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REPORT FROM THE COMMISSION

TO THE COUNCIL, THE EUROPEAN PARLIAMENT  
AND THE ECONOMIC AND SOCIAL COMMITTEE

**on the operation of Council Directive 90/377/EEC  
concerning a Community procedure to improve the transparency of gas  
and electricity prices charged to industrial end-users**

(submitted by the Commission pursuant to Article 8  
of Council Directive 90/377/EEC of 29 June 1990)

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## SUMMARY AND GENERAL APPROACH

This summary report on one hand the operation of the Price Transparency Directive is the second of its kind<sup>(\*)</sup>. It analyses implementation of Council Directive 90/377/EEC of 29 June 1990 and on the other hand it compares price evolution. It was written to comply with Article 8 of the Directive.

Part One of this report, concerning implementation of the Directive, describes the difficulties encountered by the Commission with its application. The Member States will be asked individually to improve the conditions for collecting the data to ensure full compliance with the submission dates. The increasing number of countries participating in the survey makes it less and less acceptable for negligence or tardiness on the part of a single Member State to block publication of the results.

The Commission will examine, with the experts on the Working Party on Energy Prices, the improvements to be made to operation of the Directive based, in particular, on the lessons learned from the price comparison. The accent will be placed on obtaining more reliable and more representative prices.

In response to the difficulties encountered with obtaining the breakdown referred to in point 3 of Article 1 of the Directive, the report contains new proposals to redefine the limits for application of the consumer categories. A particular effort will also have to be made to define the content of the notifications on the price systems, as provided for in point 2 of the same Article.

As regards the marker prices, the Commission draws the Member States' attention to the urgent need to reach agreement within the group of experts on the definition of the demand characteristics of the notional consumer to which the marker price applies, in accordance with the second paragraph of point 15 of the Annex on electricity, and to meet the obligations imposed by points 16 to 21 of the same Annex concerning notification of the representative special factors and price reductions, of the number of consumers and of total consumption by category. Without these details, the marker prices will not reflect the prices actually charged to the relevant consumers and will be unusable for analysis purposes.

As in the past, the SOEC will continue to play its information role for the Directive. It will study means of checking the reliability of the data obtained from the communications provided for by the Directive and, where necessary, conduct direct surveys of certain consumers.

The geographical coverage of the Directive has improved, particularly in Germany and with the extension to the new Member States, although gaps remain in other cases.

Electricity prices are transparent enough, but gas prices to the biggest consumers, by contrast, have become less transparent. The Commission will ask the experts to study the causes in order to remedy this deterioration.

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(\*) See COM(93)666 final of 16 December 1993.

The Commission is also concerned about the drift towards making the exemption on the grounds of commercial confidentiality the rule, to the detriment of information. In particular, there has been a fall in price notifications from the locations where liberalization has produced a proliferation of suppliers and the ensuing fragmentation of the market. More and more often no single supplier musters the three consumers required in a given category in order to lift the exemption on confidentiality grounds and publish the corresponding price. It should be made clear that the three consumers rule applies, of course, to the location, not supplier. The Commission warns against this drift since transparency remains essential, whatever the regulatory framework or howsoever the market is organized.

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Part Two of the report analyses the price data collected by the SOEC under the Directive. It is restricted exclusively to the gas and electricity prices submitted under Article 8 of the Directive.

In the context of the negotiations in progress on the internal gas and electricity market, the political importance of this analysis lies in the fact that it answers many questions arising, particularly on electricity and gas price trends and any possible convergence.

In this respect, although no significant price changes have been recorded since the last report, sharp currency fluctuation has brought far-reaching changes to the relative prices between the Member States.

This part of the report examines the price movements in each Member State in national currency first, in order to establish the trend, and then makes comparisons in terms of purchasing power standard (PPS), which provides a means of removing the distortion caused by fluctuations in currency parities. The trends observed from the PPS comparisons closely match the comparisons of the ECU prices. Tables setting out the ECU prices are annexed.

Throughout the Community electricity prices fell slightly, in real terms, between January 1985 and January 1995. Gas prices, by contrast, fell considerably, following the world price trend for energy in general and for oil products in particular.

The falling electricity prices reflect the productivity gains obtained from industrial restructuring, the introduction of new generating technologies, such as combined heat and power production, and other new marketing and management methods (demand side management and integrated resources planning).

With the exception of Germany, a marked convergence of gas prices was observed in all Member States. By contrast, the spread of electricity prices has widened, which could indicate greater inertia in the electricity industry than in the gas sector in response to competition. However, in several Member States the biggest typical consumers qualify for low electricity prices which are relatively similar. These prices are closer together in central, frontier regions of the Union, where the tariffs and price structures seem to be designed to offer competitive prices to big consumers. Beyond doubt, this must be seen as one result of the pressure exerted on electricity generators' pricing by the opening-up of the internal market in industrial products.

In some cases, this has been done without taking account of the generator's real cost structure and, hence, to the detriment of small consumers, as indicated by the widening gap between the maximum and minimum prices in the sample. This cross-subsidization is even more marked in the gas industry, where the gaps between the maximum and minimum prices in the sample are wider than for electricity. They would have been wider still had data been available for the largest consumer in the sample.

At Community level, the interval between the maximum and minimum prices for the entire sample of industrial users gave a factor of 5 for electricity and of 6.5 for gas in January 1995. This is bigger than can be reasonably explained by economic causes and can only stem from national and even regional fragmentation of the markets. This phenomenon is particularly marked in Germany, where the price spread is even wider than in the Community as a whole in the case of gas and covers the whole of the top half of the Community sample in the case of electricity. In some cases, this situation is also a sign of uneconomic investments or deficient industrial structures.

The publication of prices provided for by the Directive possibly prompted adjustments of prices too far from the norm. It does not seem capable, on its own, of bringing about any significant convergence of prices until the grid-based energy markets are opened up to competition. These conclusions illustrate the role which price transparency can play in detecting anomalies likely to hamper achievement of the energy policy objectives and completion of the internal energy market or to damage consumers' interests.

**The Commission will continue its efforts within the group of experts to improve price transparency and obtain the exhaustive breakdown of consumers by categories in every Member State and full submission of the data concerning the marker prices, with a view to making the tariff systems, the supply conditions and the format of the price data more homogeneous to allow optimum comparability. This approach is in line with the conclusions reached in the first report on operation of the Directive, which still apply (cf. p. 6 of document COM(93)666 final of 16 December 1993).**

**It will also examine the need to amend the Directive in order to clarify the concepts of "consumer categories" and "location" and improve the geographical coverage of the Directive.**

## PART ONE

### IMPLEMENTATION OF THE DIRECTIVE

#### 1. Content of the Directive

Council Directive 90/377/EEC of 29 June 1990 established a procedure requiring the Member States to communicate to the Statistical Office of the European Communities (SOEC) the prices of gas and electricity to industrial users, the price systems in use, the breakdown of consumers and the corresponding volumes.

- The data on prices, price systems and tariffs are assembled on 1 January and 1 July each year and sent to the SOEC for publication in May and November respectively. These data have been collected following the procedure laid down in the Directive since 1 July 1991.
- The breakdown of industrial consumers and the corresponding volumes are submitted every two years. These data are covered by the rules on commercial confidentiality and may not be published directly. They enable the SOEC to calculate the weighted average prices and the national and Community price indices, which may be published.

## **2. Legal aspects**

### **2.1 Implementation**

Every Member State has incorporated the Directive into its national law, except Spain, against which an infringement procedure has been initiated for this reason. Nevertheless, this gap in the legislation has not prevented regular submission of full data by the Spanish administration. Details of the national measures adopted to implement the Directive are set out in Annex 1.

### **2.2 Amendments to the Directive**

The Commission has started the procedure to amend the Annexes to the Directive to transfer Berlin from the North/Central Zone to the Eastern Zone. In practice, the notifications for Berlin have taken this into account since 1 July 1993. The amendment is about to be published in the Official Journal.

## **3. Extension to new countries**

### **3.1 The new Member States**

The accession of three new countries to the European Union has prompted the addition of new locations to the Annexes to the Directive. This automatic technical adjustment was contained in the Act of Accession. The locations are Vienna, Upper Austria and Tyrol in Austria and the country as a whole (national price) in the case of Finland and Sweden. It is fair to ask how representative these national prices are for these two competitive markets. The first notifications were submitted to the SOEC by the dates stipulated.

### **3.2 European Economic Area**

The Treaty on the European Economic Area likewise provides for submission of the data provided for by the Directive to the SOEC. In practice, only Norway is under this obligation, as both Iceland and Liechtenstein are exempted. Norway has started to transmit data to the SOEC already. The data for the enlarged Community plus Norway will be given in forthcoming SOEC publications.

### **3.3 Central and Eastern European countries**



The Commission's White Paper on approximation of the legislation of the countries of Central and Eastern Europe provides for applying the most important Community legislation on energy to these countries. The Directive on the transparency of gas and electricity prices is one of the key measures mentioned.

#### 4. Operation of the Directive

Collaboration between the SOEC and the national bodies responsible for collecting the data in the Member States has been satisfactory. The national experts have been tackling the practical problems created by the technical and commercially sensitive nature of the work with a will to succeed, although this does not necessarily mean that the solutions offered have always been the fastest or most satisfactory.

##### 4.1 Price data

###### 4.1.1 Evaluation of the situation

All the data on electricity prices have been received and published, except in the case of the United Kingdom, where full data are available for London only. In the case of gas, it is becoming increasingly difficult to obtain data on the biggest typical consumers. The SOEC had received only two figures for the entire European Union in January 1995. Also, the submission dates set in the Directive are not always observed, leading to delays in publication of "Statistics in focus" (formerly "Rapid reports").

###### 4.1.2 Marker prices

The marker prices required by Part II of the electricity annex to the Directive apply to consumers with maximum demand above the volume set for typical reference consumers (i.e. above 10 MW). They apply to three categories of industrial consumer with maximum demand in the region of:

- 25 MW, covering consumers with maximum net demand of between 17.5 and 37.5 MW,
- 50 MW (maximum net demand of between 37.5 and 62.5 MW), and
- 75 MW (maximum net demand of between 62.5 and 75.0 MW).

These marker prices are available from nine Member States but not from Denmark, Ireland and Luxembourg, which have fewer than the three consumers in each category provided for in the Directive. Member States' attention is drawn to the fact that once the number of consumers in any category reaches three (the point at which the confidentiality clause ceases to apply), submission of the data becomes compulsory with effect from the next submission date, without any need for a reminder from the SOEC.

Some Member States have yet to define the supply characteristics which apply to the marker price (load factor, distribution between peak and off-peak periods, etc.). Without these details, the SOEC is unable to guarantee that the data are homogeneous. The same applies to the special factors specified in paragraph 17 of the electricity annex which may be applied to reduce prices and of which

notification must be given as provided for in paragraph 18 of the Annex. The Commission departments concerned will examine, with each Member State concerned, the obstacles to regular submission of this information and ways of improving the quality of the information published.

#### 4.1.3 Application of the rules on confidentiality

The growing difficulties encountered in certain Member States with collection of the prices stem largely from misapplication of the rules on confidentiality in paragraph 20 of the Annex on gas and paragraph 19 of the Annex on electricity. In practice, the immediate consequence of liberalization of a national electricity or gas industry is to increase the number of transactions with different suppliers in a given region, thus making it increasingly difficult to find three consumers supplied by the same distributor. It must be remembered that the Directive stipulates that there must be at least three consumers per category in the Member State or region concerned, but makes no mention of extending this clause to distributors. Were this rule applied, no prices could be communicated from regions where there are several distributors each with fewer than three clients in any one category.

By way of example, of the four locations selected in the United Kingdom, only London provided a full set of electricity prices in January 1995. Real price trends (in purchasing power standard (PSS)) in London show a general reduction from Ia to Ig<sup>1</sup> between 1990 and 1995 (Ih and Ii were not submitted for January 1990). This ranges from a maximum reduction of 20.8% in the case of Ic to 12.1% for Ig, 8% for Ia and Ib, and around 4% for Id and If. However, comparison with the few comparable data available for the other locations reveals different trends: Leeds reported increases of 6.2% for Ia and 9% for Ib and a reduction of just 1.8% for Id and of 9.5% for Ig. In Birmingham prices generally increased, except for a 17.3% reduction for Ig. In Glasgow there was an 11% increase for Ia and Ib, the only consumers for which prices have been submitted since July 1994. A particular effort will have to be made at these locations to meet the requirements of the Directive.

In the Member States with a competitive market on which prices are fixed freely, a national average price fails to reflect the diversity of the prices or to attain the principal objective declared in the first recital of the Directive, which states that "transparency, to the extent that it reinforces the conditions ensuring that competition is not distorted in the common market, is essential to the achievement and smooth functioning of the internal energy market." This implies that a sufficient number of price surveys are needed to make it possible to check that these conditions have indeed been met. The Working Party on Energy Prices will examine, in concertation with the Commission, means of supplementing the price data without endangering the undertakings' trade secrets.

#### 4.1.4 Breakdown of consumers and the corresponding volumes

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<sup>1</sup> Cf. Annex 2, page 28.

The breakdown of consumers and the corresponding volumes provided for in point 3 of Article 1 of the Directive creates problems because in some Member States the structure of the undertakings' customer files allows no such breakdown.

As the Directive provides no definition of the categories of consumption, the SOEC attempted to align them on the typical consumers (see the note from the SOEC to participants in the survey concerning application of Directive 90/377/EEC). However, it must be emphasized that Article 1 gives no definition of the categories and does not preclude setting other limits for the categories covered by the breakdowns. As experience has shown that it is extremely difficult to make the categories coincide with the typical consumers, there is nothing to prevent the Commission from proposing re-examining this point within the working party in order to find a formula for obtaining satisfactory information without impairing transparency.

In practice, although point 3 in Article 1 clearly defines the consumers as those defined in the annexes, it does not say what is meant by breakdown of consumers or what the limits are for the individual categories. Consequently, the Commission considers that the data provided for in point 3 of Article 1 could equally well apply not to the typical consumers (who, by definition, cannot be taken as the limits for the categories) but to other types of sale (for example, to small, medium-sized and big industrial undertakings), which would enable the SOEC to calculate the average selling prices. This assumes submission of the volumes marketed in each category and of the corresponding revenue. The Commission will put this interpretation to the Member States within the Working Party on Energy Prices in order to ensure the earliest possible introduction of these notifications, which are essential for calculation of the weighted prices and of the national and Community price indices.

#### 4.1.5 Verification of the data

One loophole often pointed out is the lack of means for the SOEC to check the accuracy of the information received. As part of its task of observing the energy market, the Commission could consider the possibility of enlisting specialists to conduct random surveys of consumers in order to check the accuracy of the prices collected.

#### 4.1.6 Definition of the locations

In order to reflect consumers' real position as accurately as possible, the prices are recorded at a single location wherever possible rather than giving the average prices per country. These locations can be a city, conurbation or distribution network, as appropriate.

The choice of location is based on how representative it is, in terms of population, economic importance, even geographical coverage of the country, different tariff districts and harmonization with the locations used for the prices of other energy sources to allow comparisons. Consideration could be given to including this definition in the annexes to the Directive, where appropriate.

#### 4.2 The price systems

Although the notifications of the price systems are regular enough, the transparency of the price systems, on the other hand, should be improved. In particular, analysis has shown that the standards of information are not the same in every Member State. The SOEC has published guidelines on ways of making the data supplied more consistent, with the cooperation of the experts on the working party. The tariff and price-setting arrangements vary widely from one location to another. Sometimes the prices are based on tariffs, sometimes on standard contracts containing terms allowing a degree of flexibility.

## 5. **Publication of results**

The information collected by the SOEC under the Directive is published in the "Rapid reports: Energy and industry" series and, since 1995, in the "Statistics in focus" series. Five yearbooks on energy prices have also been published in series 4C (energy and industry) since the Directive entered into force. See Annex 3 for a list of publications.

The energy prices yearbooks cover a wider field than the Directive. They provide long time series placing the electricity and gas prices to domestic and industrial users in their historical context, together with series covering all fuels, particularly coal, heating gas oil and residual fuel oil, with which electricity and gas compete. They also contain abundant information on the methods and units used and on the incidence of taxation on these products. Finally, they provide useful information on consumer price index and GDP trends in the Member States.

## PART TWO

### ANALYSIS OF RESULTS

#### Price situation and trends

#### 6. Method employed

##### 6.1. Choice of measurement units

Two reference units can be used for price comparisons between Member States: the ECU or the PPS (purchasing power standard). Each has its own merits, depending on the objective of the comparison.

The PPS is a reference unit based on the purchasing power parities between the different national currencies, irrespective of variations in currency parity. The purchasing power parities are obtained from the average price ratios between the different countries for the same basket of goods and services. These parities are scaled to keep the value of the Community's GDP the same in PPS as in ECU.

Comparison of the ECU and PPS prices between Member States shows that no currency corresponds exactly to the purchasing power attributed thereto. This phenomenon reflects the overvaluation or undervaluation of every national currency. The PPS/ECU ratios in Table 1 indicate the order of magnitude of this relative overvaluation or undervaluation of each national currency. If the ratio is over 100, the currency is strong and general price levels high. If it is under 100, the currency is weak and price levels low, as confirmed by the differences in GDP values between Member States, expressed in ECU. When the prices are expressed in ECU, the countries with an overvalued currency are at a disadvantage as their prices appear higher than they really are, whereas the opposite applies to countries with a weak national currency. These distortions can be corrected by expressing the prices in PPS which removes the currency overvaluation or undervaluation element inherent in the ECU prices.

Table 1

PPS and ECU values in national currency on 1 January 1990 and 1 January 1995

Jan-90	B	DK	D	GR	E	F	IRL	IT	L	NL	P	UK
PPS	42.41	10.1	2.25	151	117.7	7.1	0.74	1514	42.69	2.33	111.5	0.656
ECU	42.61	7.88	2.04	190	132	6.9	0.77	1514	42.62	2.29	179.2	0.728
PPS/ECU	99.53	128.17	110.29	79.47	89.16	102.89	96.10	100	100.16	101.74	62.22	90.10

Jan-95	B	DK	D	GR	E	F	IRL	IT	L	NL	P	UK
PPS	40.28	9.43	2.28	231.6	130.37	7.05	0.71	1693.38	43.11	2.29	133.25	0.69
ECU	39.16	7.49	1.90	295.7	164.52	6.57	0.8	1999.01	39.16	2.13	196.13	0.79
PPS/ECU	102.9	125.9	120.0	78.3	79.2	107.3	88.8	84.7	110.0	107.5	67.9	87.3

A second problem is that the differences in general price levels between countries at a given time cannot reflect the differences between the prices for each individual product as there is only a single exchange rate. It therefore follows that the prices converted into nominal values at the market exchange rates are distorted because the currencies are under the influence of factors independent of national price movements. Calculation of the purchasing power parities provides a means of re-establishing the real prices. Use of PPS is all the more important in comparisons of electricity and gas prices, where the consumer markets for the products are closed.

Owners of plants in different Member States who wish to compare the consolidated cost of supplies to the different plants in the group will express the prices in ECU or in any national currency. However, the ECU and national currencies fluctuate constantly, under the impact of variations in the currency parities. Consequently, owners will prefer to use the PPS to compare the economic value of supplies of goods and services to each of their plants, since this provides a means of obtaining comparable values cleared of all factors associated with currency fluctuations.

## 6.2. Choice of sample

A choice had to be made from the 33 locations covered by the electricity survey (excluding the new Member States) to keep the report reasonably readable. Consequently, 14 locations were selected as suitably representative and offering complete price series.

One location per Member State was chosen from Italy, Ireland, Belgium, Luxembourg and Greece, all of which apply a standard nationwide tariff, and where, therefore, the choice of locations poses no problem. In France, Paris was considered representative of the French market, where there are only minimal differences between locations. In the case of the United Kingdom, only London was selected as no other location had provided full series of data. Only Lisbon was chosen in Portugal for the same reasons. Of course these choices dictated by purely methodological considerations in no way prejudice the importance, stressed throughout this report, of keeping as many locations as possible in the survey.

In Germany and the Netherlands no single location could reflect the diversity of electricity prices. The locations which most frequently recorded the lowest and highest prices in the sample and, hence, embrace all the others were therefore chosen. In the Netherlands, this choice was dictated by the price gap between Rotterdam and North Brabant, while in Germany the main reason was the large number of locations (11) and the price scatter.

Annex 4 shows electricity prices in Germany in 1995 and 1990 expressed in national currency (DM/10 MWh). The progress on transparency can be seen from the increased number of locations covered and from the fact that the 1995 table is complete, whereas over half the data were missing in January 1990. The intervals between the maximum and minimum prices at each location vary between a factor of 2.3 and 3, slightly above the Community average (2) except in Düsseldorf, where it is 3.95 because of the abnormally high price to the smallest consumer, 67% higher than the price to consumer Ib.

The extremely complex price structures at the German locations make it difficult to sum up the situation as regards electricity prices to industrial users. Prices in Hamburg are amongst the highest in the Community, behind only Portugal and Spain (from Ie upwards). By contrast, prices are close to the Community average in the Western Zone and in the Southern Zone, particularly for categories Ie, Id and If. Compared with other locations in the Community, prices in Germany range between the Community average and the highest prices.

One point to note is that all the prices in the new Länder lie between the maximum and minimum prices in the old Länder, a sign of satisfactory integration of the tariffs. In Leipzig and Rostock, for example, prices to categories Ig, Ih and Ii are amongst the most moderate.

### 6.3. Incidence of indirect taxation

Since in most cases indirect taxes are deductible by industry, their impact was considered negligible and the study was restricted solely to the prices net of all taxes based on application of the tariffs and contracts.

## 7. Analysis of electricity prices to industrial users in the Community

The tables in Annex 5 show the price trends for the 14 locations in the sample. As no comparison is made, the prices could be expressed in national currency. The objective is to compare the situation before and after the Directive. The dates of 1 January 1985, 1990 and 1995 were chosen, as ten years was considered long enough to show the long-term trend. The tables also include the consumer price indices (CPI) and GDP index. The consumer price indices are the monthly values on 1 January each year. The GDP index is an annual value, calculated on the basis that 1985=100. Comparison of the price trends with the consumer price index gives an indication of the productivity gains or losses in the electricity industry. The ratio between the maximum and minimum prices at each location in turn allows assessment of how the tariff burden is spread between consumers.

### 7.1. Electricity price situation and trends by location in national currency on 1 January 1985, 1990 and 1995

As a result of the Directive, progress has been made with improving the transparency of electricity prices, since the number of locations has increased and, for the first time, full data are available for at least one location in each Member State. In contrast to gas, the falling world market prices for primary energy

sources have exerted no downward pressure on electricity prices. This is one factor which must be borne in mind when assessing productivity trends.

(a) Productivity

A rough estimate of the productivity improvements in the electricity sector can be obtained by comparing electricity price and CPI trends. If prices are rising slower than the CPI it can be assumed that progress has been made. In practice, a general improvement can be observed, except in Hamburg and Spain where the relative deterioration in prices could be due to a deterioration in the cost structure and in Italy where, by contrast, the price increases reflect a drive towards truer pricing with a view to privatization. In Portugal, Greece and, to a lesser extent, the United Kingdom, where inflation was high, the price increases were well below the increase in the CPI. At the low-inflation locations, the biggest productivity improvements were in Denmark, Ireland, the Netherlands and Luxembourg. Moderate progress was made in Belgium, the Western Zone of Germany and France.

This progress stems partly from passing on the reductions in the cost of primary energy supplies in the tariffs and partly from the introduction of new generation technologies (gas/steam turbines) or of improved business management techniques (integrated resources management). Finally, some of the national electricity industries have been liberalized and had to be restructured to make them more competitive.

(b) Degressivity

The interval between  $I_i$  and  $I_a$  (the minimum and maximum prices at each location in the sample) provides a measure of degressivity. If the factor is very high, the tariff is highly degressive and it can be assumed that the costs are not shared evenly between consumer categories but to the advantage of big consumers. On 1 January 1995 this was the case in Italy (coefficient of 3.36), Belgium (3.25), Luxembourg (3.21) and Ireland (2.77). Conversely, a coefficient below the average for the sample is a sign of a tariff particularly favourable to small consumers, as in London (1.88) and Rotterdam (1.90). At all the other locations, this coefficient is slightly over 2: Spain (2.12), Greece (2.14), Portugal (2.18), Paris (2.22), Hamburg (2.27) and Western Zone of Germany (2.46). Prices in Denmark, with a coefficient of 1.26, stand out amongst all the others, not only because they are the lowest but also because of the gentle price curve which, in turn, suggests that the position is very different from at the other locations.

Whether upward or downward, the price movements between 1985 and 1995 favoured the biggest consumers, above all in Belgium, Ireland, Luxembourg and, even more so, Italy. By contrast, the increases were shared more evenly between all consumers in Hamburg, the Western Zone of Germany, Greece, Spain and Portugal and tended to favour small industrial consumers in Denmark and France. In the Netherlands, restructuring hit small consumers during the first period, but this was corrected during the second. In London, restructuring of the tariff put an end to one anomaly in the degressive scale and restored the differentials between  $I_a$ ,  $I_b$  and  $I_c$  to normal proportions.



## 7.2. Price situation and trends by location in PPS

Annexes 6 and 7 provide an overview of electricity prices (net of all taxes) to industrial users in the Community on 1 January 1995 and 1 January 1990, expressed in PPS. These tables allow comparisons between different locations. In both 1995 and 1990 Danish consumers paid the lowest PPS prices in the sample and Portuguese consumers the highest. These countries clearly mark the two opposite ends of the scale, with all the other prices therefore between the two.

The first conclusion is that price trends between 1990 and 1995 differed far more in terms of purchasing power than of monetary parity, although they remained within moderate limits, with one or two exceptions. These were in North Brabant (with an increase of 30.7% for Ic and a reduction of 19.4% for Ia), followed by Rotterdam (25% reduction for Ib) and Italy (19.0% increase for Ia). All the other price movements observed were smaller. The analysis ends at Ig since no data were available for Ih and Ii in January 1990.

Compared with 1 January 1990, on 1 January 1995 moderate increases or reductions were observed at every location, with the average trend for the entire sample downward, matching the trend in national currency. Increases of around 10% or lower were recorded in Belgium, France, Ireland, Italy, Portugal and Hamburg. Reductions on the same scale were observed in the Western Zone of Germany, Greece, Luxembourg and London (the data for the other locations in the United Kingdom were incomplete). There were ups and downs in Denmark, with the prices falling up to Id and increasing from Ie on. In Spain, the opposite was observed, with increases for Ia and Ib and small reductions for the others. Finally, in the Netherlands restructuring of the tariffs brought big reductions or increases for all consumers as costs were transferred from one category to another.

At every location the PPS prices followed the same curve as the prices in national currency, except in Denmark, where they showed transfers of costs between consumers, in Greece, where they reflected a relative fall in the PPS prices and Ireland where prices held steady in national currency but rose in PPS, showing that they had become higher in terms of purchasing power.

Price rises over the report period generally remained below inflation, with numerous examples of restructuring of the tariffs reflecting the concern to adjust prices to the demand profile.

At many locations, electricity prices were widely scattered in the case of small consumers but converged towards the same low-price range as consumption increased. This could suggest that producers set their tariffs to keep prices to big consumers close to the prices charged by their immediate neighbours.

### 7.2.1. Ranking of locations

In Annexes 8 and 9 the horizontal line cutting the table in two represents the median, the theoretical value above and below which an equal number of observations fall. This provides a means of measuring any convergence of prices, by calculating the gap between the prices at each location and the median. These tables display the relative position of each location in increasing order of price on

1 January 1990 and 1 January 1995. They also reveal far-reaching differences in price structures from one location to another in the sample.

Ranking the locations by frequency of appearance in each position, Denmark, North Brabant, France and Rotterdam, in that order, can be considered the cheapest locations in the sample, followed by Greece, the Western Zone of Germany and the United Kingdom (for small industrial consumers), Ireland (for moderate consumers) and Belgium and Luxembourg (for the biggest consumers). The most costly locations for all consumers are Hamburg and Portugal, joined, for moderate and big industrial consumers, by Spain.

### 7.2.2. Changes in ranking between 1990 and 1995

Comparison of Annexes 8 and 9 shows the changes in ranking of the individual locations on the relevant dates. Denmark (ranked first) and Portugal (last) still hold the same position for all their typical consumers. Amongst the low-cost locations, France, Rotterdam and North Brabant all showed minor changes. Luxembourg and the Western Zone of Germany fell significantly. Luxembourg has even become the location with the lowest prices, after Denmark, for big consumers. The United Kingdom (London) and Greece have both improved their relative positions. As for the high-cost locations (i.e. the locations above the median), Belgium's position deteriorated in the case of small and moderate consumers. Spain and Italy's position deteriorated for all consumers, except category Ic in Spain. In Ireland, no significant changes were reported. Finally, prices in Hamburg drew closer to those charged in Spain.

### 7.2.3. Electricity prices in ECU

The ECU tables in Annex 10 are for information only. They made it possible to plot the price difference graphs for the various units on pp. 45 and 46.

### 7.2.4. Convergence

To determine whether prices converged between 1990 and 1995, the number of observations within an interval of 10% and 25% on either side of the median for the sample was determined in January 1990 and January 1995, i.e. before and after the Directive entered into force.

**TABLE II**

**OBSERVATIONS**  
**within intervals of 10% and 25% on either side of the median**  
**(January 1995/January 1990)**

	Ia	Ib	Ic	Id	Ie	If	Ig	Ih	Ii
<b>MEDIAN 01/95</b>	1250	1255	1031	840	714	685	576	565	486
+10%	2	3	7	8	7	6	8	6	5
+25%	11	11	11	10	10	10	11	10	10

<b>MEDIAN 01/90</b>	1296	1252	1065	827	726	682	577
+10%	7	9	8	8	7	5	6
+25%	8	10	12	11	11	11	11

Over the report period, the scatter increased only for small consumers (up to If) and the trend reversed from Ig on. This is confirmed by the variations in Pearson's coefficient of variability (standard deviation x 100 divided by the arithmetic mean) which rose from 25.87% in 1990 to 27.76% in 1995 for If (wider scatter) but, conversely, fell from 28.26% to 25.59% for Ig (narrower scatter) over the same period.

This is confirmed by the variations in the standard deviation (square root of the variance = s), which rose from 179 for If in 1990 to 191.5 in 1995 but, conversely, fell from 167 in 1990 to 151 in 1995 in the case of Ig. It is impossible to compare these coefficients for the largest consumers in the sample since no figures are available for Ih and Ii in 1990. However, these figures are known for 1995, when the standard deviation and coefficient of variability were 147 and 25.48% respectively for Ih and 132 and 25.68% for Ii. These percentages are of the same order as for Ig. There are therefore strong reasons to presume that the findings for Ig also apply to Ih and Ii and that prices have converged for all big consumers.

## 8. Analysis of gas prices to industrial users in the Community

The same method will be used to analyse gas prices. As in the case of electricity, the prices are based on direct application of the tariffs and contracts. Fourteen of the 34 locations covered by the survey were selected, based on similar criteria to ensure a representative subsample. It must be made clear from the outset that gas prices are noticeably less transparent than electricity prices, particularly in the case of the biggest consumers.

### 8.1 Gas price situation and trends by location in national currency on 1 January 1985, 1990 and 1995

The tables in Annex 11 show the sharp deterioration in the transparency of gas prices to industrial users in January 1995 (except in the case of Weser-Ems and the Netherlands). In contrast to electricity prices, there are numerous blanks amongst the prices charged to the biggest consumers, either because no consumers were surveyed in these categories or because there were fewer than three. Nevertheless, there has been a marked deterioration in transparency, since seven prices were reported in January 1990 for I5 but just two in January 1995, despite the greater penetration by gas over this period. Geographically, price transparency is improving in Germany. As regards price trends, the repercussions of falling world gas prices on prices to end-users vary from one location to another. Finally, at many locations the price scale has become more degressive, to the benefit of large-scale industry.

Over the first period (from January 1985 to January 1990) there was generally a big reduction, both in the gas-producing and gas-importing Member States. From 1990 to 1995 the situation was more varied. The reductions continued at many

locations, albeit at a slower rate, but a few increases were observed, principally for the smallest standard industrial consumers whose prices seem to be directly influenced by the increase in the CPI. The situation over the entire period was marked by a general consolidation of the reductions.

At most locations, the price scale became markedly more degressive between January 1990 and 1995 in favour of the biggest standard consumers in the sample, often by substantial proportions, with the notable exception of London. There has been extensive restructuring of the tariffs at the expense of small and medium-sized industrial undertakings, which indicates strong pressure exerted by competition on the internal market on the biggest consumers, who demand and obtain the most competitive gas prices. Competition from other energy sources plays an extremely important role for large offtakes in the gas sector but virtually no role at all for small and medium-sized industrial users who bear the full burden of the tariff restructuring in response to falling oil and oil-product prices.

## 8.2 Price situation and trends by location in PPS

Annexes 12 and 13 show the situation as regards PPS gas prices, net of all taxes, to industrial users on 1 January 1995 and 1 January 1990 respectively, based on direct application of the tariffs and terms of sale. The unit used in the case of gas is 100 GJ.

Prices are lowest in Denmark and the Western Zone of Germany up to standard consumer I3-1 and in France from I3-2 on (I5 not communicated). Prices are highest in Spain up to I3-2 and in Berlin from I3-1 to I4-2 (I5 not communicated). Prices in the Netherlands lie in between. Only two (identical) prices are available for I5, from the Netherlands and Weser-Ems, both gas-producing regions. These prices are extremely favourable, compared with the 11 submitted for I4-2.

As regards the tariff structure, at every location the switch from I2 to I3-1 (identical offtake but better load factor) attracts a significant price reduction, except in Berlin and Luxembourg, where there is no significant difference. By contrast, the improvement in consumption conditions between I3-1 and I3-2 or between I4-1 and I4-2 (same offtake but better load factor) attracts only a small price cut or no change at all at most locations, except in Belgium, France, Italy and the United Kingdom.

Compared with January 1990, the 1995 PPS prices were slightly lower in the United Kingdom, Luxembourg, Strasbourg and in Belgium but higher in Ireland and Turin. Changes to the tariff base in favour of big industry were observed in Weser-Ems, Paris, Spain and the Netherlands. In Naples, similar changes were made in favour of small industrial consumers. No comparison was possible for Denmark, Berlin, Hanover and Birmingham for lack of data. In some cases, this was because no correlation with the past was established, in others because the Directive is not fully applied.

Compared with the Community sample as a whole, Germany is at both ends of the scale, with Weser-Ems sharing the lowest prices with Denmark and Paris, but the Berlin sample sharing the highest prices with Spain. Consequently, the price

scatter in Germany is wider for gas than for electricity, with the locations with the lowest gas prices comparable to the cheapest locations in the European Union. Still in Germany, the interval between the highest price (DM 1306 in Düsseldorf) and the lowest (DM 584 in Weser-Ems) was slightly over 2 in 1990 but rose to 3.46 in 1995 between Berlin (on DM 1497) and Dortmund/Düsseldorf (DM 433). The tables in Annex 14 compare DM gas prices at 10 locations in Germany on 1 January 1990 and 1 January 1995.

### 8.2.1 Ranking of locations on 1 January 1995

Without exception, and irrespective of the fact that the locations chosen are not always the same for the two sources, the relative ranking of the locations is not the same for both gas and electricity prices. Locations with high gas prices sometimes have low electricity prices and vice-versa (see Annexes 15 and 16), which suggests that the two sources are not in competition. Comparison of the tables in Annexes 15 and 16 shows the changes in the ranking of the sample between 1990 and 1995. The following countries, in order, had prices below the median everywhere in 1995: Denmark (no data in 1990), Weser-Ems (no significant change in comparison with 1990), Birmingham (no data in 1990), Paris and the Netherlands (which lost ground in categories I1 and I2 but consolidated their strong position from I3-1 on). The following were above the median everywhere: Spain, Naples and Berlin (except in the case of I2), Turin (except from I4-1 on) and Ireland (except for I3-1). Luxembourg and London maintained the same pattern in 1995, amongst the lowest gas prices for I1 and I2 but well above the median from I3-1 on. Belgium aligned its prices on the median, clearly in 1990, but far less so in 1995. Transparency has deteriorated since 1990. It is inadequate for the biggest gas consumers, as can be seen from the lack of data from many locations. This limits the scope for comparisons.

The most striking features are as follows: Denmark, the Weser-Ems region and the Netherlands are the leading contenders for the lowest prices for all consumers combined. They are joined by London and Birmingham in the case of small industrial consumers. Both these locations are close to the production sites, which is an indication that the comparative advantages have been passed on satisfactorily in the price of the end-product. Ireland, however, is an exception and has very high prices despite having its own resources. France (Paris) is close to the median for I1 and I2 and the cheapest location in the sample in 1995 from I3-2 on, despite the fact that it has no substantial resources of its own and is a leading importer. Strasbourg, with its autonomous arrangements, is far worse placed than the rest of the country. Of the other importing locations, Belgium and Luxembourg are clearly below the median for I1 and I2, are amongst the most expensive locations in the sample for I3-1 but return close to the median again for large offtakes. Berlin is close to the median for I1 and I2 but then becomes the most expensive location in the entire sample from I3-1 on. Spain has the highest prices for I1 and I2, followed by Ireland and the Italian locations. It is also amongst the most expensive locations from I3-1 on.

### 8.2.2 Gas prices in ECU

As in the case of electricity, the ECU gas prices in Annex 17 made it possible to plot the graphs comparing ECU and PPS prices (see pp. 47 and 48) and to show the differences between the two modes used.

### 8.2.3 Convergence

The number of observations within intervals of 10% and 25% on either side of the median was higher everywhere in January 1995 than in January 1990 except in the case of I1, where the scatter widened in response to the numerous price increases in this category. The increase in the number of observations indicates a clear convergence of gas prices in the Community.

**TABLE III**  
**OBSERVATIONS**  
**within intervals of 10% and 25% on either side of the median**  
**(January 1995/January 1990)**

	<i>I1</i>	<i>I2</i>	<i>I3-1</i>	<i>I3-2</i>	<i>I4-1</i>	<i>I4-2</i>	<i>I5</i>
<b>MEDIAN 01/1995</b>	575	471	377	351	340	321	
+10%	2	6	8	10	7	5	
+25%	8	10	11	13	9	10	
<b>MEDIAN 01/1990</b>	584	497	398	349	304	280	266
+10%	3	4	1	6	4	6	4
+25%	9	8	9	9	8	8	7

Comparison of the coefficients of variability (see definition on p. 19) between 1990 and 1995 for the standard consumers for which full series are available confirms this. Although the variability rose from 32.8% to 42% for I1, it fell considerably for the following three standard consumers:

- from 27.5% to 17.5% for I2,
- from 22% to 12.6% for I3-1,
- from 24.3% to 13% for I3-2.

Beyond I3-2, the data are incomplete, which makes measurements of this type impossible. The perfect symmetry from I1 to I3-1 between the concentration of the observations around the median on the one hand combined with the reduction in the coefficients of variability on the other suggest that the same symmetry should extend to the consumer categories above I3-1 and tends to confirm that the average reduction in gas prices in the European Union has been accompanied by greater convergence. This is possible, even though gas is a closed market protected against gas-gas competition by exclusive rights, since this market is nevertheless open to "oblique" competition from neighbouring markets.

ANNEX 1  
COUNCIL DIRECTIVE 90/377/EEC OF 29 JUNE 1990  
INCORPORATION INTO NATIONAL LEGISLATION

Member State	Type of Act	Date of adoption	Date of publication	Date of notification	Date of entry into force
A	Federal law	-	04-12-92	04-03-94	01-01-95
B	Ministerial Decree published in <i>Moniteur Belge</i>	18-05-92	18-05-92	28-09-92	18-05-92
D	Agreement signed. Details published in the <i>Bundesanzeiger</i>	08-07-93	30-07-93	17-09-93	08-07-93
DK	Decree issued by Energy Ministry	16-03-92	16-03-92	01-04-92	16-03-93
E <sup>1</sup>	Not yet fully incorporated				
FIN	Agreement reached between the INS and the parties concerned	-	-	09-02-94	01-01-95
F	Law published in the <i>Journal Officiel de la République</i>	19-07-93	20-07-93	05-10-94	20-07-93
G <sup>2</sup>	Law published in <i>Efimeris tes Guverneseus</i>	25-07-91	25-07-91	09-08-91	25-07-91
IRL <sup>3</sup>	(Existing provisions)	-	-	-	01-07-91
I	Law published in the <i>Gazetta Ufficiale</i>	20-02-92	20-02-92	26-03-92	20-02-92
LUX <sup>4</sup>	(Existing provisions)	-	-	-	01-07-91
NL	Agreement signed between Ministry of Economic Affairs and relevant parties	-	-	25-05-92	01-01-92
P	Ministerial Decree published in <i>Diario da Republica</i>	30-05-92	30-05-92	10-06-92	30-05-92
S <sup>5</sup>	?	?	?	?	?
UK	Energy Act of 1976	-	-	-	01-07-91

see footnotes on next page.

1. In Spain an Order published in the Boletín Oficial del Estado on 31 May 1995 implemented the part of the Directive concerning electricity prices, but the Commission has yet to be notified of the general regulation on the transparency of gas prices. This gap in the legislation has not prevented regular submission of full data by the Spanish administration.
2. Greece has implemented only the part of the Directive relating to electricity. In line with paragraph 2 of Article 9 and with Annex 1 to the Directive, Greece is exempted from the provisions on natural gas which is not yet available nationwide.
3. Only administrative measures were deemed necessary in view of the laws and other provisions already adopted. The Commission accepted this solution in an exchange of letters.
4. The provisions of the existing Act were deemed sufficient to implement the Directive, i.e. to incorporate it into national law.
5. Contacts have been established with the Swedish administration to verify whether the Directive has been incorporated and why the Commission has not been notified.



**ANNEX 2**

**Typical industrial electricity consumers:**

Reference consumer	Annual consumption (in kWh)	Maximum demand (in kWh)	Annual utilisation (in hours)
la	30 000	30	1 000
lb	50 000	50	1 000
lc	160 000	100	1 600
ld	1 250 000	500	2 500
le	2 000 000	500	4 000
lf	10 000 000	2 500	4 000
lg	24 000 000	4 000	6 000
lh	50 000 000	10 000	5 000
li	70 000 000	10 000	7 000

**Typical industrial gas consumers:**

Reference consumer	Annual consumption (in GJ)	Load factor
l1	418.60 (or 116 300 kWh)	No load factor laid down*
l2	4 186.00 (or 1 163 000 kWh)	200 days
l3-1	41 860.00 (or 11.63 GWh)	200 days 1 600 hours
l3-2	41 860.00 (or 11.63 GWh)	250 days 4 000 hours
l4-1	418 600.00 (or 116.3 GWh)	250 days 4 000 hours
l4-2	418 600.00 (or 116.3 GWh)	330 days 8 000 hours
l5	4 186 000.00 (or 1 163 GWh)	330 days 8 000 hours

\*if necessary 115 - 200 days

### ANNEX 3

#### ISSUES OF "STATISTICS IN FOCUS" PUBLISHED TO DATE

* 1993	No 19	Electricity prices (domestic) - 1 January 1993
	No 20	Gas prices (domestic) - 1 January 1993
* 1994	No 1	Electricity prices (industry) - 1 July 1993
	No 2	Gas prices (industry) - 1 July 1993
	No 3	Electricity prices (domestic) - 1 July 1993
	No 4	Gas prices (domestic) - 1 July 1993
	No 13	Pricing systems (electricity)
	No 14	Pricing systems (gas)
	No 19	Gas prices (domestic) - 1 January 1994
	No 20	Electricity prices (domestic) - 1 January 1994
	No 21	Electricity prices (industry) - 1 January 1994
	No 22	Gas prices (industry) - 1 January 1994
	No 33	Electricity prices for industry in the EU - 1 July 1994
	No 35	Gas prices for industry in the EU - 1 July 1994
* 1995	No 8	Electricity prices for industry - 1 January 1995
	No 9	Gas prices for industry in the EU - 1 January 1995
	No 13	Gas prices (domestic) - 1 January 1995
	No 14	Electricity prices (domestic) - 1 January 1995

#### YEARBOOKS ON ENERGY PRICES

Gaspreise - Gas prices - Prix du gaz 1990 - 1994  
Elektrizitätspreise - Electricity prices - Prix de l'électricité 1985 - 1993  
Gaspreise - Gas prices - Prix du gaz 1985 - 1993  
Elektrizitätspreise - Electricity prices - Prix de l'électricité 1990 - 1994  
Gaspreise - Gas prices - Prix du gaz 1990 - 1994  
Energiepreise - Energy prices - Prix de l'énergie 1973 - 1993  
Energiepreise - Energy prices - Prix de l'énergie 1973 - 1994  
Elektrizitätspreise - Electricity prices - Prix de l'électricité 1990 - 1995  
Gaspreise - Gas prices - Prix du gaz 1990- 1995

ANNEX 4

ELECTRICITY PRICES (NET OF TAX) TO INDUSTRIAL USERS IN GERMANY  
(in DM/100 MWh/year)

01/01/95 ELECTRICITY PRICES (NET OF TAX) TO INDUSTRIAL USERS IN GERMANY									
DM/10 MWh/Year	la	lb	lc	ld	le	lf	lg	lh	li
Düsseldorf	5036	3020	2681	2144	1895	1760	1402	1535	1276
Hamburg	3548	3548	3020	2423	1943	1943	1627	1755	1522
Hannover	3364	3316	2602	2159	1824	1806	1517	1588	1408
W.Gebiet	2768	2768	2436	2012	1777	1627	1259	1366	1123
Frankfurt	4198	4169	2831	2200	1799	1718	1481	1560	1401
Stuttgart	3726	3632	2798	2253	1861	1780	1481	1534	1334
München	3891	3846	2509	2008	1645	1613	1416	1478	1364
S.Gebiet	3442	3400	2957	1932	1625	1579	1384	1418	1304
Erfurt	3597	3565	2767	2064	1748	1745	1501	1596	1425
Leipzig	2939	2884	2702	2187	1845	1693	1364	1456	1243
Rostock	3700	3700	3348	2174	1770	1770	1503	1431	1234

01/01/90 ELECTRICITY PRICES (NET OF TAX) TO INDUSTRIAL USERS IN GERMANY									
DM/10 MWh/Year	la	lb	lc	ld	le	lf	lg	lh	li
Düsseldorf	NA	NA	2582	2066	1837	1701	1358	NA	NA
Hamburg	NA	NA	2833	2326	1858	1858	1550	NA	NA
Hannover	NA	NA	2412	2013	1700	1886	1417	NA	NA
W.Gebiet	2975	2882	2594	2086	1863	1713	1334	NA	NA
Frankfurt	NA	NA	2525	1996	1632	1561	1349	NA	NA
Stuttgart	3474	3474	2749	2247	1857	1779	1480	NA	NA
München	3235	3235	2477	2004	1643	1613	1416	NA	NA
S.Gebiet	NA	NA	2406	1924	1620	1577	1383	NA	NA
Erfurt	NA	NA	NA	NA	NA	NA	NA	NA	NA
Leipzig	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rostock	NA	NA	NA	NA	NA	NA	NA	NA	NA

ANNEX 5

**ELECTRICITY PRICE SITUATION AND TRENDS BY LOCATION IN NATIONAL CURRENCY  
ON 1 JANUARY 1985, 1990 and 1995**

Electricity prices net of tax to industrial users											
Belgium (B)											in BFR/100 KWh/Yea
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	97.7	(100)	504	502	457	368	328	307	264	NA	NA
1990	109.2	116.6	550	542	452	346	296	283	245	NA	NA
1995	124	(131)	581	575	476	359	304	288	236	209	179
Denmark (DK)											in DKR/100 kWh/Year
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	98	(100)	4249	4196	4007	3842	3330	3527	3094	3272	2935
1990	119.5	121	4720	4662	4452	4273	3743	3720	3445	3561	3316
1995	132	(131)	3656	3597	3496	3264	3240	3169	3029	2962	2907
Hamburg (D)											in DM/100 KWh/Year
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	99.3	(100)	NA	NA	3187	2242	1800	1800	NA	NA	NA
1990	105.8	112.7	NA	NA	2833	2326	1858	1858	1550	NA	NA
1995	125	(132)	3548	3548	3020	2423	1943	1943	1627	1755	1522

Western Zone (D)											in DM/100 KWh/Year	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	99.3	(100)	2748	2658	2379	1887	1674	1530	1193	NA	NA	
1990	105.8	112.7	2975	2882	2594	2086	1863	1713	1334	NA	NA	
1995	125	(132)	2768	2768	2436	2012	1777	1627	1259	1366	1123	

Athens(GR)											in DR/100 KWh/Year	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	92.5	(100)	1088	1084	1002	832	775	775	657	NA	NA	
1990	201.3	211	1740	1735	1603	1330	1239	1239	1049	NA	NA	
1995	410	(359)	2467	2467	2278	1813	1678	1678	1426	1307	1155	

Madrid (E)											in PTA/100 KWh/Yea	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	97	(100)	1143	1002	941	869	781	741	669	NA	NA	
1990	133.2	142.8	1588	1588	1339	1229	1094	1026	934	NA	NA	
1995	172	(178)	1934	1934	1465	1347	1203	1127	1014	1016	911	

Paris (F)											in FF/100 KWh/Year	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	97.4	(100)	7807	7089	4708	4708	3860	3860	3210	NA	NA	
1990	114.7	119.4	6465	6465	5930	4947	4033	4033	3436	NA	NA	
1995	128	(134)	6673	6673	6156	5089	4275	4275	3688	3345	3001	

Dublin (IRL)											in IRL/100 KWh/Year	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	98.3	(100)	1063	1063	879	693	610	593	536	NA	NA	
1990	116.7	114.8	1015	1001	804	614	501	469	403	NA	NA	
1995	130	(126)	1015	1001	804	614	501	469	403	404	367	

Italy (I)											in LIT/100 KWh/Year	
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li	
1985	96.1	(100)	23073	21054	16891	14417	12356	12410	9168	NA	NA	
1990	128.2	139	20873	19049	14886	12412	11166	10893	8029	NA	NA	
1995	163	(171)	27320	21980	17192	15442	12671	12671	10323	9694	8134	

Luxemburg (L) in LFR/100 KWh/Year											
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	97.8	(100)	545	542	422	346	296	275	225	NA	NA
1990	108	117	582	583	450	368	313	242	206	NA	NA
1995	124	(132)	556	563	433	353	300	230	189	196	173

Rotterdam (NL) in HFL/100 KWh/Year											
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	98.6	(100)	3125	3003	2536	2361	2187	2025	1720	NA	NA
1990	102.5	104	NA	2950	2168	1815	1521	1411	1122	NA	NA
1995	119	(117)	2177	2182	2401	1874	1491	1294	1053	1118	991

Lisbon (P) in ESC/100 KWh/Year											
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	93.9	(100)	1511	1373	1156	1017	925	925	856	NA	NA
1990	160.7	192	1943	1948	1613	1398	1253	1255	1149	NA	NA
1995	237	(288)	2408	2499	2057	1764	1568	1568	1284	1197	1105

London (UK) in UKL/100 KWh/Year											
Year	I.P.C.	P.I.B.	la	lb	lc	ld	le	lf	lg	lh	li
1985	96.4	(100)	631	623	580	454	396	395	NA	NA	NA
1990	126.3	131.1	650	637	701	529	462	460	413	NA	NA
1995	154	(157)	753	735	615	534	473	449	414	428	401

**ANNEX 6**  
**EUR12: ELECTRICITY PRICES (NET OF TAXES) TO INDUSTRIAL USERS**  
(in PPS/10 MWh on 1/01/1995)

<i>Electricity prices net of tax to industrial users on 1/1/1995</i>										<i>EUR 12 in PPS/10 MWh/yr</i>
	<i>Ia</i>	<i>Ib</i>	<i>Ic</i>	<i>Id</i>	<i>Ie</i>	<i>If</i>	<i>Ig</i>	<i>Ih</i>	<i>Ii</i>	<i>Ia/Ii</i>
<i>Belgium(B)</i>	1443	1428	1182	891	755	715	586	519	444	3.25
<i>Denmark(DK)</i>	441	435	424	399	397	389	374	367	361	1.22
<i>Western Zone(D)</i>	1212	1212	1067	881	778	712	551	598	492	2.46
<i>Hamburg(D)</i>	1553	1553	1322	1061	851	851	712	768	666	2.33
<i>Athens(GR)</i>	1069	1065	984	783	725	725	616	564	499	2.14
<i>Madrid(E)</i>	1483	1483	1124	1033	923	864	778	779	699	2.12
<i>Paris(F)</i>	947	947	873	722	607	607	523	475	426	2.22
<i>Dublin(IRL)</i>	1422	1403	1126	860	702	657	565	566	514	2.77
<i>Italy(I)</i>	1613	1298	1015	912	748	748	610	572	480	3.36
<i>Luxembourg(L)</i>	1289	1306	1005	819	625	533	439	455	402	3.21
<i>Rotterdam(NL)</i>	949	951	1047	817	650	564	549	488	432	2.20
<i>North Brabant(NL)</i>	772	793	919	587	495	493	441	455	433	1.78
<i>Lisbon(P)</i>	1807	1875	1544	1324	1177	1177	964	898	829	2.18
<i>London(UK)</i>	1090	1064	890	773	685	650	529	620	580	1.88



ANNEX 7  
 EUR12: ELECTRICITY PRICES (NET OF TAXES) TO INDUSTRIAL USERS  
 (in PPS/10 mWh on 1/01/1990)

	EUR 12 in PPS/10									
	Ia	Ib	Ic	Id	Ie	If	Ig	Ih	Ii	Ia/Ii
<i>Belgium(B)</i>	1296	1277	1065	815	697	667	577	N.A.	N.A.	2.25
<i>Denmark(DK)</i>	463	457	436	419	367	365	338	349	N.A.	1.33
<i>Western Zone(D)</i>	1321	1280	1152	926	827	761	592	N.A.	N.A.	2.23
<i>Hamburg(D)</i>	N.A.	N.A.	1258	1033	825	825	688	N.A.	N.A.	1.83
<i>Athens(GR)</i>	1148	1145	1058	878	818	818	692	N.A.	N.A.	1.66
<i>Madrid(E)</i>	1350	1350	1138	1045	930	872	794	N.A.	N.A.	1.70
<i>Paris(F)</i>	905	905	830	693	565	565	481	N.A.	N.A.	1.88
<i>Dublin(IRL)</i>	1366	1348	1082	827	675	631	543	N.A.	N.A.	2.52
<i>Italy(I)</i>	1357	1238	968	807	726	708	522	N.A.	N.A.	2.60
<i>Luxemburg(L)</i>	1363	1364	1053	861	732	567	482	N.A.	N.A.	2.83
<i>Rotterdam(NL)</i>	N.A.	1266	930	779	653	605	481	N.A.	N.A.	2.63
<i>North Brabant(NL)</i>	958	921	703	575	488	486	427	N.A.	N.A.	2.24
<i>Lisbon(P)</i>	1741	1746	1445	1253	1123	1124	030	N.A.	N.A.	1.69
<i>London(UK)</i>	990	969	1067	805	703	700	628	N.A.	N.A.	1.58
<i>Glasgow(UK)</i>	1189	1156	1124	878	744	682	602	N.A.	N.A.	1.98

ANNEX 8

**RANKING OF LOCATIONS IN INCREASING ORDER OF PRICE  
ON 1 JANUARY 1995**

RANKING OF LOCATIONS IN INCREASING ORDER OF PRICE									
1/1/1995									
	la	lb	lc	ld	le	lf	lg	lh	li
1	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)
2	North Brabant (NL)	North Brabant (NL)	Paris (F)	North Brabant (NL)	North Brabant (NL)	North Brabant (NL)	Luxembourg (L)	Luxembourg (L)	Luxembourg (L)
3	Paris (F)	Paris (F)	London (UK)	Paris (F)	Paris (F)	Luxembourg (L)	North Brabant (NL)	North Brabant (NL)	Paris (F)
4	Rotterdam (NL)	Rotterdam (NL)	North Brabant (NL)	London (UK)	Luxembourg (L)	Rotterdam (NL)	Paris (F)	Paris (F)	Rotterdam (NL)
5	Athens (GR)	London (UK)	Athens (GR)	Athens (GR)	Rotterdam (NL)	Paris (F)	Rotterdam (NL)	Rotterdam (NL)	North Brabant (NL)
6	London (UK)	Athens (GR)	Luxembourg (L)	Rotterdam (NL)	London (UK)	London (UK)	Western Zone (D)	Belgium (B)	Belgium (B)
7	Western Zone (D)	Western Zone (D)	Italy (I)	Luxembourg (L)	Dublin (IRL)	Dublin (IRL)	Dublin (IRL)	Athens (GR)	Italy (I)
8	Luxembourg (L)	Italy (I)	Rotterdam (NL)	Dublin (IRL)	Athens (GR)	Western Zone (D)	Belgium (B)	Dublin (IRL)	Western Zone (D)
9	Dublin (IRL)	Luxembourg (L)	Western Zone (D)	Western Zone (D)	Italy (I)	Belgium (B)	London (UK)	Italy (I)	Athens (GR)
10	Belgium (B)	Dublin (IRL)	Madrid (E)	Belgium (B)	Belgium (B)	Athens (GR)	Italy (I)	Western Zone (D)	Dublin (IRL)
11	Madrid (E)	Belgium (B)	Dublin (IRL)	Italy (I)	Western Zone (D)	Italy (I)	Athens (GR)	London (UK)	London (UK)
12	Hamburg (D)	Madrid (E)	Belgium (B)	Madrid (E)	Hamburg (D)	Hamburg (D)	Hamburg (D)	Hamburg (D)	Hamburg (D)
13	Italy (I)	Hamburg (D)	Hamburg (D)	Hamburg (D)	Madrid (E)	Madrid (E)	Madrid (E)	Madrid (E)	Madrid (E)
14	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)

ANNEX 9

**RANKING OF LOCATIONS IN INCREASING ORDER OF PRICE  
ON 1 JANUARY 1990**

RANKING OF LOCATIONS IN INCREASING ORDER OF PRICE								1/1/1990	
	la	lb	lc	ld	le	lf	lg	lh	li
1	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	Denmark (DK)	
2	Paris (F)	Paris (F)	North Brabant (NL)	North Brabant (NL)	North Brabant (NL)	North Brabant (NL)	North Brabant (NL)		
3	North Brabant (NL)	North Brabant (NL)	Paris (F)	Paris (F)	Paris (F)	Paris (F)	Paris (F)		
4	London (UK)	London (UK)	Rotterdam (NL)	Rotterdam (NL)	Rotterdam (NL)	Rotterdam (NL)	Luxembourg (L)		
5	Athens (GR)	Athens (GR)	Italy (I)	London (UK)	Dublin (IRL)	Rotterdam (NL)	Luxembourg (L)		
6	Glasgow (UK)	Glasgow (UK)	Luxembourg (L)	Italy (I)	Belgium (B)	Dublin (IRL)	Italy (I)		
7	Belgium (B)	Italy (I)	Athens (GR)	Belgium (B)	London (UK)	Belgium (B)	Dublin (IRL)		
8	Western Zone (D)	Rotterdam (NL)	Belgium (B)	Dublin (IRL)	Italy (I)	Glasgow (UK)	Belgium (B)		
9	Madrid (E)	Belgium (B)	London (UK)	Luxembourg (L)	Luxembourg (L)	London (UK)	Western Zone (D)		
10	Italy (I)	Western Zone (D)	Dublin (IRL)	Athens (GR)	Glasgow (UK)	Italy (I)	Glasgow (UK)		
11	Luxembourg (L)	Dublin (IRL)	Glasgow (UK)	Glasgow (UK)	Athens (GR)	Western Zone (D)	London (UK)		
12	Dublin (IRL)	Madrid (E)	Madrid (E)	Western Zone (D)	Hamburg (D)	Athens (GR)	Hamburg (D)		
13	Lisbon (P)	Luxembourg (L)	Western Zone (D)	Hamburg (D)	Western Zone (D)	Hamburg (D)	Athens (GR)		
14		Lisbon (P)	Hamburg (D)	Madrid (E)	Madrid (E)	Madrid (E)	Madrid (E)		
15			Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)	Lisbon (P)		

**ANNEX 10**  
**ELECTRICITY PRICES IN ECU PER 10 MWh PER YEAR**  
**(1 January 1985, 1990 and 1995)**

Electricity prices in ECU per 10 MWh per year				Electricity prices in ECU per 10 MWh per year			
Ia	Jan-85	Jan-90	Jan-95	Ib	Jan-85	Jan-90	Jan-95
Belgium (B)	1132	1290	1484	Belgium (B)	1127	1272	1468
Denmark (DK)	535	599	488	Denmark (DK)	529	592	480
Western Zone (D)	1237	1464	1456	Western Zone (D)	1196	1418	1456
Hamburg (D)	0	0	1866	Hamburg (D)	0	0	1866
Athens (GR)	1200	915	837	Athens (GR)	1196	913	834
Madrid (E)	929	1204	1176	Madrid (E)	815	1204	1176
Paris (F)	1148	931	1015	Paris (F)	1042	931	1015
Dublin (IRL)	1489	1320	1274	Dublin (IRL)	1489	1302	1257
Italy (I)	1684	1378	1367	Italy (I)	1537	1257	1100
Luxemburg (L)	1224	1366	1419	Luxemburg (L)	1217	1367	1438
Rotterdam (NL)	1244	0	1021	Rotterdam (NL)	1195	1286	1024
North Brabant (NL)	778	974	830	North Brabant (NL)	743	936	853
Lisbon (P)	1251	1084	1228	Lisbon (P)	1137	1087	1274
London (UK)	1015	893	955	London (UK)	1002	874	932

Electricity prices in ECU per 10 MWh per year				Electricity prices in ECU per 10 MWh per year			
Ic	Jan-85	Jan-90	Jan-95	Id	Jan-85	Jan-90	Jan-95
Belgium (B)	1026	1060	1215	Belgium (B)	827	812	917
Denmark (DK)	505	565	467	Denmark (DK)	484	543	436
Western Zone(D)	1071	1276	1281	Western Zone(D)	849	1026	1058
Hamburg (D)	1434	1394	1588	Hamburg (D)	1009	1144	1274
Athens (GR)	1105	843	770	Athens (GR)	918	700	613
Madrid (E)	765	1015	890	Madrid (E)	706	932	819
Paris (F)	692	854	937	Paris (F)	692	712	774
Dublin (IRL)	1231	1045	1008	Dublin (IRL)	971	798	771
Italy (I)	1233	982	860	Italy (I)	1052	819	772
Luxemburg (L)	948	1056	1107	Luxemburg (L)	777	863	902
Rotterdam (NL)	1009	945	1127	Rotterdam (NL)	940	791	879
North Brabant (NL)	1102	715	989	North Brabant (NL)	613	584	632
Lisbon (P)	957	900	1049	Lisbon (P)	842	780	899
London (UK)	933	962	780	London (UK)	731	726	677

ANNEX 10

Electricity prices in ECU per 10 MWh per year				Electricity prices in ECU per 10 MWh per year			
le	Jan-85	Jan-90	Jan-95	If	Jan-85	Jan-90	Jan-95
Belgium (B)	737	694	776	Belgium (B)	690	664	735
Denmark (DK)	420	475	433	Denmark (DK)	444	472	423
Western Zone (D)	753	917	935	Western Zone (D)	689	843	856
Hamburg (D)	810	914	1022	Hamburg (D)	810	914	1022
Athens (GR)	855	652	567	Athens (GR)	855	652	567
Madrid (E)	635	829	731	Madrid (E)	602	778	685
Paris (F)	567	581	650	Paris (F)	567	581	550
Dublin (IRL)	854	652	629	Dublin (IRL)	830	609	588
Italy (I)	902	737	634	Italy (I)	906	719	634
Luxemburg (L)	665	733	765	Luxemburg (L)	618	589	587
Rotterdam (NL)	870	663	700	Rotterdam (NL)	806	615	607
North Brabant (NL)	558	496	533	North Brabant (NL)	556	494	531
Lisbon (P)	766	699	799	Lisbon (P)	766	700	799
London (UK)	636	634	600	London (UK)	635	631	570

Electricity prices in ECU per 10 MWh per year			
Ig	Jan-85	Jan-90	Jan-95
Belgium (B)	593	575	603
Denmark (DK)	390	438	404
Western Zone (D)	537	656	662
Hamburg (D)	0	763	856
Athen (GR)	725	552	482
Madrid (E)	544	709	616
Paris (F)	472	495	561
Dublin (IRL)	750	524	506
Italy (I)	669	530	516
Luxemburg (L)	505	483	483
Rotterdam (NL)	685	989	494
North Brabant (NL)	675	434	474
Lisbon (P)	709	641	655
London (UK)	0	567	525

**ANNEX 11**

**Gas prices (net of tax) to industrial users by location in national currency:  
situation and trends on 1 January 1985, 1990 and 1995**

<b>Gas prices (net of tax) to industrial users</b>									
<b>Belgium (B)</b>			<b>in BFR/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	97.7	100	36840	36840	36840	36840	36840	36840	36840
1990	109.2	116.6	24620	24620	24620	24620	24620	24620	24620
1995	124	(131)	23700	23700	23700	23700	23700	23700	23700
<b>Denmark (DK)</b>			<b>in DKR/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	98	100	NA	NA	NA	NA	NA	NA	NA
1990	119.5	121	NA	NA	NA	NA	NA	NA	NA
1995	132	(131)	3870	3650	2710	2710	2370	2370	NA
<b>Weser-Ems (D)</b>			<b>in DM/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	99.3	100	1438	1394	1292	1292	1279	1237	1228
1990	105.8	112.7	838	794	665	665	609	609	584
1995	125	(132)	978	875	678	678	569	569	517
<b>Berlin (D)</b>			<b>in DM/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	99.3	100	NA	NA	NA	NA	NA	NA	NA
1990	105.8	112.7	NA	NA	NA	NA	NA	NA	NA
1995	125	(132)	1497	1072	1050	1050	900	872	NA
<b>Madrid (E)</b>			<b>in PTA/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	97	100	160400	153600	152700	152700	NA	NA	11A
1990	133.2	142.8	118400	78500	73800	73800	NA	NA	NA
1995	172	(178)	190010	83020	52170	50250	46110	46110	NA
<b>Paris (F)</b>			<b>in FF/100 GJ/Year</b>						
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	97.4	100	5352	4647	4222	4129	3850	3780	3753
1990	114.7	119.4	3796	3157	2298	2242	1975	1925	1901
1995	128	(134)	3960	3337	2132	1945	1691	1640	NA

Dublin (IRL) <span style="float: right;">in IRL/100 GJ/Year</span>									
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	98,3	100	630	559	NA	NA	NA	NA	NA
1990	116,7	114,8	380	380	340	340	175	175	175
1995	130	(126)	549	446	254	254	NA	NA	NA

Milano (I) <span style="float: right;">in LIT/100 GJ/Year</span>									
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	96,1	100	1118900	1084500	1008300	924900	937000	914400	862400
1990	128,2	139,4	1163600	1122400	529500	496600	468200	434800	408500
1995	163	(171)	1456300	1011900	655100	626500	575900	543800	NA

Luxemburg (L) <span style="float: right;">in LUF/100 GJ/Year</span>									
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	97,8	100	32880	32160	30800	28750	NA	NA	NA
1990	108	116,6	20003	17691	16991	16767	16603	16603	NA
1995	124	(132)	19451	17610	17237	15149	15086	15086	NA

Rotterdam (NL) <span style="float: right;">in HFL/100 GJ/Year</span>									
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	98,6	100	1594	1582	1492	1492	1410	1410	1328
1990	102,5	104,4	1140	1125	762	762	645	645	NA
1995	119	(117)	1184	1162	742	742	593	593	518

London (UK) <span style="float: right;">in UKL/100 GJ/Year</span>									
Year	I.P.C.	P.I.B.	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
1985	96,4	100	343	325	308	308	308	308	271
1990	126,3	131,1	386	303	290	286	246	242	156
1995	154	(157)	333	298	262	258	256	227	NA

ANNEX 12  
 EUR12: GAS PRICES (NET OF TAX) TO INDUSTRIAL USERS IN PPS/100 GJ  
 on 01/01/1995

<i>Gas prices (net of tax) to industrial users on 1/1/1995</i>								
	11	12	13-1	13-2	14-1	14-2	15	11/15
BELGIUM (B)	588	461	418	342	342	316	N.A.	1.90
DENMARK(DK)	411	387	288	288	251	251	N.A.	1.60
WESER-EMS(D)	428	383	297	297	249	249	226	1.90
BERLIN(D)	655	469	460	460	394	382	N.A.	1.70
MADRID(E)	1454	637	400	385	354	354	N.A.	4.10
PARIS(F)	562	473	303	276	240	233	N.A.	2.40
STRASBURG(F)	650	571	353	334	N.A.	N.A.	N.A.	1.90
DUBLIN(IRL)	769	625	356	356	N.A.	N.A.	N.A.	2.10
TURIN(I)	753	598	387	370	340	321	N.A.	2.30
NAPLES(I)	1099	598	387	370	340	321	N.A.	3.42
LUXEMBURG(L)	451	408	400	351	350	350	N.A.	1.30
ROTTERDAM(NL)	516	507	324	324	259	259	226	1.20
LONDON(UK)	481	432	379	373	371	328	N.A.	1.50
BIRMINGHAM(UK)	497	428	975	351	334	N.A.	N.A.	1.50

\*or last known consumer where no 15.



**ANNEX 13**

**EUR12: GAS PRICES (NET OF TAX) TO INDUSTRIAL USERS IN PPS/100 GJ  
on 01/01/1990**

Gas prices (net of tax) to industrial users on 1/1/1990								
	11	12	13-1	13-2	14-1	14-2	15	11/15
Belgium(B)	580	469	421	352	352	329	321	1.80
Hanover(D)	672	569	497	492	470	272	272	2.50
Weser-Ems(D)	372	353	296	296	271	271	260	1.40
Madrid(E)	1006	667	627	627	N.A	N.A	N.A	1.60
Paris(F)	533	443	323	315	277	270	N.A	2.00
Strasbourg(F)	700	579	N.A	346	N.A	N.A	N.A	2.00
Dublin(IRL)	511	511	458	458	236	236	236	2.10
Turin(I)	699	651	344	323	304	283	266	2.60
Naples(I)	1130	944	344	323	304	283	266	4.20
Luxembourg(L)	468	414	398	393	389	389	N.A	1.20
Rotterdam(NL)	489	483	327	327	277	277	N.A	1.80
London(UK)	588	461	441	435	374	368	237	2.50

**ANNEX 14**  
**GAS PRICES (NET OF TAX) TO INDUSTRIAL USERS IN GERMANY**  
**on 1 January 1990 and 1995**

<i>Gas prices (net of tax) to industrial users on 1/1/95</i>							Germany
	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
Düsseldorf	1350	983	967	919	803	756	433
Hamburg	1022	1014	861	786	708	NA	NA
Hanover	1289	972	844	836	792	NA	NA
Dortmund	1003	850	822	789	733	703	433
Frankfurt	1069	983	847	817	781	753	NA
Stuttgart	1231	1097	1058	944	875	750	NA
Munich	1161	1094	1028	836	797	742	456
Weser-Ems	978	875	678	678	569	569	517
Dresden	1233	994	892	836	667	NA	NA
Berlin	1497	1072	1050	1050	900	872	NA
<i>Gas prices (net of tax) to industrial users on 1/1/90</i>							Germany
	I1	I2	I3-1	I3-2	I4-1	I4-2	I5
Düsseldorf	1306	982	967	924	914	772	635
Hamburg	1103	1103	928	853	834	612	612
Hanover	1512	1280	1119	1108	1058	612	612
Dortmund	1028	834	806	773	684	684	621
Frankfurt	992	939	718	718	714	714	714
Stuttgart	1075	1103	1181	923	923	834	834
Munich	1482	1002	1114	1032	864	751	609
Weser-Ems	838	794	665	665	609	609	584
Dresden	NA	NA	NA	NA	NA	NA	NA
Berlin	NA	NA	NA	NA	NA	NA	NA

ANNEX 15

Ranking of locations in increasing order of price on 1 January 1995

Ranking of locations in increasing order of price							01/01/1995
	11	12	13-1	13-2	14-1	14-2	15
1	Denmark(DK)	Weser-Ems(D)	Denmark(DK)	Paris(F)	Paris(F)	Paris(F)	Weser-Ems(D)
2	Weser-Ems(D)	Denmark(DK)	Weser-Ems(D)	Denmark(DK)	Weser-Ems(D)	Weser-Ems(D)	Rotterdam(NL)
3	Luxembourg(L)	Luxembourg(L)	Paris(F)	Weser-Ems(D)	Denmark(DK)	Denmark(DK)	
4	London(UK)	Birmingham(UK)	Rotterdam(NL)	Rotterdam(NL)	Rotterdam(NL)	Rotterdam(NL)	
5	Birmingham(UK)	London(UK)	Strasbourg(F)	Strasbourg(F)	Birmingham(UK)	Belgium(B)	
6	Rotterdam(NL)	Belgium(B)	Dublin(IRL)	Belgium(B)	Turin(I)	Turin(I)	
7	Paris(F)	Berlin(D)	Birmingham(UK)	Birmingham(UK)	Naples(I)	Naples(I)	
8	Belgium(B)	Paris(F)	London(UK)	Luxembourg(L)	Belgium(B)	London(UK)	
9	Strasbourg(F)	Rotterdam(NL)	Turin(I)	Dublin(IRL)	Luxembourg(L)	Luxembourg(L)	
10	Berlin(D)	Strasbourg(F)	Naples(I)	Turin(I)	Madrid(E)	Madrid(E)	
11	Turin(I)	Turin(I)	Luxembourg(L)	Naples(I)	London(UK)	Berlin(D)	
12	Dublin(IRL)	Naples(I)	Madrid(E)	London(UK)	Berlin(D)		
13	Naples(I)	Dublin(IRL)	Belgium(B)	Madrid(E)			
14	Madrid(E)	Madrid(E)	Berlin(D)	Berlin(D)			

**ANNEX 16**

**RANKING OF LOCATIONS IN INCREASING ORDER OF PRICE  
on 1 January 1990**

Ranking of locations in increasing order of price							Gaz01/01/90
	<i>11</i>	<i>12</i>	<i>13-1</i>	<i>13-2</i>	<i>14-1</i>	<i>14-2</i>	<i>15</i>
1	Weser-Ems(D)	Weser-Ems(D)	Weser-Ems(D)	Weser-Ems(D)	Dublin(IRL)	Dublin(IRL)	Dublin(IRL)
2	Luxembourg(L)	Luxembourg(L)	Paris(F)	Paris(F)	Weser-Ems(D)	Paris(F)	London(UK)
3	Rotterdam(NL)	Paris(F)	Rotterdam(NL)	Turin(I)	Paris(F)	Weser-Ems(D)	Weser-Ems(D)
4	Dublin(IRL)	London(UK)	Turin(I)	Naples(I)	Rotterdam(NL)	Hanover(D)	Turin(I)
5	Paris(F)	Belgium(B)	Naples(I)	Rotterdam(NL)	Turin(I)	Rotterdam(NL)	Naples(I)
6	Belgium(B)	Rotterdam(NL)	Luxembourg(L)	Strasbourg(F)	Naples(I)	Turin(I)	Hanover(D)
7	London(UK)	Dublin(IRL)	Belgium(B)	Belgium(B)	Belgium(B)	Naples(I)	Belgium(B)
8	Hanover(D)	Hanover(D)	London(UK)	Luxembourg(L)	London(UK)	Belgium(B)	
9	Turin(I)	Strasbourg(F)	Dublin(IRL)	London(UK)	Luxembourg(L)	London(UK)	
10	Strasbourg(F)	Turin(I)	Hanover(D)	Dublin(IRL)	Hanover(D)	Luxembourg(L)	
11	Madrid(E)	Madrid(E)	Madrid(E)	Hanover(D)			
12	Naples(I)	Naples(I)		Madrid(E)			

**ANNEX 17**  
**GAS PRICES IN ECU IN 1985 - 1990 - 1995**

Gas prices in ECU/100 GJ/Year				Gas prices in ECU/100 GJ/Year			
I1	Jan-85	Jan-90	Jan-95	I2	Jan-85	Jan-90	Jan-95
Belgium(B)	827	578	605	Belgium(B)	758	467	474
Denmark(DK)	NA	NA	517	Denmark(DK)	NA	NA	487
Weser-Ems(D)	647	412	514	Weser-Ems(D)	627	390	460
Madrid(E)	1304	897	1155	Madrid(E)	1249	595	505
Paris(F)	786	548	602	Paris(F)	683	456	508
Strasbourg(F)	937	720	697	Strasbourg(F)	779	595	612
Dublin(IRL)	882	494	689	Dublin(IRL)	783	494	560
Turin(I)	877	710	638	Turin(I)	827	661	506
Naples(I)	NA	1148	931	Naples(I)	NA	958	506
Luxembourg(L)	738	469	497	Luxembourg(L)	722	415	450
Rotterdam(NL)	634	497	556	Rotterdam(NL)	630	490	454
London(UK)	551	530	422	London(UK)	523	416	378

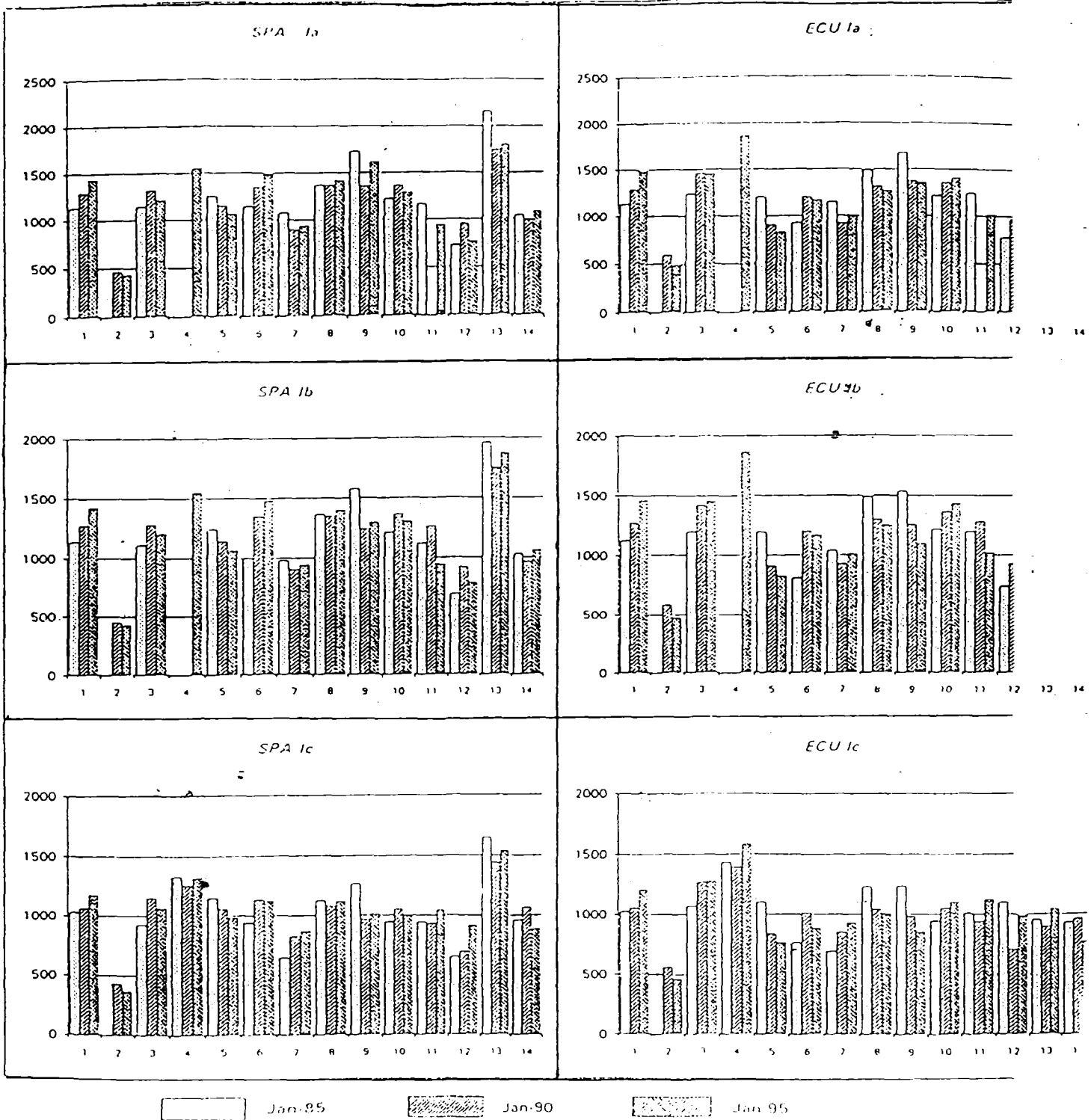
Gas prices in ECU/100 GJ/Year				Gas prices in ECU/100 GJ/Year			
I3-1	Jan-85	Jan-90	Jan-95	I3-2	Jan-85	Jan-90	Jan-95
Belgium(B)	692	419	408	Belgium(B)	632	350	329
Denmark(DK)	NA	NA	362	Denmark(DK)	NA	NA	362
Weser-Ems(D)	581	327	357	Weser-Ems(D)	581	327	357
Madrid(E)	1241	559	317	Madrid(E)	1241	559	305
Paris(F)	620	332	324	Paris(F)	606	324	296
Strasbourg(F)	NA	NA	378	Strasbourg(F)	639	356	358
Dublin(IRL)	NA	442	319	Dublin(IRL)	NA	442	319
Turin(I)	736	349	328	Turin(I)	719	328	313
Naples(I)	736	349	328	Naples(I)	719	328	313
Luxembourg(L)	692	399	440	Luxembourg(L)	646	393	387
Rotterdam(NL)	594	332	348	Rotterdam(NL)	594	332	348
London(UK)	495	398	332	London(UK)	495	393	327

Gas prices in ECU/100 GJ/Year				Gas prices in ECU/100 GJ/Year			
I4-1	Jan-85	Jan-90	Jan-95	I4-2	Jan-85	Jan-90	Jan-95
Belgium(B)	632	350	329	Belgium(B)	611	327	303
Denmark(DK)	NA	NA	316	Denmark(DK)	NA	NA	316
Weser-Ems(D)	575	299	299	Weser-Ems(D)	556	299	299
Madrid(E)	NA	NA	280	Madrid(E)	NA	NA	280
Paris(F)	565	285	257	Paris(F)	555	278	249
Strasbourg(F)	NA	NA	NA	Strasbourg(F)	NA	NA	NA
Dublin(IRL)	NA	227	NA	Dublin(IRL)	NA	227	NA
Turin(I)	684	309	288	Turin(I)	668	287	272
Naples(I)	684	309	288	Naples(I)	668	287	272
Luxembourg(L)	NA	390	385	Luxembourg(L)	NA	390	385
Rotterdam(NL)	561	281	278	Rotterdam(NL)	561	281	278
London(UK)	495	338	325	London(UK)	495	332	287

Gas prices in ECU/100 GJ/Year			
I5-1	Jan-85	Jan-90	Jan-95
Belgium(B)	605	320	NA
Denmark(DK)	NA	NA	NA
Weser-Ems(D)	552	287	272
Madrid(E)	NA	NA	NA
Paris(F)	551	275	NA
Strasbourg(F)	NA	NA	NA
Dublin(IRL)	NA	227	NA
Turin(I)	630	270	NA
Naples(I)	630	270	NA
Luxembourg(L)	NA	NA	NA
Rotterdam(NL)	529	NA	243
London(UK)	436	214	NA

GRAPHS

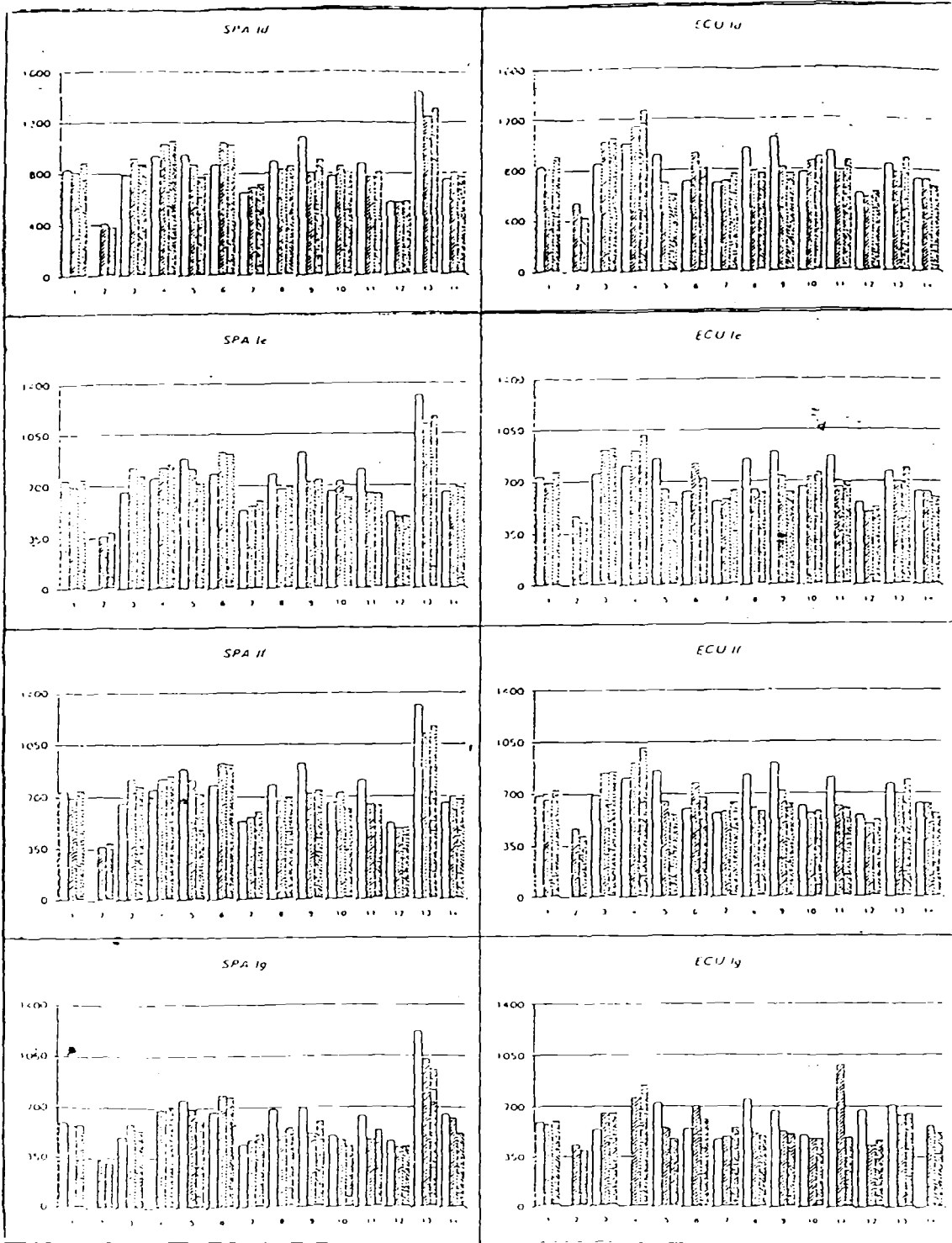
ELECTRICITY PRICES 1985, 1990, 1995



Notes: 1- Belgium(B)4- Hamburg(D)7- Paris(F)10- Luxembourg(L)13 - Lisbon(P)  
 2- Denmark(DK)5- Athens(G)8- Dublin(IRL)11- Rotterdam(NL)14- London(UK)  
 3- Western Zone(D)6- Madrid(E)9- Italy(I)12- North Brahant

GRAPHS

ELECTRICITY PRICES 1985, 1990, 1995

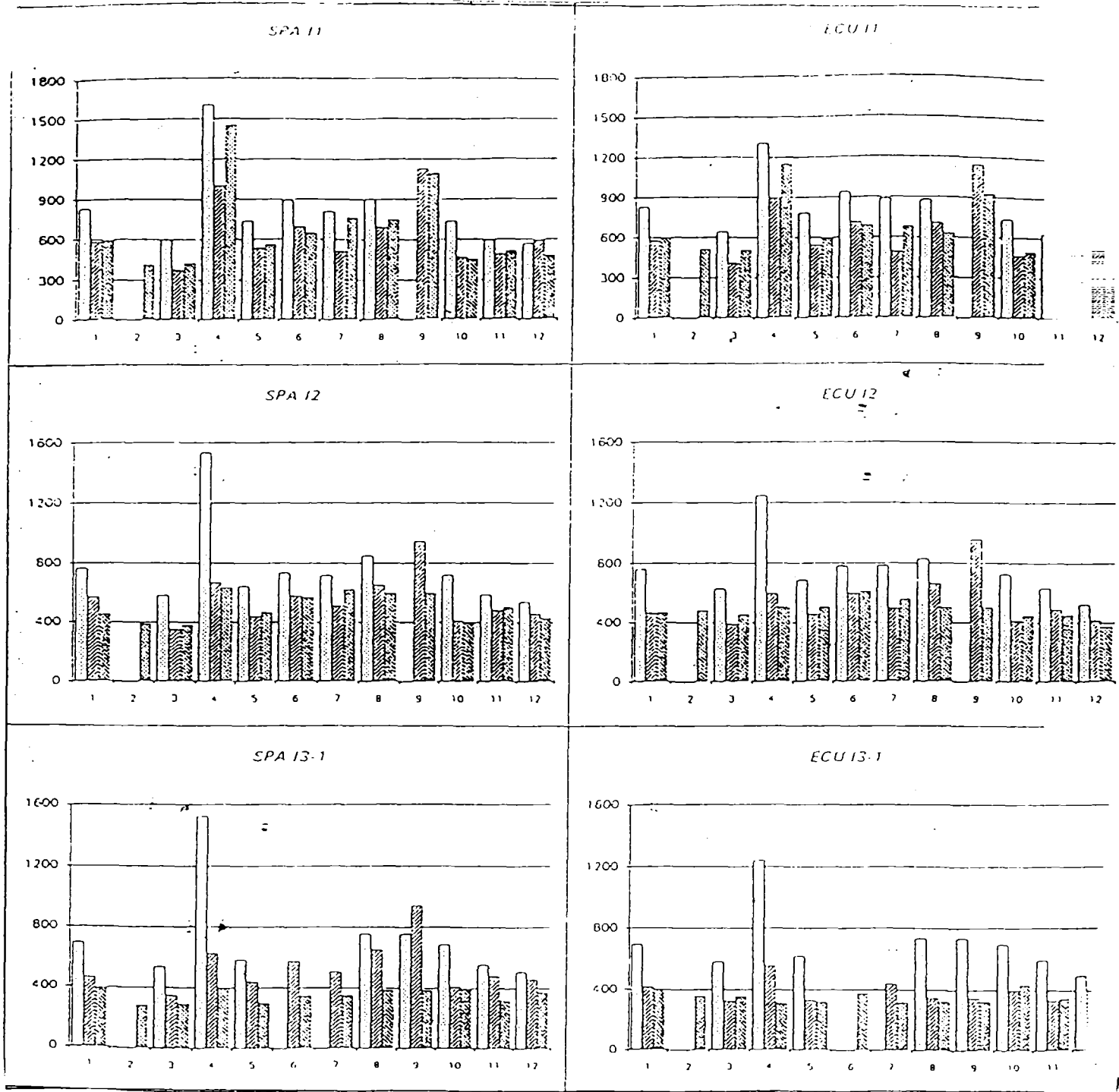


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GRAPHS

NATURAL GAS PRICES IN 1985, 1990 and 1995

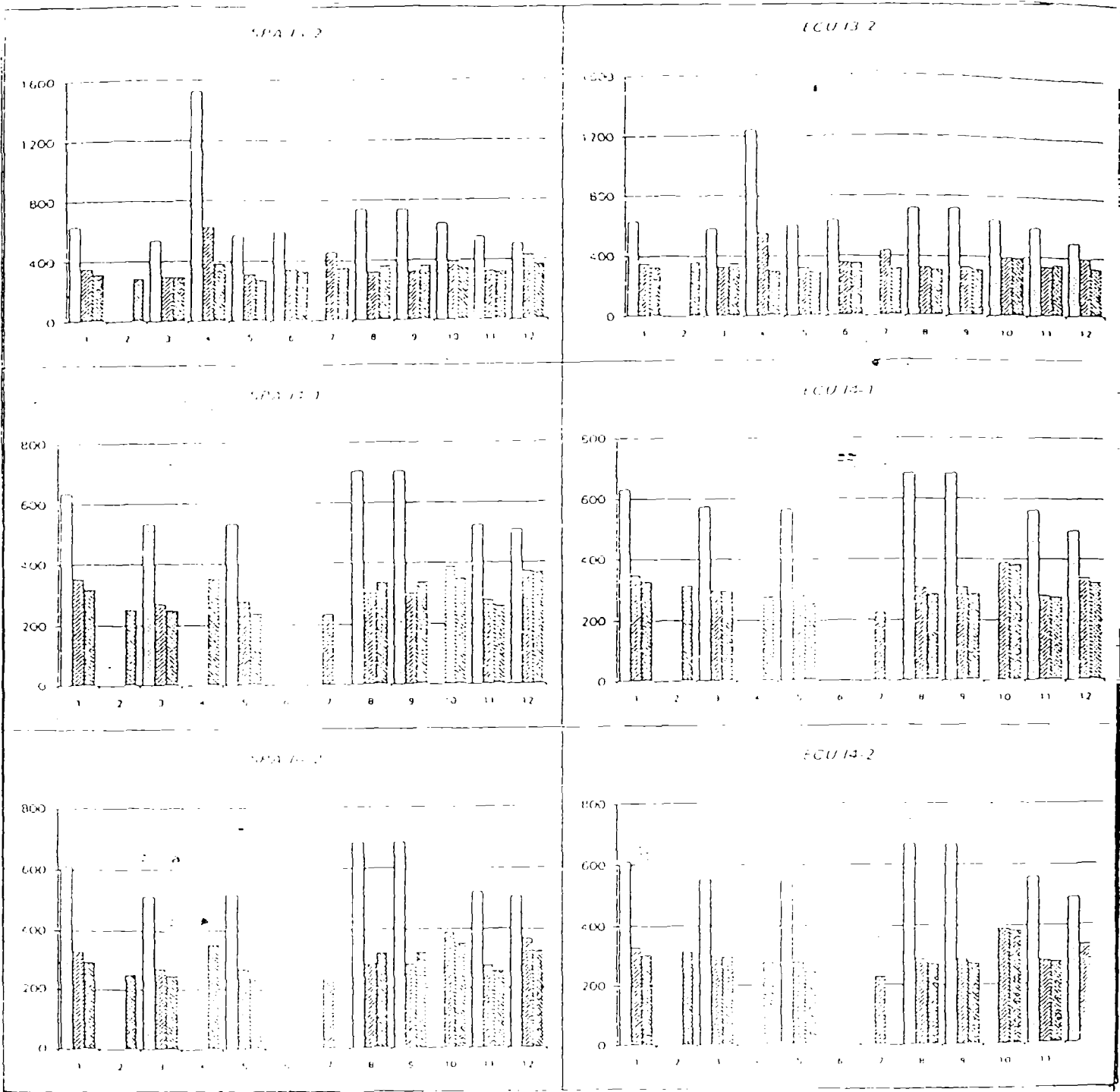


Jan-85 Jan-90 Jan-95

Notes: 1- Belgium(B)4- Hamburg(D)7- Dublin(IRE)10- Luxembourg(L)  
 2- Denmark(DK)5- Paris (F)8-Turin(I)11- Rotterdam(NL))  
 3- Weser-Ems(D)6- Strasbourg (F)9-Naples(I)12- London (UK)

GRAPHS

NATURAL GAS PRICES IN 1985, 1990 and 1995



1985
  1990
  1995

Notes 1- Belgium(B)4- Hamburg(D)7- Dublin(IRL)10- Luxembourg(L)  
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