

Statistics in focus

INDUSTRY, TRADE AND SERVICES

31/2006

Author

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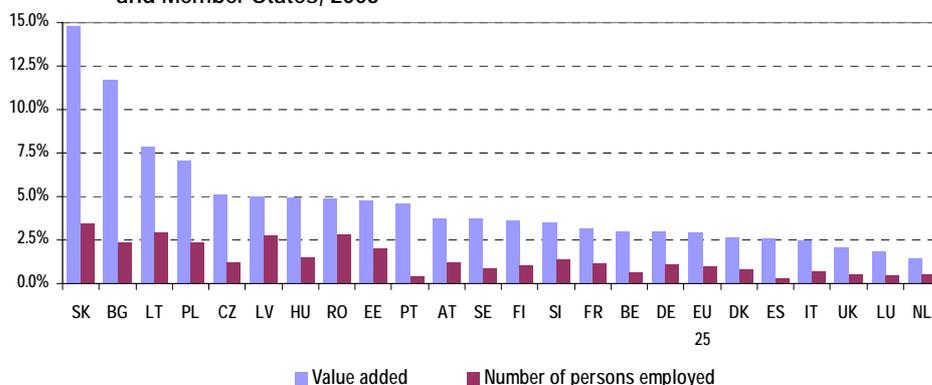
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Energy production and distribution enterprises in the EU

Overview

In 2003, the energy sector (electricity, gas and hot water supply: NACE 40*) in the EU-25, generated a turnover of approximately EUR 535 billion and was the main activity of around 16 000 enterprises. These enterprises generated a value added of EUR 139 billion, and employed over 1.1 million persons, representing respectively 2.9 % and 1.0 % of the total non-financial business economy.

Graph 1: Employment and value added in 'electricity, gas and hot water supply' (NACE 40), as % of the non-financial business economy (NACE C-K excl. J), EU-25 and Member States, 2003



SE: 2002 – CY, EL, IE and MT: data not available or confidential. Source: Eurostat (SBS)

When measuring the importance of the energy sector in a country's non-financial business economy total (Graph 1), and among the 21 Member States with data available, Slovakia was the most specialised – in terms of both value added and employment – with the industry representing 14.8 % and 3.4% respectively of its non-financial business economy. By contrast, in terms of value added, the least specialised was the Netherlands, where the industry represented 1.5 % of its non-financial business economy.

The sector was relatively more important for countries from Eastern Europe, with eight of these Member States together with Bulgaria and Romania all showing above-average shares for both value added and employment.

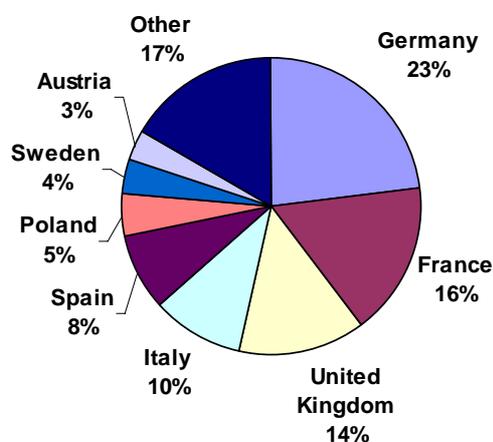
The weight of the energy sector was much heavier in the non-financial business economy in terms of value added than for employment in all of the 21 Member States with data available, which indicates relatively high apparent labour productivity (value added per person employed), when compared with the non-financial business economy average. The value added share was larger than that of employment by a factor of 10.4 in Portugal, and at the other end of the scale, by a factor of 1.8 in Latvia.

*The energy sector corresponds to NACE Rev. 1.1, Division 40: 'Electricity, gas, steam and hot water supply'. This is broken down into three Groups: 'Production and distribution of electricity' (40.1) 'Manufacture of gas; distribution of gaseous fuels through mains' (40.2) and 'Steam and hot water supply' (40.3). For electricity, the NACE Group is further broken down according to whether the activity is production (40.11), transmission (40.12) or distribution and trade (40.13), and for gas, whether the activity is manufacture (40.21) or distribution and trade through mains (40.22).

Readers should note that enterprises which are involved in other activities related to energy supply, such as: the extraction of crude petroleum and natural gas or service activities incidental to oil and gas extraction, are not covered in this publication.

Apparent labour productivity three times the industrial average

Graph 2: Main contributors to EU-25 value added in 'electricity, gas and hot water supply' (NACE 40), 2003



Source: Eurostat (SBS)

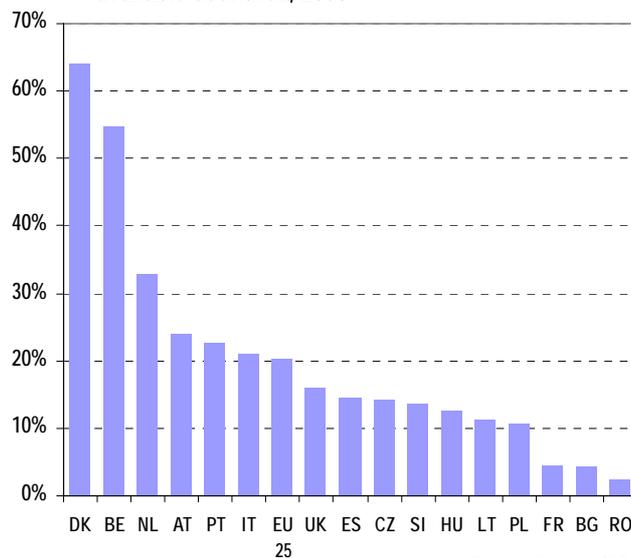
Looking at the geographic composition of EU-25 value added, Germany was the main contributor with a share of 23 %, ahead of France by 7 percentage points (Graph 2). Among the main contributing countries, shares were larger than the industrial average (NACE Sections C to E) for France (+ 3 percentage points), Poland (+ 2 points), Austria, Spain and Sweden (+ 1 point). Interestingly, however, Germany's contribution was lower than that to industry as a whole by 3 percentage points.

EU-25 apparent labour productivity in energy (value added per person employed) was EUR 122 400 in 2003 (Table 1), which was 2.5 times the industrial average (EUR 49 600). In the same year, personnel costs in energy averaged around EUR 43 200 per employee, which was a third more than the average for industry (EUR 32 600). Consequently, wage-adjusted labour productivity – which shows the

relationship between value added per person employed and average personnel costs – was 283 %, almost twice the industrial average (152 %). At the same time, the gross operating rate (gross operating surplus as a share of turnover) was around 17 % in 2003, far greater than the industrial average of 10.3 %.

Large enterprises clearly dominated the energy sector. In 2003 small and medium sized enterprises with fewer than 250 persons employed (SMEs) accounted for just 20.5 % of EU-25 value added in the energy sector, some 22 percentage points lower than the industrial average (Graph 3). Among the 14 Member States with data available, SMEs were most important in Denmark, where they accounted for 64 % of value added, and least important in France, where they generated just 5 % of value added.

Graph 3: Importance of SMEs in 'electricity, gas and hot water supply' (NACE 40), based on value added, EU-25 and available countries, 2003



Source: Eurostat (SBS)

Table 1: Main indicators of 'electricity, gas and hot water supply' (NACE 40), 2003

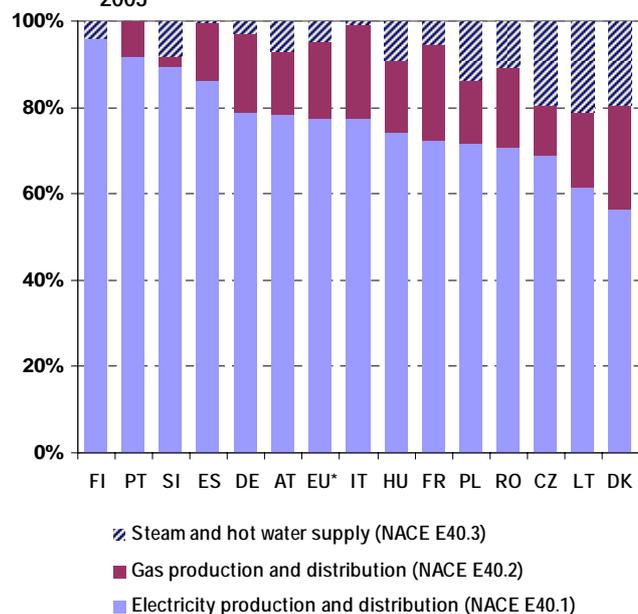
	EU-25	BE	CZ	DK	DE	EE	ES	FR	IT	LV	LT	LU	HU
Value added at factor cost - in million EUR	139 045	4 008	2 490	2 497	31 199	209	11 038	22 096	13 326	248	456	212	1 656
Persons employed	1 136 400	15 049	45 669	13 104	230 242	7 545	36 909	161 574	102 142	15 281	22 794	925	39 319
Number of enterprises	16 000*	93	672	1 891	1 384	187	2 148	2 012	1 581	276	176	68	306
Turnover - in million EUR	534 871	22 974	8 805	10 645	163 618	842	32 397	54 753	48 722	702	1 647	766	8 348
Average personnel costs - in thousand EUR	43.2	93.0	12.6	38.5	64.4	8.5	56.4	63.5	39.0	6.6**	7.8	69.2	15.8
Apparent labour productivity (value-added per person employed) - in thousand EUR	122.4	266.3	54.5	190.6	135.5	27.7	299.1	136.8	130.5	16.2	20.0	229.2	42.1
Wage adjusted labour productivity - in %	283.3	286.4	432.9	494.6	210.5	325.1	529.8	215.2	334.8	234.6**	255.5	331.1	266.1
Gross operating rate - in %	17.0*	11.4	21.9	18.9	10.0	17.2	27.9	21.6	19.3	21.3**	16.9	19.6	12.4

* rounded estimate based on non confidential data. - ** 2002 - ***2001 - ****2000 - CY, EL, IE and MT not available.

Source: Eurostat (SBS)

Electricity production and distribution largest activity in the energy sector

Graph 4: Value added in 'electricity, gas and hot water supply' (NACE 40) by sub-sector, EU* and available countries, 2003



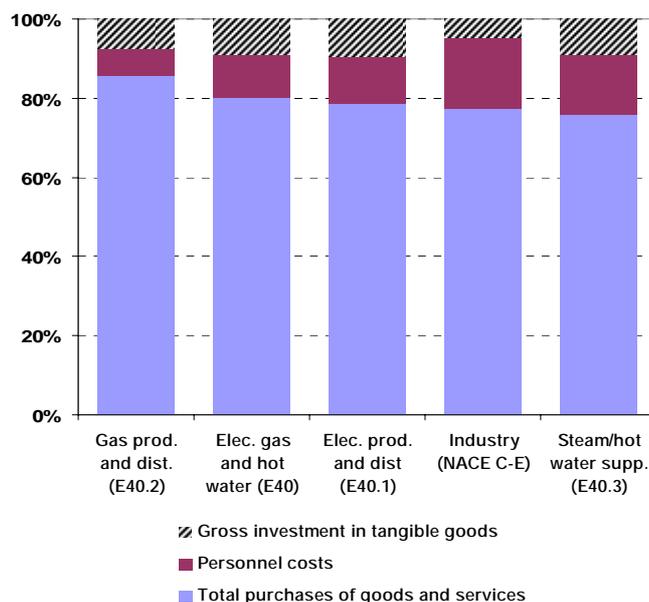
Source: Eurostat (SBS)

* EU average based on 13 Member States for which data were available and accounting for 73 % of EU-25 value added in the energy sector (NACE 40).

Electricity was clearly the largest sub-sector within the EU's energy sector. The production and distribution of electricity accounted for about 77 % of EU-25 value added in 2003 (Graph 4). Gas production and distribution followed, representing a value-added share of 18 %, leaving 5 % for steam and hot water supply.

Among the 13 Member States for which data were available, Finland displayed the highest share of electricity production and distribution (96 %) in energy value added and the smallest share of gas production and distribution (0.1 %). The smallest share of electricity in energy value added could be found in Denmark (57 %), which also showed the highest share of gas (24 %), ahead of Italy and France (each 22 %).

Graph 5: Operating and capital expenditure in 'electricity, gas and hot water supply' (NACE 40) EU*, 2003



Source: Eurostat (SBS)

* EU average based on 13 Member States for which data were available and accounting for 73 % of EU-25 value added in the energy sector (NACE 40).

In 2003, operating expenditure accounted for about 91 % of total expenditure in the EU's energy sector. This was made up of 80 % of total purchases of goods and services (including raw energy materials) and 11 % of personnel costs, while the remaining 9 % was on capital expenditure, i.e. gross investment in tangible goods (Graph 5).

The share of operating expenditure in the EU's energy sector was four percentage points less than the industrial average (95 %), notably because of a lower share of personnel costs (seven points less). Meanwhile, the shares of purchases of goods and services, and of capital expenditure were greater than

Table 1: Main indicators of 'electricity, gas and hot water supply' (NACE 40), 2003 (continued)

	NL	AT	PL	PT	SI	SK	FI	SE**	UK	BG	RO	NO****	CH***
Value added at factor cost - in million EUR	3 361	4 494	6 380	2 783	441	1 636	2 523	4 896	18 557	793	838	2 060	6 246
Persons employed	23 765	29 179	172 731	12 627	7 738	30 957	13 020	22 857	94 345	41 190	110 749	15 340	22 069
Number of enterprises	415	774	1 282	260	267	134	612	1 127	407	139	232	:	337
Turnover - in million EUR	25 951	15 894	22 620	9 464	1 440	5 137	8 074	19 018	63 037	3 598	6 749	8 109	15 752
Average personnel costs - in thousand EUR	48.2	62.7	11.3	50.7	23.2	9.9	45.4	52.2	49.1	6.06	5.0	:	:
Apparent labour productivity (value-added per person employed) - in thousand EUR	141.4	154.0	36.9	220.4	57.0	52.8	193.8	214.2	196.7	19.3	7.6	134.3	283.0
Wage adjusted labour productivity - in %	293.4	245.6	326.5	435.1	245.2	533.6	426.5	410.6	400.9	318.1	151.2	:	:
Gross operating rate - in %	8.5	16.9	19.5	22.8	18.5	25.9	24.6	19.7	22.1	15.1	4.2	17.2	29.5

2001 - *2000

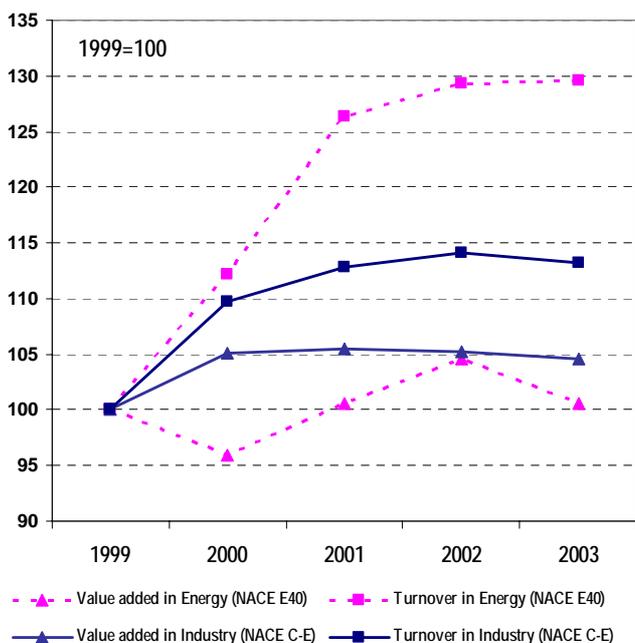
Source: Eurostat (SBS)

the industrial average, by respectively three and four points. This reflects partly the high costs involved in purchasing the raw material needed for energy production. However, this also partly reflects structural changes within the sector.

The gas sub-sector displayed the highest proportion of purchases of goods and services and the lowest proportion of personnel costs, while the reverse was true for steam and hot water supply. The share of capital expenditure did not vary much but was lowest in the gas sub-sector (7 %).

Turnover in energy grew much faster than the industrial average

Graph 6: Evolution of turnover* and value added in 'electricity, gas and hot water supply' (NACE 40) and Industry, EU-25, 1999-2003



*Turnover in current non-deflated prices.

Source: Eurostat (SBS)

Between 1999 and 2003, turnover in the energy sector increased by 29.5 %, much higher than the average industrial growth of 13.2 % (Graph 6). This is mainly due to the different evolution between 2000 and 2001 when turnover in the energy sector increased by 12.6 % against just 2.8 % in industry.

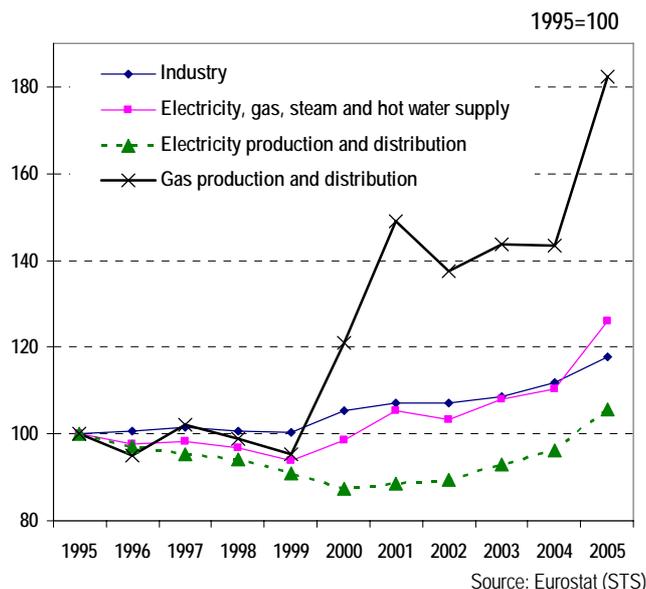
The size of turnover in an enterprise depends mainly on the quantities sold and the price received per unit. The latter reflects a number of factors such as demand, raw materials and other costs of production, and taxes levied on the products (excluding deductible taxes such as VAT). Moreover, total turnover for a specific sector is also influenced by structural changes within the sector.

According to statistics from Eurostat's energy domain, primary energy production in the EU-25 decreased by 1.9 % between 1999 and 2003, while final energy consumption actually grew by 5.5 %, implying an increased dependency on energy imports. This is also indicated by the fact that value added generated by the energy sector in 2003 remained approximately at the same level as in 1999, as shown in Graph 6.

Instead of resulting from increased production volumes, part of the growth in turnover between 1999 and 2003 seems to be due to an increase in energy prices. Based on the domestic output price index, prices in the energy sector rose approximately the same as the industrial average (+4.9 %) between 1999 and 2000 (Graph 7).

However, between 2000 and 2001, while the average price growth for industry slowed down to just 1.9 %, the growing trend continued in energy (+7 %). This is mostly due to the sharp increase in gas prices between 1999 and 2001 (+ 56 %), which is linked with the rise in crude oil prices. Between these same three years, the domestic output prices index for electricity, by contrast, declined overall by 2.7 %.

Graph 7: Evolution of domestic output prices in 'electricity, gas and hot water supply' (NACE 40), 1995-2005



Source: Eurostat (STS)

Moreover, the increase in turnover also seems to be connected with structural changes, partly occurring as a result of the liberalisation of the energy sector. Already underway in some Member States in the latter half of the nineties, liberalisation was given further momentum with new electricity and gas directives adopted in 2003¹. The aim of this legislation is to open up internal electricity and gas markets for all consumers, notably through 'unbundling', i.e. unlinking the activities of network operation (transmission, distribution and storage) from production and supply.

¹ Directive 2003/54/EC and 2003/55/EC of the European Parliament and of the Council of 26 June 2003.

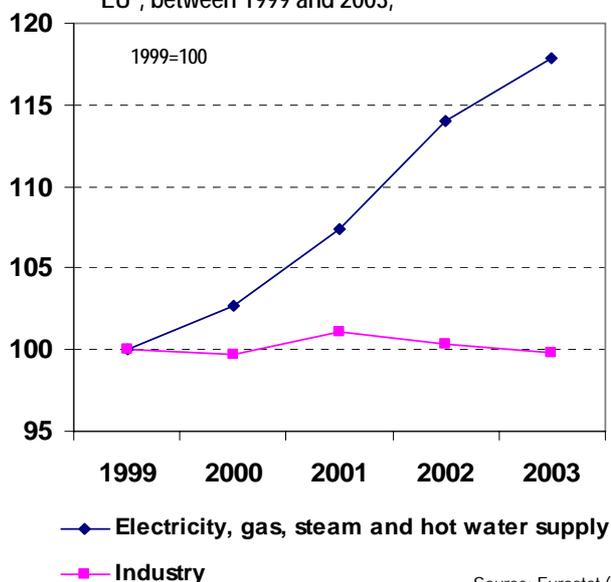
Such a separation would indeed cause total turnover to increase, even if production or value added remained unchanged, simply because of sales between different units. Correspondingly, this would also be accompanied by a similar increase in the purchases of goods and services. In effect, the evolution of total purchases was also very similar to that of turnover in the energy sector between 1999 and 2003.

Readers should note that the general trend in increased specialisation and outsourcing (where enterprises increasingly focus on their core tasks and purchase other services from external service providers) would also give rise to a similar situation. This could possibly explain in part why there was a similar but less significant situation for industry as a whole.

Number of energy enterprises grew significantly while industrial total stagnated

Between 1999 and 2003, the number of enterprises active in the EU-25's energy sector increased by about 18 %, whereas the industrial total, by contrast, fractionally dropped by 2003 (Graph 8). In absolute terms, the largest growth was in Spain where the number of enterprises grew from 1 172 to 2 148.

Graph 8: Evolution of the number of enterprises in 'electricity, gas and hot water supply' (NACE 40) and industry, EU*, between 1999 and 2003,



*EU average based on available, non-confidential data for 18 Member States accounting for 85 % of total EU-25 energy enterprises in 2003.

It should be noted that this growth in the number of enterprises includes both 'real' enterprise births and entries into the population due to mergers, break-ups, split-offs, changes in the main activity of existing enterprises or other restructuring of the existing set of enterprises.

An examination of business demography data provides information on 'real' enterprise births. In Spain, for example, the rate of 'real' enterprise births – as a proportion of the total number of energy enterprises – was consistently one of the highest of the Member States throughout the period, rising from 8.9 % in 1999 to 12 % in 2003, constantly exceeding the country's industrial average. Based on data available, the highest rate recorded was for Luxembourg: of the total number of energy enterprises recorded in 2003, 56.8 % were born in

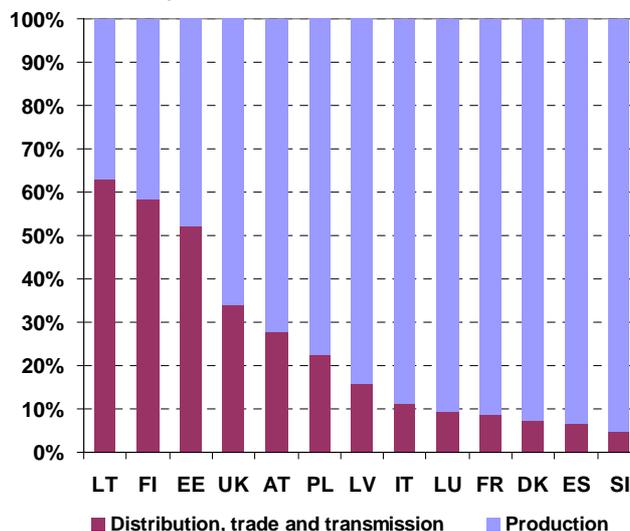
that year, compared with the country's industrial average of 8.7 %.

Looking at the size of these newcomers between 1999 and 2003, there was a higher share of new small enterprises in energy, compared with the industrial average. The rate of new enterprises was generally highest for one-person enterprises and for enterprises employing between 1 and 4 persons. New enterprises with 5 persons or more, and notably those employing 20 persons or more were far rarer.

One of the effects of market liberalisation is the creation of new retailers, which are not necessarily involved in generating or importing energy. As shown in the Statistics in Focus "European electricity market indicators of the liberalisation process" (Environment and Energy 6/2006), the number of electricity suppliers is generally highest where full liberalisation has already taken place.

This said, generally only a tiny fraction of these suppliers, if not just one company, can claim a significant market share. Germany, for example, registered 940 retailers but only four reached a notable size (at least 5% of the total quantity of electricity supplied at national level). Similarly, 166 electricity retailers were counted in France, but only one could be considered as major. (Data not shown.)

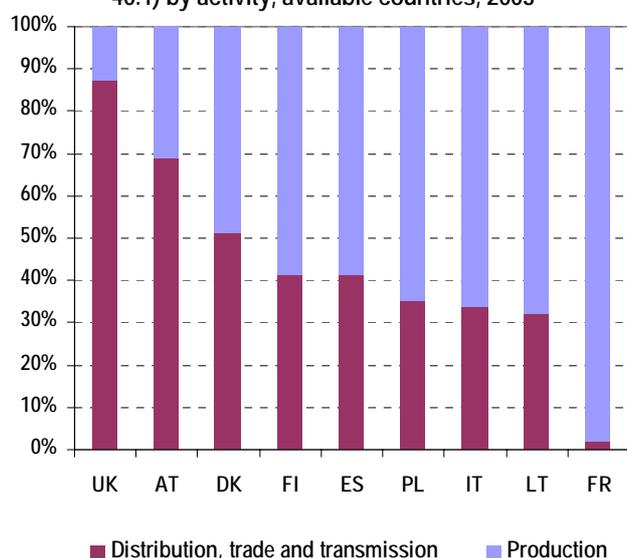
Graph 9: Breakdown of electricity enterprises (NACE 40.1) by activity, available countries, 2003



As shown in Graph 9, the main activity for most enterprises in the electricity sub-sector was electricity production in 2003. In 11 out of 14 Member States, for which data were available, over 65 % of the number of electricity enterprises were active in production, in six of these, shares reached upwards of 90 %. Conversely, in Lithuania, Finland and Estonia, shares of enterprises mainly engaged in distribution, trade and transmission reached between around 50 % and 60 %.

However, the activity of distribution, trade and transmission was more important in terms of value added. In 2003, the share of this activity accounted for over 30 % of the value added generated by the electricity sub-sector in eight Member States, reaching over 50 % in Austria and Denmark and as much as 87 % in the UK (Graph 10).

Graph 10: Breakdown of value added in electricity (NACE 40.1) by activity, available countries, 2003*



*FR: 2002 data.

Source: Eurostat (SBS)

Distribution and trade was even more important in the gas production and distribution sub-sector (NACE 40.2, data not shown). In nine Member States for which data were available, trade and distribution accounted for extremely high shares of value added, of between 96 % and 100 %.

The degree of market opening, defined as the percentage of the total electricity or gas consumed by customers with the freedom to choose supplier has generally increased over time. As shown in Table 2, for those Member States for which data are available, the degree of market opening either increased significantly between 2001 and 2005, or was already 100% in 2001. Big changes were recorded particularly for the main contributing countries of Spain, France and Italy, with full liberalisation being achieved in some cases.

By September 2005, full market liberalisation for both industry and households was completed in 10 Member States for electricity and in seven Member States for gas. Denmark, Germany, Spain, the Netherlands, Austria and the UK had fully liberalised markets for both electricity and gas.

Table 2: Evolution of degree of market opening in gas and electricity markets between 2001* and 2005**

	Electricity		Gas	
	2001	2005	2001	2005
Belgium	35%	90%	59%	90%
Czech Republic	:	74%	:	25%
Denmark	90%	100%	30%	100%
Germany	100%	100%	100%	100%
Estonia	:	12%	:	95%
Greece	30%	62%	:	:
Spain	45%	100%	72%	100%
France	30%	70%	20%	70%
Ireland	30%	100%	75%	86%
Italy	45%	79%	65%	100%
Cyprus	:	35%	:	:
Latvia	:	76%	:	0%
Lithuania	:	74%	:	90%
Luxembourg	:	84%	51%	80%
Hungary	:	67%	:	66%
Malta	:	0%	:	:
Netherlands	33%	100%	45%	100%
Austria	100%	100%	49%	100%
Poland	:	80%	:	72%
Portugal	30%	100%	:	:
Slovenia	:	77%	:	91%
Slovakia	:	79%	:	72%
Finland	100%	100%	100%	:
Sweden	100%	100%	47%	95%
United Kingdom	100%	100%	100%	100%

Source: Eurostat (Energy)

*Source for 2001 data: 'First benchmarking report on the implementation of the internal electricity and gas market', Brussels, (3.12.2001). **Source for 2005 data: Statistics in focus 'European electricity market indicators of the liberalisation process 2004-2005' (Environment and Energy, 6/2006) and 'European gas market indicators of the liberalisation process, 2004 - 2005' (Environment and Energy, 8/2006).

However, reflecting the situation up to 2005, liberalisation, and notably the 'unbundling' of network activities (transmission, distribution and storage) from production and supply, has neither been as fast nor as thorough as the European Commission had advocated¹.

Among the concerns raised is that concentration in numerous markets remains high and that the industry has been further consolidated since the start of the liberalisation process. The Commission points for example to the recent decrease in genuine newcomers to the market and that only a very limited share of new electricity generation projects had been commissioned by non-incumbents.

¹ Report on progress in creating the internal gas and electricity market', 15.11.2005, COM (2005) 568 final.

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

DATA SOURCES

The source of all figures presented is Eurostat (unless specifically stated otherwise). Most data sources are continually updated and revised where necessary. This publication reflects the state of data availability in Eurostat's reference database as of June 2006.

Structural Business Statistics (SBS) is the main data source for this publication. Two main SBS data sets have been used: annual enterprise statistics and annual enterprise statistics broken down by size classes. These and other SBS data sets are available under theme 'Industry, trade and services' on the Eurostat website <http://ec.europa.eu/eurostat> (select 'Data' / 'Industry, trade and services' / 'Horizontal view' / 'Structural Business Statistics'). Selected publications, data and background information are available in the section dedicated to European Business, located directly under the theme 'Industry, trade and services' on the Eurostat website.

Short-Term Statistics (STS) were used to complement SBS data with information on time series development based on: the industrial production index, which shows the evolution of value added at factor cost at constant prices; and the domestic output price index, which shows the average price development of goods and related services.

Energy Statistics on production, consumption, trade and degree of market opening were also used.

COUNTRIES

This publication covers the European Union, including the 25 Member States (EU-25): Belgium (BE), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Greece (EL), Spain (ES), France (FR), Ireland (IE), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK). Also included are the Candidate Countries, EFTA and EEA countries with data available: Bulgaria (BG), Romania (RO), Switzerland (CH) and Norway (NO).

EU-25

EU-25 aggregates include estimates for missing components where necessary. EU-25 aggregates from the SBS data set was supplemented by rounded estimates based on non-confidential data where necessary and appropriate. Some differences may exist between aggregates and sub-components due to the rounding. In some cases when no EU totals are available, averages of available countries are presented.

EXCHANGE RATES

All data are presented in ECU/EUR terms, with national currencies converted using average exchange rates prevailing for the year in question.

SYMBOLS

“.” not available or confidential.

SECTORS

Statistics are presented by sectors of activity according to the NACE Rev. 1.1 system of classification. Comparisons are made with the whole non-financial business economy and/or total industry (NACE Sections C-E). The **non-financial business economy** includes Sections C (Mining and

quarrying), D (Manufacturing), E (Electricity, gas and water supply), F (Construction), G (Wholesale and retail trade), H (Hotels and restaurants), I (Transport, storage and communication) and K (Real estate, renting and business activities). Note that for these comparisons Cyprus excludes K73, and Ireland and Norway exclude Section E.

OBSERVATION UNIT

The observation unit is the enterprise. An enterprise carries out one or more activities at one or more locations. Enterprises are classified into sectors (by NACE) according to their main activity. The enterprise should not be confused with the local unit, which is an enterprise or part thereof situated in one geographically identified place.

STRUCTURAL BUSINESS STATISTICS VARIABLES

Variables are defined according to Commission Regulation No 2700/98 and include:

Number of enterprises

The number of enterprises active during at least part of the reference period.

Number of persons employed

The total number of persons who work in the observation unit, as well as persons who work outside the unit who belong to it and are paid by it. It includes working proprietors, unpaid family workers, part-time workers, seasonal workers etc.

Value added at factor cost

The gross income from operating activities after adjusting for operating subsidies and indirect taxes (including value added tax).

Turnover

The totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties.

Average personnel costs

Personnel costs are the total remuneration, in cash or in kind, payable by an employer to an employee for work carried out. This is divided by the number of employees (paid workers), which includes part-time workers, seasonal workers etc, but excludes persons on long-term leave.

Apparent labour productivity

This is a simple indicator of productivity calculated as value added divided by persons employed.

Wage adjusted labour productivity (%)

Value added divided by personnel costs, after the latter has been divided by the share of employees (paid workers) in the number of total persons employed. It can also be calculated by dividing apparent labour productivity by average personnel costs.

Gross operating surplus

The gross operating surplus is the surplus generated by operating activities after the labour factor input has been recompensed. It can be calculated from the value-added at factor cost less the personnel costs.

The gross operating rate (%)

This is an indicator of profitability where the gross operating surplus is related to the turnover generated.

Purchases of goods and services

All goods and services purchased for resale or consumption in the production process, excluding capital goods the consumption of which is registered as consumption of fixed capital.

Gross investment in tangible goods

All new and existing tangible capital goods, whether bought from third parties or produced for own use, having a useful life of more than one year including non-produced tangible goods such as land.

Further information:

Data: [EUROSTAT Website/Home page/Industry, trade and services/Data](#)

Industry, trade and services

Industry, trade and services - horizontal view

Structural Business Statistics (Industry, Construction, Trade and Services)

Annual enterprise statistics

Annual detailed enterprise statistics on electricity, gas and water (part of Annex 2) - (NACE : E)

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