
Chart 70



Source: E-Control

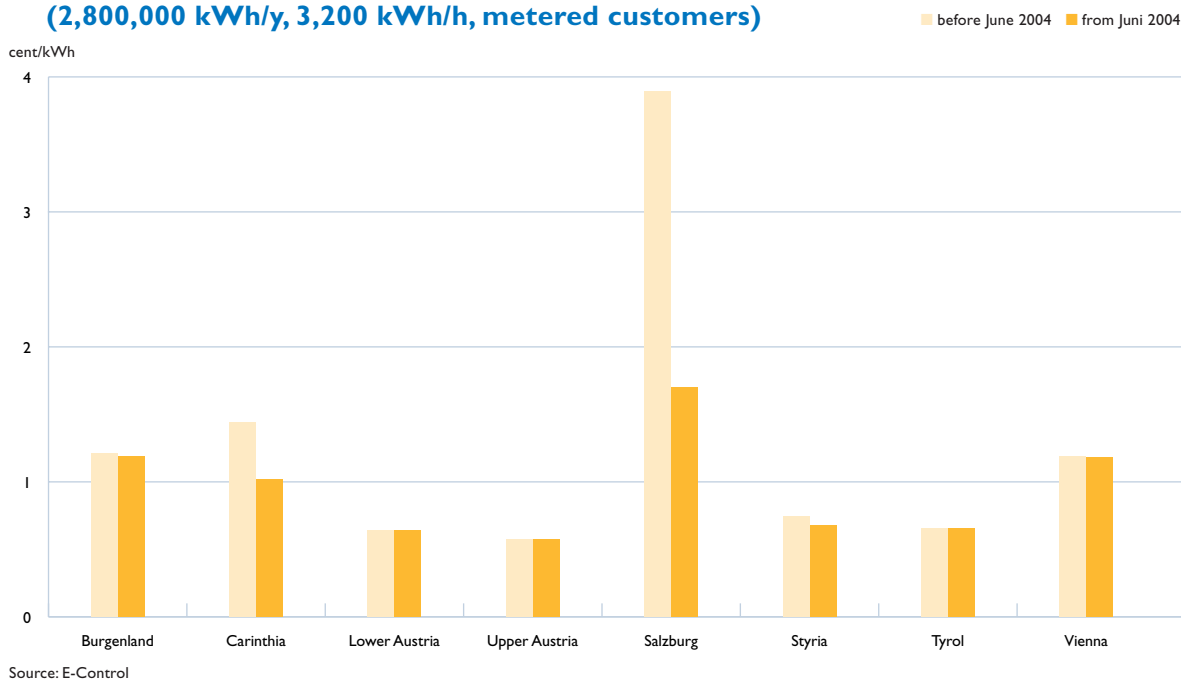
→ Use of system charges at Level 3 in cent/kWh  
(80,000 kWh, non-metered consumers)

Chart 71



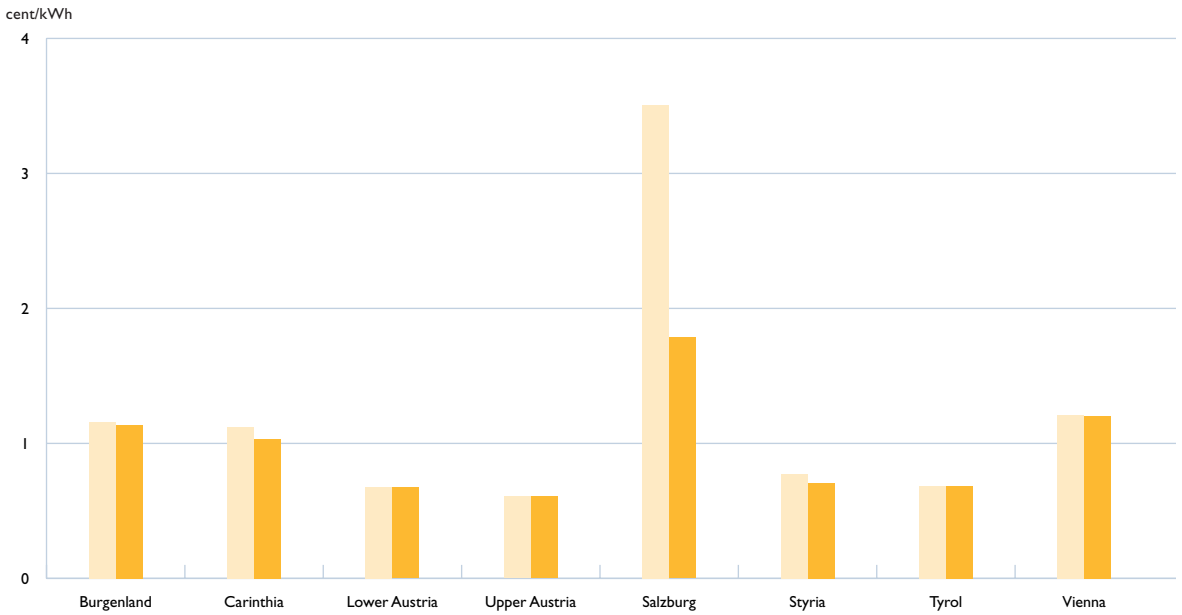
→ Use of system charges at Level 2, Band A, in cent/kWh  
(2,800,000 kWh/y, 3,200 kWh/h, metered customers)

Chart 72



→ Use of system charges at Level 2, Band B, in cent/kWh  
(7,900,000 kWh/y, 9,600 kWh/h, metered customers)

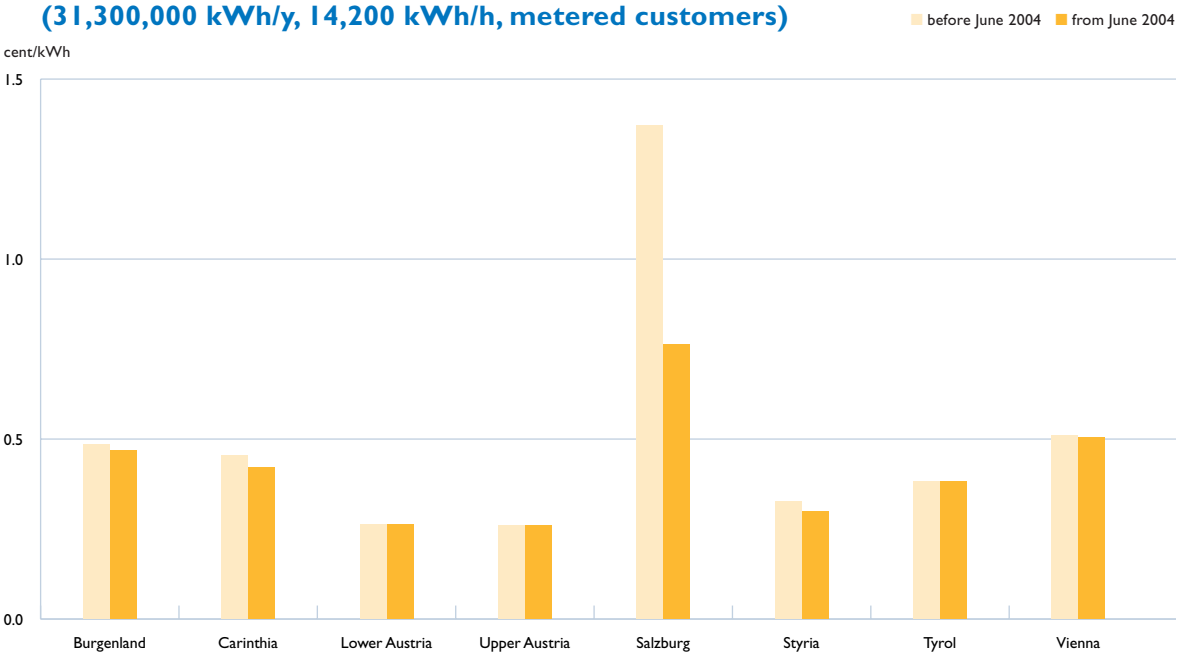
Chart 73



Source: E-Control

→ Use of system charges at Level 2, Band C, in cent/kWh  
(31,300,000 kWh/y, 14,200 kWh/h, metered customers)

Chart 74

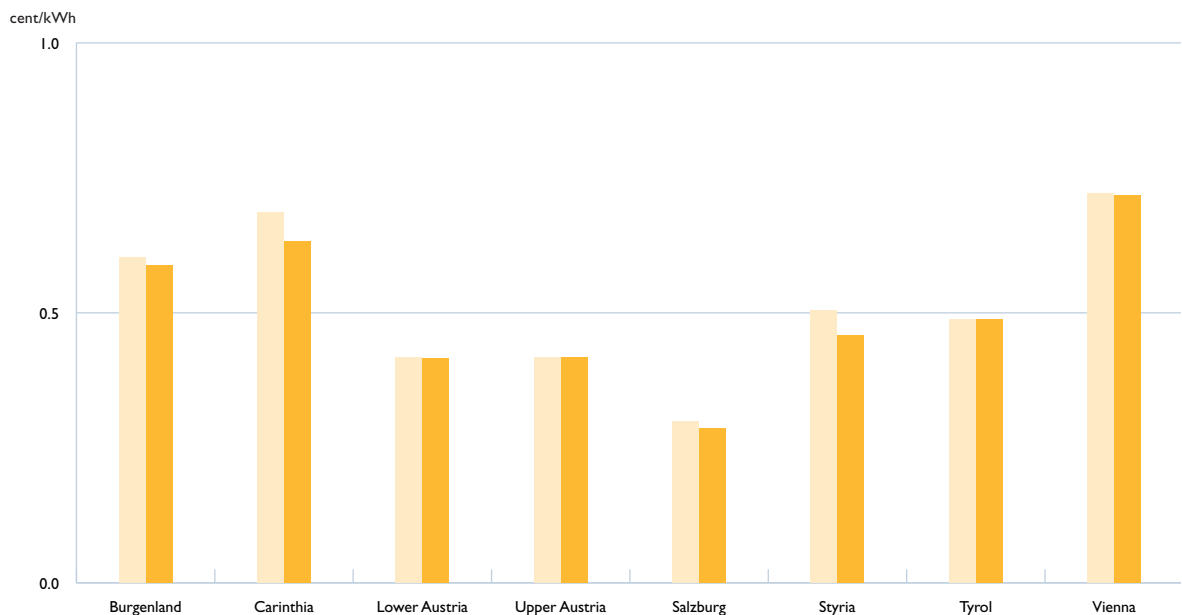


Source: E-Control



→ Use of system charges at Level 2, Band D, in cent/kWh  
(150,000,000 kWh/y, 120,500 kWh/h, metered customers)

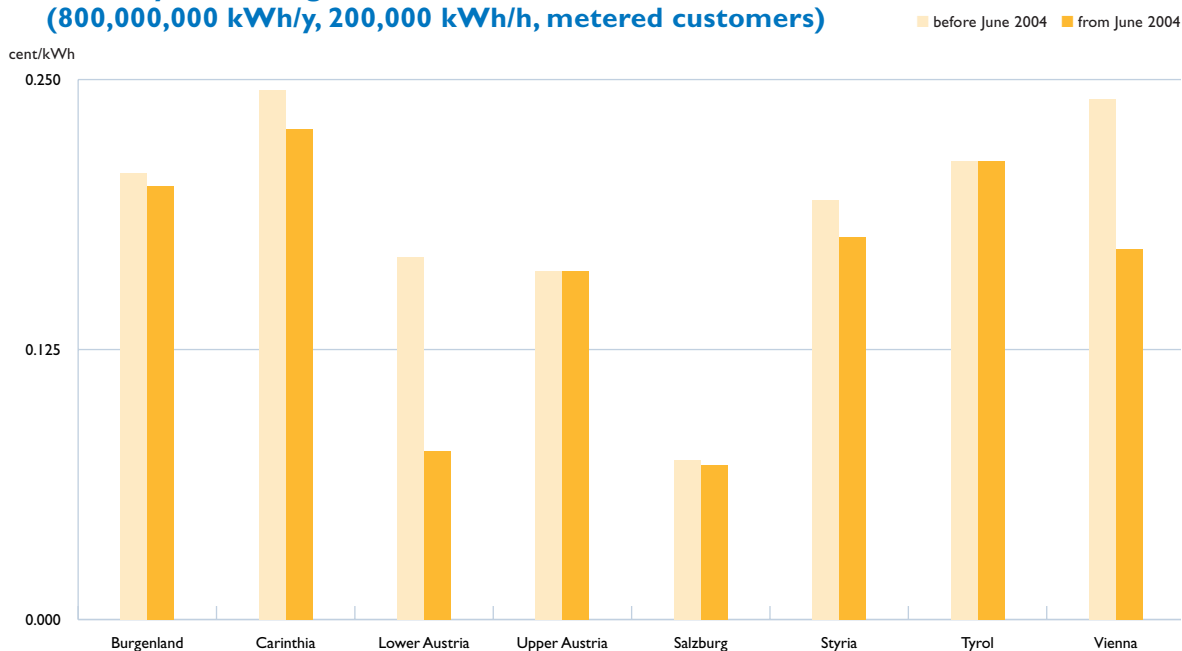
Chart 75



Source: E-Control

→ Use of system charges at Level 2, Band E, in cent/kWh  
(800,000,000 kWh/y, 200,000 kWh/h, metered customers)

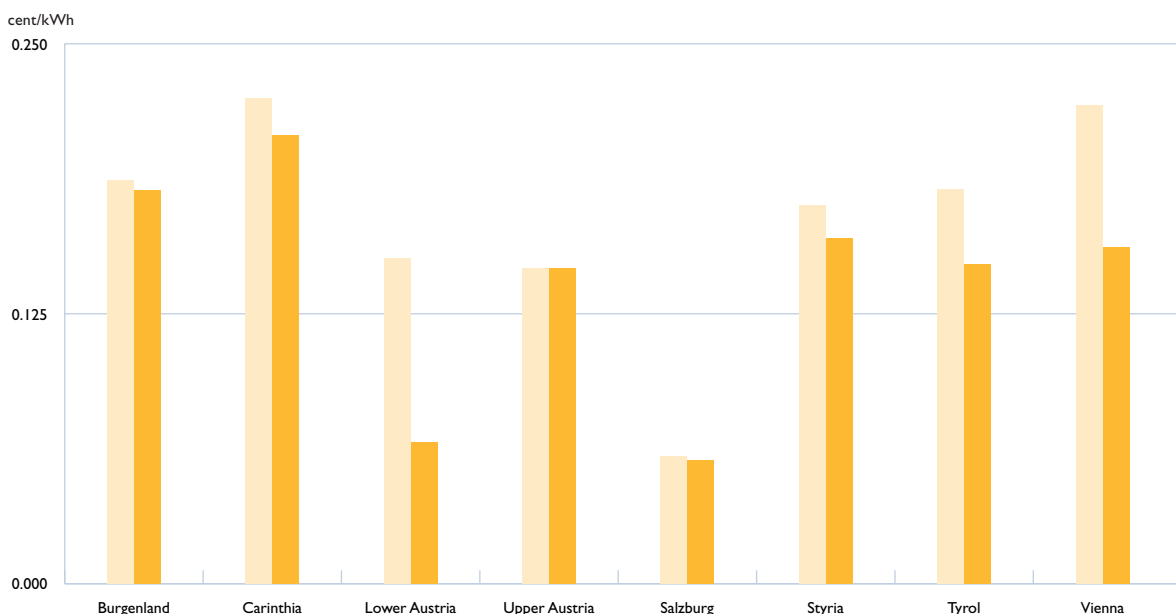
Chart 76



Source: E-Control

→ Use of system charges at Level 2, Band F, in cent/kWh  
(1,150,000,000 kWh/y, 275,000 kWh/h, metered customers)

Chart 77



Source: E-Control

### The gas balancing market<sup>49</sup>

#### Trends on the balancing energy market

During the 2002–2003 gas year a total of approx. 240 m cu m of balancing energy was sold to bidders (withdrawn from the network) and 125 m cu m was purchased from suppliers (injected into the network). Purchases of balancing energy declined markedly in the 2003–2004 gas year. From October 2003 to June 2004 approx. 19 m cu m of gas were purchased from balancing energy suppliers and approx. 150 m cu m sold to bidders. These figures point to a fall in balancing gas volume. Despite the dominance of a small number of players – principally EconGas and RAG – prices have hitherto been relatively flat. Among other things, this reflects the fact that EconGas is also the balancing

group in the Eastern control area with the heaviest demand. As the largest bidder for balancing energy, it would thus be hardest hit by high balancing energy prices.

During the first year of operation of the system the costs incurred by balancing groups as a result of system losses and own use emerged as a serious problem. As the gas network can function as a short-term storage facility, it is possible for gas injected by the control area manager and the balancing groups not to be fully withdrawn within a given hour.<sup>50</sup> The remaining volumes are booked to the System Losses and Own Use balancing group. During the first year of operation this gave rise to cumulative balancing energy costs of about € 3 million.

<sup>49</sup> Since October 2003, E-Control has been preparing monthly reports on hourly, daily and monthly price and volume trends on the balancing market. These are posted on the E-Control website ([www.e-control.at](http://www.e-control.at)).

<sup>50</sup> It can also happen that the control area manager and the balancing groups withdraw more gas than has been injected by the balancing groups and balancing energy suppliers; such discrepancies are credited to the System Losses and Own Use balancing group as sales by the network.

In order to reduce such costs a package of actions was decided upon in the course of the review of the market rules. The main changes agreed were as follows:

- change in the price formula for hours in which no balancing energy is called off;
- linepack calculation and publication of linepack usage statistics by the control area manager, AGGM;
- preparation of a code of conduct for network operation by AGGM;
- cost monitoring by E-Control.

#### Revised price formula

Under the old price formula hours in which no balancing energy was called off were charged at the mean of the lowest bid and the highest offer in the merit order. The main purpose of revising the formula for hours without take-up was to give balancing groups a low buying price for system losses and own use, and a high selling price for balancing energy. Another major change is the move to calculating prices at the end of the month, on the basis of the hourly aggregate deltas of all system operators, rather than publishing them on the following day.

If there have been net withdrawals from the grid by system operators, then the average of the last seven balancing energy selling prices becomes the price for the hour in question. If there have been net injections into the grid by system operators, then the average of the last seven balancing energy buying prices becomes the price for the hour.

#### Effect of the revised price formula

Chart 78 shows the effect of the new price formula, which has been in operation since 1 October 2003, on the cost of balancing groups' system losses and own use. During the first month the balancing groups bore expenses of approx. € 90,000, and with the exception of February 2004 they have since recorded income. In all, cumulative system losses have cost balancing groups a net total of € 1.9 m since the introduction of the balancing market in October 2002.

#### Linepack usage

The above trend is due not only to the revised price formula but also to changes in AGGM's operating practices. The company's code of conduct, drawn up in consultation with E-Control, states that the control area manager must attempt to call off balancing energy in as many packages of equal amounts as possible, and to use available linepack to reduce balancing energy utilisation, without compromising network stability.

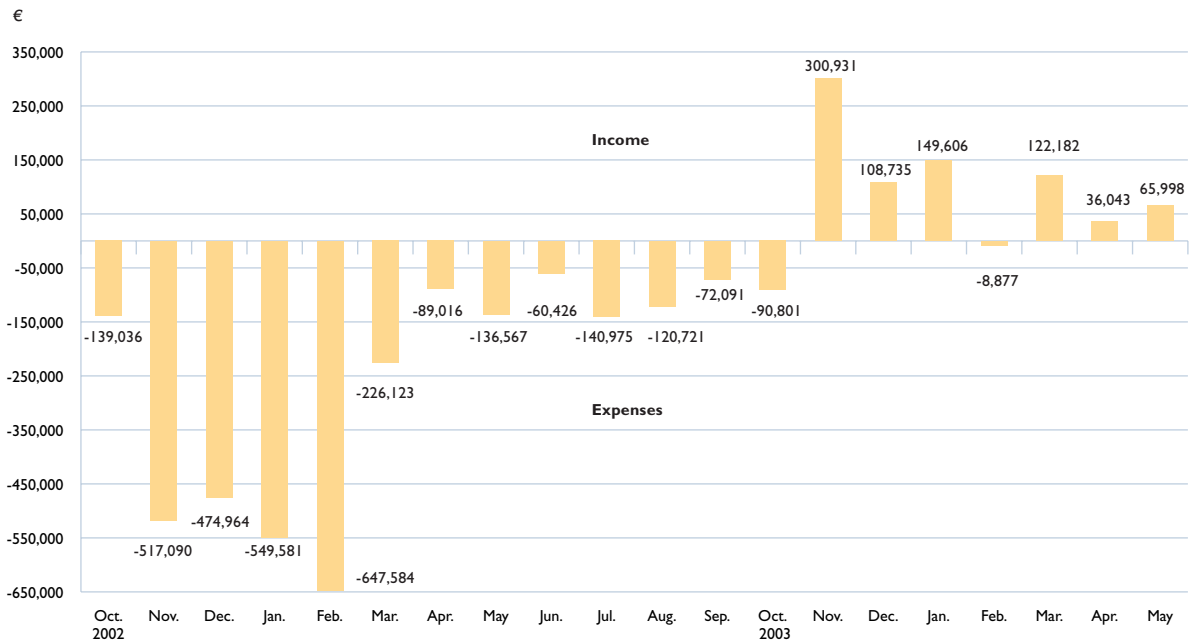
The effects of this approach and of the revised price formula can be seen from recent price trends (Chart 79). In particular, the differences between average prices and the peaks and troughs (maximum buying price and minimum selling price) have decreased markedly.

#### Persistent oversupply

Since the establishment of the market in October 2002 there has been a strong tendency towards oversupply of balancing groups. This is indicated by the fact that the control area mana-

→ Cost to gas balancing groups of system losses and own use from October 2002 to May 2004

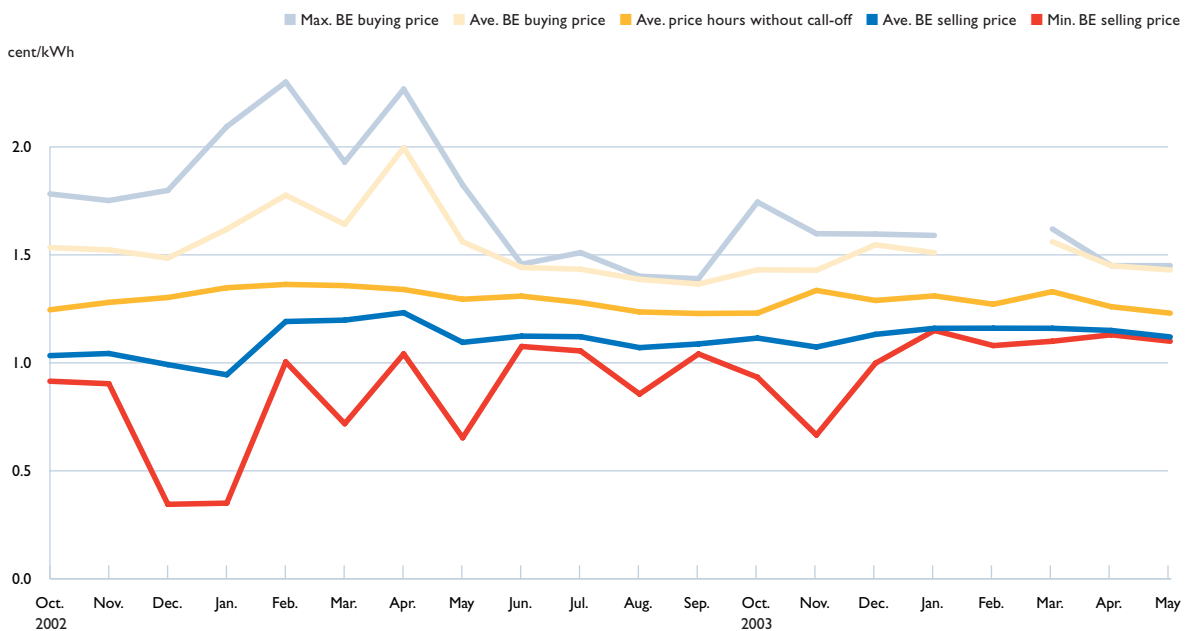
Chart 78



Source: E-Control

→ Price trends on the gas balancing market, October 2002 to May 2004<sup>51</sup>

Chart 79



Source: E-Control

<sup>51</sup> No balancing energy suppliers' buying price is available for February 2004 because there were no such purchases. During this month there were only sales of balancing energy to suppliers.

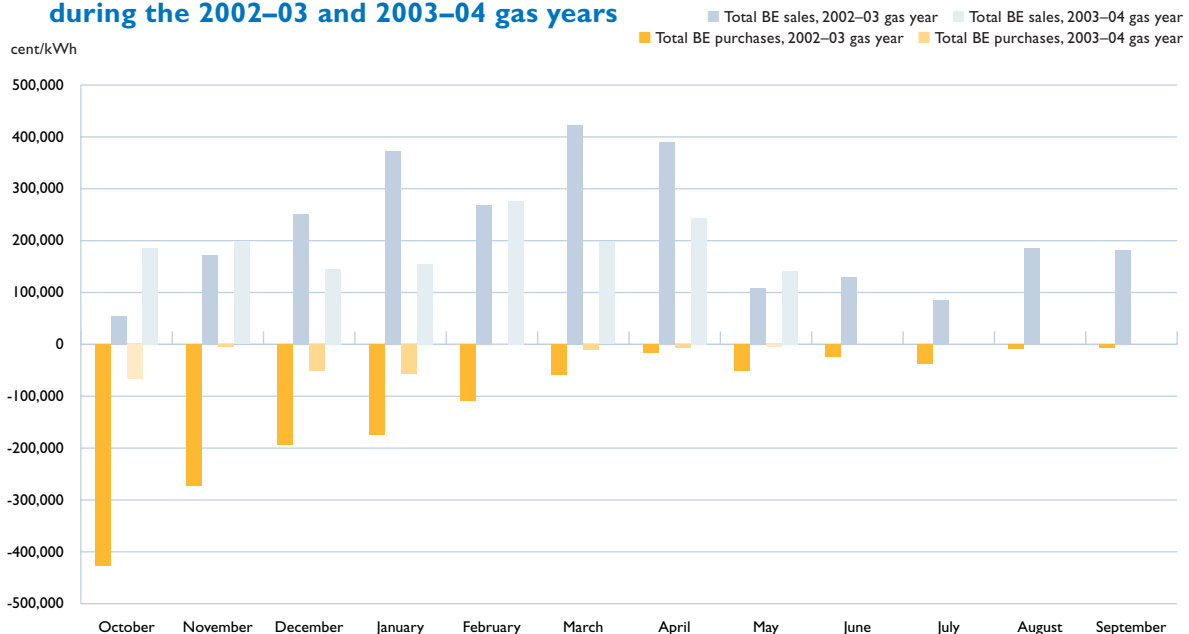
ger has increasingly been obliged to sell balancing energy to balancing energy suppliers for the account of the balancing groups, as shown by Chart 80.

The reason for this is the fact that the balancing market is used for short-term gas trading. Balancing groups go long while at the same time they or the balancing energy suppliers enter the market to buy. Some balancing groups trade a substantial proportion of their gas consumption on the balancing market. However, there is a significant difference from a spot market. When making their decisions to buy or sell players cannot be guided by current prices, since the balancing energy prices are not made known until later. Due to the low volatility of balancing gas prices the price risk associated with short-term trading on the balancing market is relatively minor. Moreover, neither buyer nor seller

faces any volume risk. If gas injected by the buyer finds no takers it remains in the system (i.e. it is imputed to the System losses balancing group) or the control area manager has to withdraw gas from the system by calling off balancing energy. If a buyer withdraws more gas than has been injected, either the shortfall is made up by the System Losses and Own Use balancing group (i.e. this balancing group buys gas) or the control area manager must inject gas into the system by calling off balancing energy. Short-term gas trading is carried out via the balancing market because of the absence of a spot market. This has the major disadvantage that the market risk is shared by companies that play no part in the trading – namely, the system operators (and other balancing groups). The establishment of a spot market on which short-term trading was possible would therefore be desirable.

→ **Monthly evolution of sales and purchases of balancing energy during the 2002–03 and 2003–04 gas years**

Chart 80



Source: E-Control



## Market outcomes

### → Convergence of the electricity and gas markets

Since liberalisation balancing market turnover has fallen sharply relative to total gas sales in the Eastern control area. While the proportion was approx. 6.5 % in October 2002, by the start of 2004 it had sunk to less than 2 % (Chart 81). However there has been a slight rebound since February 2004.

The change in the price formula and the control area manager's operating practices (including the optimisation of linepack usage) have resulted in less recourse being made to the System Losses and Own Use balancing group. A positive development is the fact that balancing energy turnover as a proportion of total sales in the control area has almost been halved. Less encouraging are the sluggish price increases despite the small number of balancing energy suppliers. The persistent oversupply of the market and the potential consequences of this for the market model need to be closely watched.

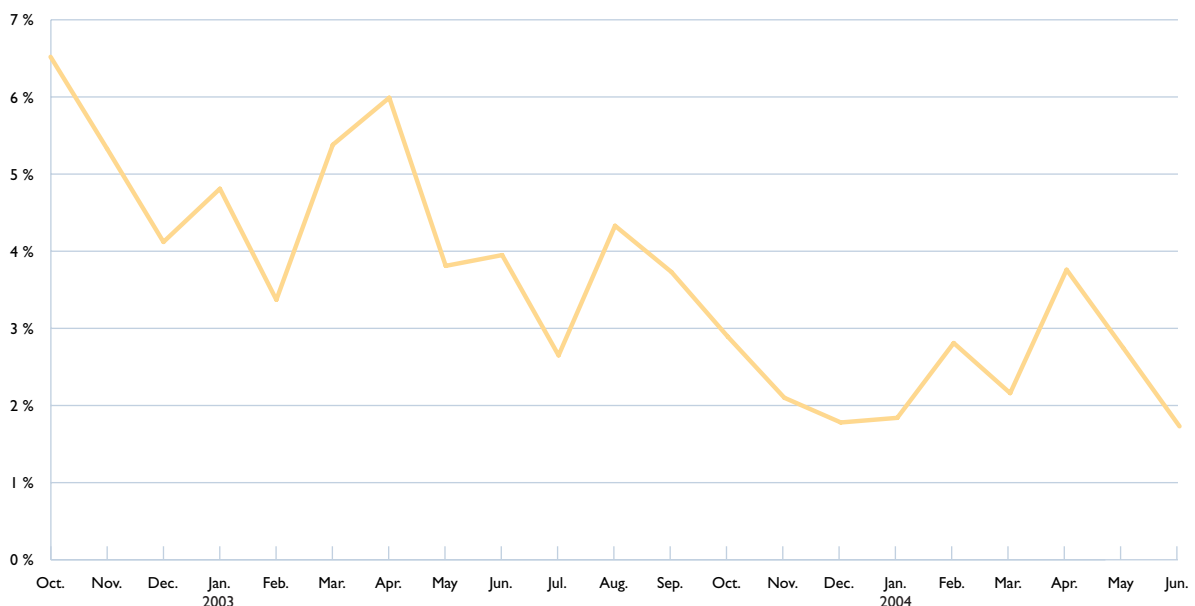
### → Convergence of the electricity and gas markets

Since liberalisation there has been much discussion of the links between the electricity and gas markets. The fact that these chiefly arise from the use of natural gas as a primary energy source for electricity generation is worth looking at in more detail. In future gas as well as coal prices are likely to have a major influence on competition in the electricity sector.

Apart from demand side factors, spot electricity prices are mainly driven by gas and coal price trends. The cost of gas and coal determines the variable costs of the power stations used as medium and peak load generating capacity. Since the linkage between gas and oil prices means that the former depend on the latter, oil price trends influence wholesale electricity prices. With gas likely to play an increasing role

### → Balancing energy turnover as a proportion of total sales in the Eastern control area

Chart 81



Source: E-Control



## Market outcomes

### → Convergence of the electricity and gas markets

as a primary energy source for electricity, its influence on electricity prices will continue to grow.

The linkage between gas and oil prices adds to the risk of electricity price volatility. This may mean that the market for risk management services encompassing gas and electricity prices will grow in importance. Integration of the two sectors may reduce the risks associated with rising gas prices, and their impact on electricity prices.

The Austrian provincial and municipal utilities have traditionally been active in both sectors. These companies are involved in every stage of the value chain other than gas production and transmission. The electricity and gas companies – apart from OMV Gas and RAG – are unlikely to play a part in production in the future. The main synergies are in the downstream area (i.e. distribution, marketing and trading), and particularly in retailing (see section Multi-utility strategies).

The Energie Austria and EconGas mergers, and the parties' holdings in EnergieAllianz have effectively created a fully integrated gas and electricity business, though only parts of the value chain (trading and sales to large customers) are directly affected. Both merger companies have dominant positions in the respective relevant product markets (see section Concentration in the electricity and gas markets). There is also a danger that EconGas' dominance of the gas market – particularly through its role as the main importer and supplier of the distributors – will negatively impact competition in the electricity market. Moreover, the upstream suppliers (power stations in the electricity and importers in the gas sector) also enjoy assured sales, giving them an advantage over potential competitors, as the German Federal Cartel Office found in its judgment on the E.On-Ruhr gas merger.

### → Trends in consumer behaviour

Switching by consumers and renegotiation of electricity and gas supply agreements are important indicators of the success of action to stimulate competition. E-Control has therefore conducted two surveys in conjunction with OGM and the ÖEKV to investigate the effects of electricity and gas liberalisation on consumer behaviour. The latest survey was the first to include the gas market.

#### Initial effects of electricity and gas liberalisation

In both markets large consumers had been free to switch suppliers and renegotiate agreements prior to full liberalisation. In the electricity market renegotiation of existing agreements and transfers by large consumers affected 19,500 GWh and 560 GWh of annual power supplies, respectively, in the first three quarters of 2001. This meant that consumers actively sought changes in the terms and conditions applying to more than 40 % of total demand in the run-up to 1 October 2001.

In the gas market, preliminary negotiations on some 3,030m cu m or around 37 % of total demand were initiated by large consumers ahead of liberalisation, but there were no supplier changes.

During the first post-liberalisation year 9,900 residential gas consumers (0.9 %) switched, compared with some 26,000 private electricity consumers (0.7 %). This corresponded to 0.7 % of annual gas and 0.8 % of annual electricity demand. Some 200 other small gas (0.2 %) and 37,700 other small electricity consumers (3.2 %) switched. In terms of the volumes involved, large consumers accounted for most of the transfers. Since the large consumers had been able to renegotiate their agreements or switch

suppliers before the respective liberalisation dates, and were thus already contractually tied, these groups were considerably less active in seeking changes during the first post-liberalisation year than before. Chart 82 depicts the overall impact of electricity and gas liberalisation in the first year<sup>52</sup>.

During the first post-liberalisation year large electricity consumers renegotiating their agreements achieved savings of up to 10 % on 21 % of their total demand, savings of up to 20 % on 32 % of demand, and savings of over 20 % on 48 % thereof. None of the companies surveyed stated that no savings had been achieved or that they had accepted a price increase.

Gas consumers obtained savings of up to 10 % on 27 % of the energy supplied to them, and savings of over 10 % on 4 % thereof. No significant price changes were achieved in respect of 46 % of total supply, while for 15 % of supply prices were higher than before liberalisation.

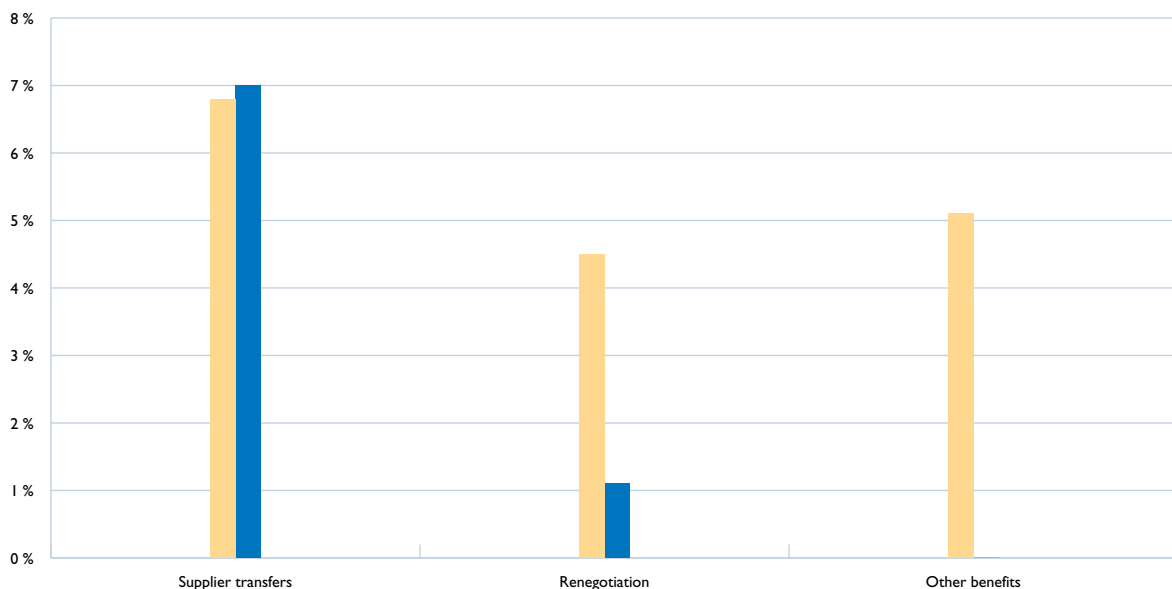
#### Effects in the second year of electricity liberalisation

During the second post-liberalisation year, 28,400 residential consumers (0.8 %) and 14,800 other small consumers, mostly small businesses (1.2 %) changed suppliers. In terms of annual demand the proportions were 0.6% and 1.6 %, respectively.

→ Effects of electricity and gas liberalisation during the first year of full market opening (% of total annual demand)

Chart 82

■ Gas ■ Electricity



Source: E-Control

<sup>52</sup> In the case of electricity, 1 October 2001 to 30 September 2002, and in that of gas 1 October 2002 to 30 September 2003.



Some 1,100 large consumers switched and 6,000 renegotiated their agreements. In all, 40.2 % of all large consumers achieved changes in terms and conditions applying to 36 % of all annual demand.

The churn rate for other small consumers and large consumers slowed in comparison to the first post-liberalisation year (by 61 % and 32 %, respectively) while it accelerated by 9 % in the case of residential consumers. The number of large consumers renegotiating their agreements trebled to about 6,000.

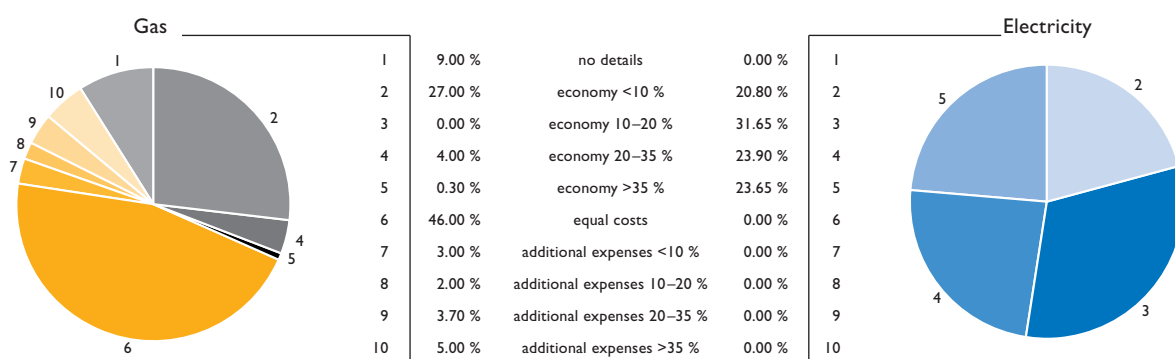
To sum up, for most consumers (especially residential consumers) both energy markets are relatively inflexible as compared to other liberalised markets. Over the first two years 1.5% of all residential consumers and some 4% of all ot-

her small consumers switched, while (in statistical terms) every large consumer either switched or renegotiated its agreement. The first post-liberalisation year showed strong similarities to the electricity market, though gas consumers were somewhat less active in seeking improvements.

Both the findings of the direct surveys with system operators and those of the random surveys with large consumers yield the conclusion that the high churning and renegotiation rates reflect the greater anticipated price concessions. Switching for its own sake or for reasons other than costs appears to play a negligible role at present. It remains to be seen to what extent large consumers will act on their professed increased willingness to change suppliers if dissatisfied.

→ Effects on energy prices in the first year of full market opening

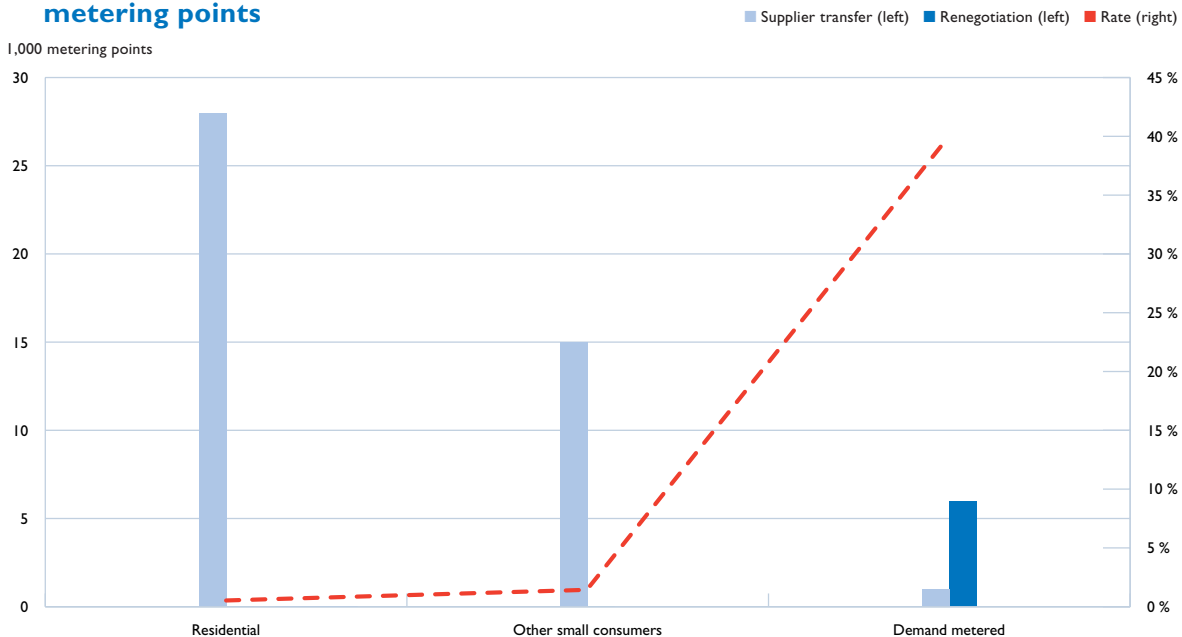
Chart 83



Source: E-Control

→ Effects on the electricity market of the second year of liberalisation: metering points

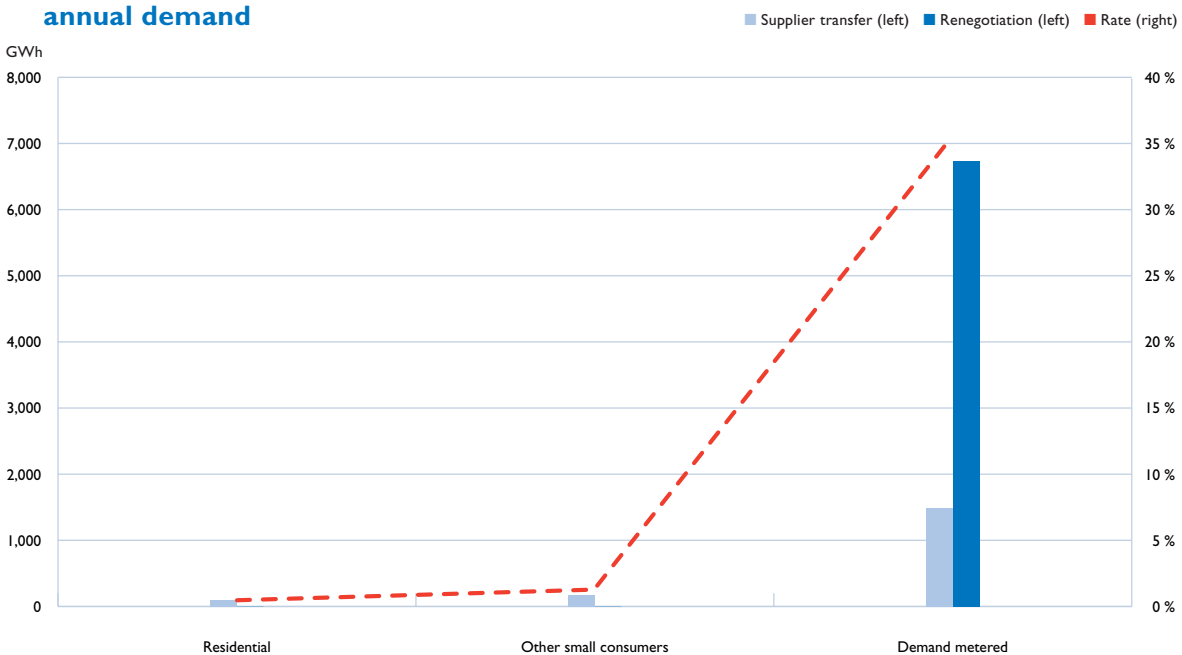
Chart 84



Source: E-Control

→ Effects on the electricity market of the second year of liberalisation: annual demand

Chart 85



Source: E-Control



## Market outcomes

### → Companies' financial performance

#### → Companies' financial performance

Over the past two years rising wholesale prices have had a favourable impact on electricity companies' financial performance. The results of companies with low generating costs (e.g. Verbund, with its hydro power plants) have registered particularly strong improvements. For instance Verbund posted a 22 % year-on-year gain in sales revenue in the first half of 2004 due to higher market prices and sales volume. Sales from areas of business apart from "others" increased.

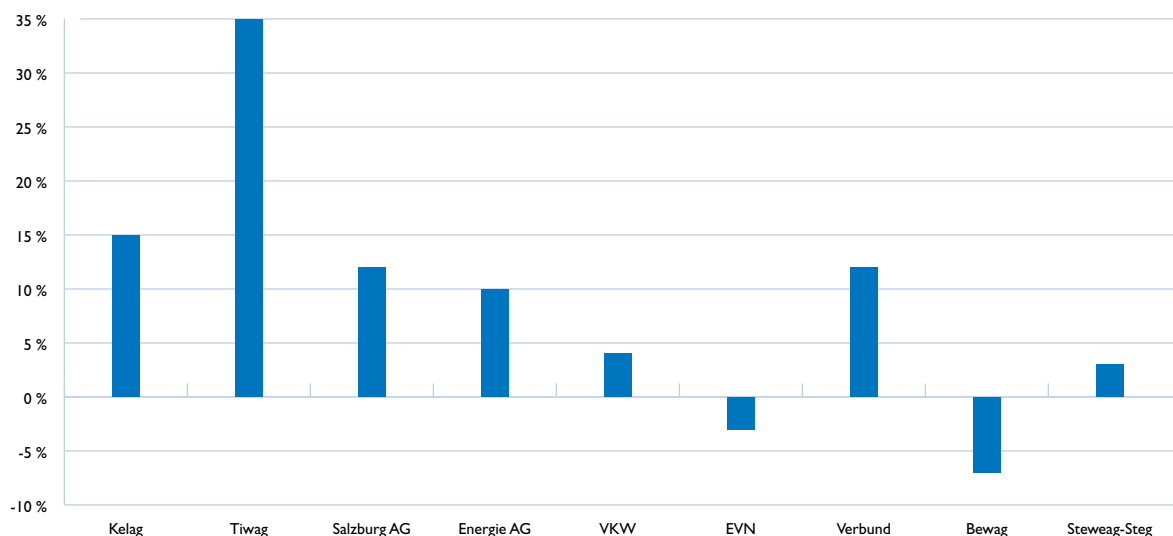
Likewise, EVN's electricity revenues were up by 10 % in the first half of its 2003–2004 financial year, mainly as a result of increased generation by its thermal power stations and higher electricity prices. However, gas revenues declined due to the transfer of the company's major customers to EconGas and to higher temperatures.

The sales revenues of most other large energy enterprises in Austria and Europe as a whole have also risen lately, most of the improvement coming from higher prices and demand growth. Thus the majority of the provincial utilities recorded increases in revenue in 2003, some of them large (Chart 86).

Verbund's stock has largely moved in step with the ATX index over the past three years (August 2001 to July 2004) (see Chart 87). It has outperformed the ATX since December 2003, making up the ground lost during the second half of that year. Since the start of 2004 the Verbund price has advanced by 56.1 % compared to 28.8 % for the ATX. The reasons for Verbund's outperformance of the market probably lie in the implementation of the Energie Austria merger as of 1 October 2004 (commencement of operations) and the positive impact on the company's results of higher wholesale prices.

#### → Percentage change in Austrian electricity companies' sales revenue, 2002–2003<sup>53</sup>

Chart 86



Source: Companies' annual reports, E-Control

<sup>53</sup> EVN's sales revenues were 2.9% down year on year in financial 2002–03. The main factor behind the decline was the loss of revenue from large consumer and trading business due to the transfer of the latter to EconGas. However the sales revenue of the remaining gas retail business rose.

EVN's stock was stronger than Verbund's at the start of the observation period. However, its performance has been mixed since February 2003. While both the ATX and Verbund have advanced strongly, EVN's share price fell back and did not begin to recover until the start of 2004. It is still below its pre-liberalisation level.

Verbund has more generating capacity than EVN, and owns a large number of hydro power stations. Stable hydro power generating costs and rising wholesale prices benefit its financial performance. Another explanation for the more positive trend is the fact that following the disposal of APC Verbund has no more final customers, and operates exclusively as a generator and trader. By contrast EVN principally serves final customers and must buy electricity on the wholesale market (exchange or OTC) to meet demand. EVN's exposure to price risk is thus greater.

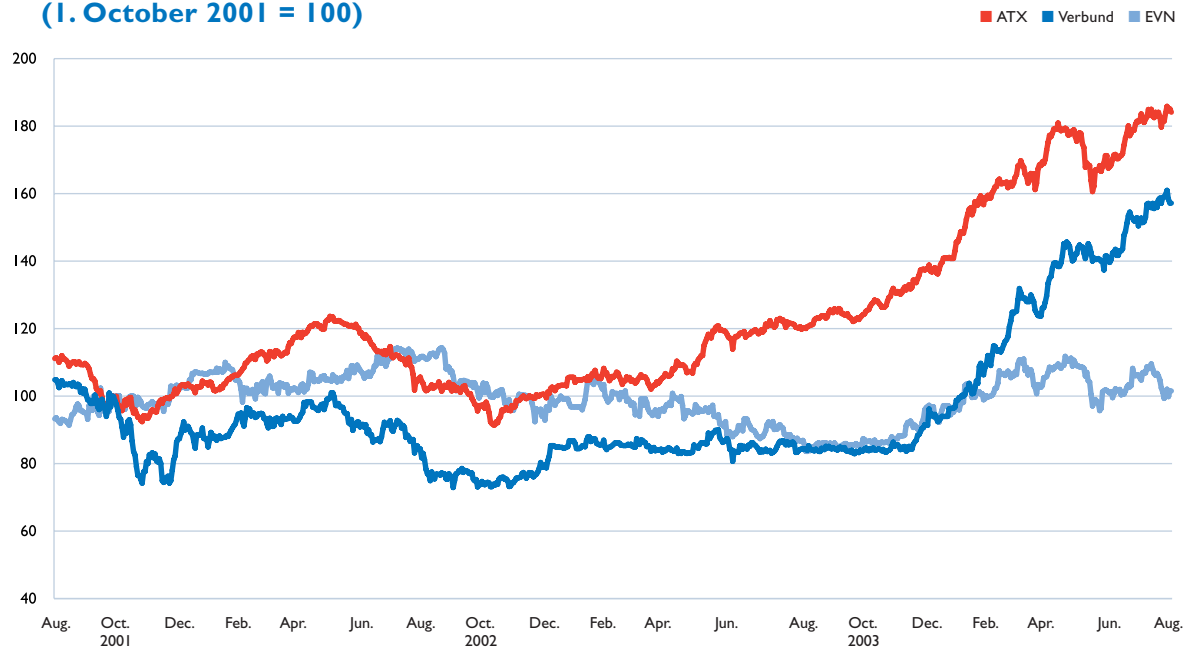
Apart from higher wholesale prices other factors are also responsible for the upturn in energy companies' share prices over the past few

years. Because most have heavy debt burdens, energy suppliers benefit from low interest rates, whereas high interest rates have a negative effect on plant amortisation periods, which are long because of the high investment costs associated with power stations and supply networks. Moreover, energy supply companies are seen as safe long-term investments as compared to businesses in other, faster-moving sectors.

As shown by Chart 88, European energy companies are expected to continue to deliver strong profits over the next two years. For instance, analysts are predicting an increase of 147 % in earnings per share for Verbund between 2004–2006. Similarly, profit expectations for EVN have improved markedly (145 % for the 2004–2006 period) as compared to the 1999–2003 trend. The fall in earnings per share from 1999–2003 is attributable to the fact that liberalisation benefited EVN later than Verbund, and to high depreciation. The slower earnings growth of other European companies over the 1999–2003 period mainly reflects acquisitions.

→ Performance of Verbund and EVN stock compared to the ATX  
(1. October 2001 = 100)

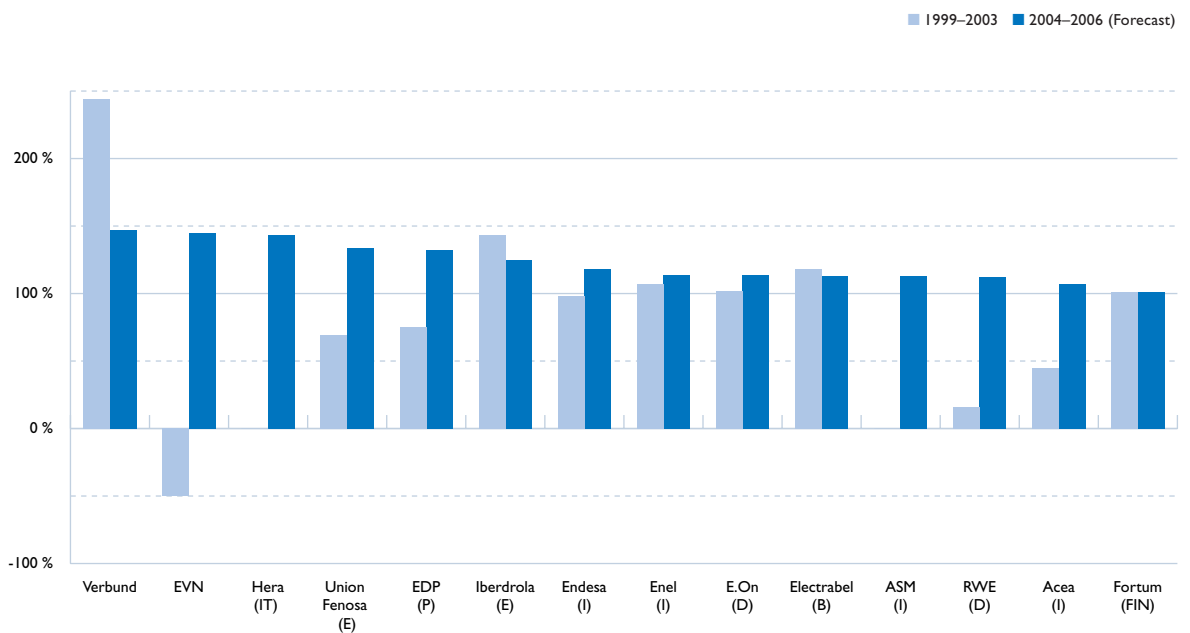
Chart 87



Sources: Verbund, EVN and Vienna Stock Exchange

→ Percentage change in electricity companies' earnings per share

Chart 88



Source: Bloomberg, cited in Wirtschaftsblatt (8 July 2004)



## Market outcomes

### → Summary and conclusions

#### → Summary

- The electricity wholesale market (bilateral and exchange based trading) has consolidated its position in Austria, Germany and Switzerland.
- Spot electricity prices rose in 2003 and stabilised in 2004; it is not yet possible to predict the effects of CO<sub>2</sub> allowance trading on electricity prices.
- There has been a sharp rise in overall retail electricity and gas prices over the past 12 months despite a further reduction in system charges.
- There are wide variations in the margins on electricity sales to residential consumers.
- Gas purchasing price trends are driven by crude oil prices.
- Electricity wholesale and gas import price reductions are only partly passed on to consumers.
- Churn rates for all categories of electricity and gas consumers are low despite the opportunities for savings, some of them considerable.
- To date 1.5% of residential and 4% of other small electricity consumers have switched suppliers.
- All the large electricity consumers have either switched or renegotiated their agreements.
- Prices are the main reason for electricity and gas consumer to switch; however willingness to change suppliers is very limited in both markets.
- Electricity companies' results have improved, partly because of rising wholesale prices.

#### → Conclusions

- Monitoring the margins of electricity and gas companies will be increasing important.
- Compliance with unbundling requirements in the electricity and gas industries needs to be monitored so as to exclude cross-subsidisation and create a level playing field for all market participants.
- Centralised provision of consumer information relevant to switching (especially relating to new connections) would stimulate competition in the electricity and gas markets.
- The transparency of commercial and industrial prices needs to be increased.
- More efficient system operation would help cut system charges.



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