APPENDIX D

Measurement of Financial Support for Coal Production Using a Producer Subsidy Equivalent Calculation

Introduction

This Annex describes the producer subsidy equivalent (PSE) calculation and provides an interpretation of its application to forms of financial support for coal production. The main difficulties and data issues are discussed, and the results obtained are set out in tables for each country. Detailed notes to the tables describe the sources and nature of the data employed.

The PSE has been developed within the OECD as a method for calculating a single monetary measure of the financial support provided by direct subsidies and a variety of other measures that support the domestic production of agricultural products. The technique appears equally applicable to coal. Using this method, it is possible to compare support systems across countries that produce very different ranges of products and have different and complex systems of financial support. The method is purely descriptive: it does not explain why a support system exists, nor does it suggest how, how much or how fast a support system should be changed.

The method of calculating PSEs has been agreed among OECD Member countries for its application to agricultural commodities. These applications have been presented in a number of OECD papers and publications. Some countries have proposed that the methodology be applied within the General Agreement on Tariffs and Trade.

PSEs and their Interpretation

A PSE defines the monetary payment to domestic producers equivalent to the total value of existing support provided at current levels of production, consumption and trade, and hence world prices. Put in another way, it is the payment that would just keep all domestic production competitive with imports at existing levels of coal output, current producer incomes and

import prices. It thus evaluates the support system that maintains domestic production and imports at their current levels. Clearly, if all support systems for high-cost coal production in all countries were withdrawn at once, world coal import requirements would likely rise, and with it coal import prices would rise in the short term. In the resulting equilibrium situation, with no systems of support remaining, the PSE would be zero. However, the PSE in a given year does not presuppose some different level of imports, it only evaluates the system of support that is maintaining the existing situation.

It is important to keep in mind this aspect of the PSE as a static measure when interpreting the results of the calculations. In the text of this report, for example, it is argued that the coal prices that prevailed in the international markets of 1987 are not sustainable in the longer run in the sense that at these prices coal exporters would not be willing to invest in significant additional production facilities because they would be unable to earn an adequate rate of return on the capital involved. Similarly appraisal analyses for investment, disinvestment or policy change decisions would need to take account of expected future prices. In the medium to longer term it would be prudent to assume that future prices will be close to sustainable levels when additional production capacity will be needed to meet growing coal demand. However, the PSE is not concerned with situations in the future; it attempts to evaluate the support systems for domestic coal production which maintain the present situation and current world coal price levels. For the same reason, PSEs are converted into different currencies using the average exchange rates of the year in question, even though exchange rates in any particular year may be considered anomalous. By calculating PSEs for a run of years and by quoting them both in national currencies and in United States' dollars (which allows broad international comparisons to be made), the problem of any one year's data being unrepresentative can be overcome.

The General Method

Support for production normally takes two forms: direct (or budgetary) assistance and price support. Many direct monetary payments to producers, such as government deficit payments, clearly help to maintain current domestic production and are therefore included in the calculation of the PSE. Other direct payments are designed to speed contraction of the industry, or are otherwise unrelated to current production, and are therefore excluded from the PSE. Other, indirect support components, such as import restrictions, can result in prices of internal production that are higher than the cost of imports (after allowing for quality or internal transport cost differences). Some of this support arises as the result of specific long-term arrangements between coal industries and utilities. The evaluation of these indirect support components, as a whole, can be obtained by multiplying the volume of the product concerned by the difference between the actual

price received by domestic producers and a reference price (usually the border import price, adjusted for physical quality differences and inland transport costs).

In the tables given in this appendix, the total PSE for each country examined is obtained by adding together the relevant net budgetary payments to producers and the calculated value of the indirect measures, as described above. The aim is to include in the PSE the total value of those forms of protection provided to the domestic coal industry that the industry itself would normally be expected to cover in a competitive situation. For comparison with other published figures, separate listings are also given for aids not benefitting current production. As is customary, the PSEs have been calculated on an annual basis.

Conceptual and Data-related Problems in Applying the PSE Methodology to Coal

Direct Financial Aid to Current Production

Forms of direct financial aid to coal producers vary widely, but they generally fall into one of several broad categories: capital grants; deficit grants, or grants to cover operating losses; grants to help companies meet interest payments; and direct payments to employed miners.

Grants for capital investment. Grants to help cover the costs of captital investments have in most cases been included in the PSE calculation as a source of revenue for the year in which the grants were provided. In cases where the government has an equity interest in the coal producer, and grants for ongoing capital investments are regarded as gross additions to equity, the depreciation losses have been taken as the effective level of support. Implicitly, the depreciation items included in the accounts of the coal industries in each country have been accepted as an adequate measure of capital consumption allowable for current production. No attempt has been made to check whether these allowances were appropriate — for example, whether previous capital write-offs now make them too low.

Deficit grants. Deficit grants are by definition unspecific as to the kinds of costs they offset. In all cases, the entire value of the deficit grant has been included in the calculation of the PSE.

Interest payment grants. In many cases grants are provide to help producers meet payments of accrued interest, and these represent a surrogate for a return on capital. Where concessional credit rates are provided and could be itemised the value of these concessions have been included in the PSE.

Payments to employed miners. In some instances, government grants are paid directly to employed miners. Although the producing firms do not benefit directly from such grants, they benefit indirectly, since such payments presumably lower the wage demands that the firms would otherwise have to meet in order to attract the necessary skilled labour.

Price Support

Selection of an appropriate reference price, against which the domestic price is to be compared, is clearly critical to an accurate measurement of the level of support provided through high prices. Ideally, the two sets of prices should compare like with like — that is, they should relate to commodities of similar quality and conditions of exchange (e.g., contract lengths). With coal, as with many commodities, however, it is often the case that none of the available reference price series perfectly fit this ideal, and so the result must inevitably be approximate.

Because price information is not usually available for individual transactions, both the domestic and the reference prices have been calculated for an average or typical consumer. Where possible, however, the difference between the actual price received by domestic consumers and the reference price has been calculated for comparable coal qualities and for similar lengths of contract. Differences in thermal quality between domestic and imported steam coals have been adjusted by expressing prices (and quantities) in thermal-equivalent terms. Inevitably, such adjustments mean that individual prices are specified separately for each country. This causes no great conceptual problems as long as the general principles are applied consistantly in each case.

A particular methodological problem is raised in the case of countries where past and current financial support systems have kept imports from growing to a volume large enough to support the development of modern, efficient transshipment and transport facilities. In such circumstances the degree of support includes the absence of an importing infrastructure capable of allowing imports to compete with the country's uneconomic coal production, or of providing access for ships of a size normally used in international seaborne coal trade. This consequence of the support system must be taken into account in specifying the reference price used in calculating the price support component of the PSE. Unadjusted, the current average import price is an inappropriate basis for comparison. In order to capture the degree of support afforded by the support system, the reference price should reflect the import price by package size, type of ship and port facility usual in the trade of countries within the region.

For the United Kingdom, for example, this has been taken as direct deliveries to deep-water ports in the United Kingdom rather than the import price resulting from breaking cargo at Rotterdam and delivery by smaller boats to the United Kingdom. In all cases, approximate adjustments for port-to-consumer and mine-to-consumer transport costs are made before the price difference is calculated.

Assistance not Benefiting Current Production

A number of types of assistance have not been included in the calculations of countries' PSEs, as they were judged to provide no benefit to current production (one unambiguous example would be development aid to mining regions). Where the assistance given was surplus to the producers' needs, however, the amount of this surplus has been regarded as an aid benefiting current production. The conceptual issues relating to these categories are explored below.

Research and Development. RD&D expenditures are incurred in many industries as a part of normal operations, in order to stay abreast with progress in technologies and production techniques and to adapt these new methods to the particular conditions of each company. Other RD&D expenditures may be more speculative. As explained below, however, grants for RD&D have not been included in the calculations of PSEs.

In virtually all coal-producing countries aid is granted to coal-related RD&D. A significant proportion of these grants is given in order to spur developments in mining technology generally. The IEA has encouraged such aid. Much of the state-supported RD&D goes to projects, the results of which are intended to benefit coal producers (or consumers) generally and are not designed for the benefit of domestic producers specifically. Some, however, are specific, such as those associated with the installation of new technologies in operating mines. Unfortunately, data on RD&D expenditures and aid are not reported in sufficient detail to allow treatment in this form. (For a similar reason, the general assistance provided to domestic coal industries by government-sponsored coal exploration programmes has not been included in countries' PSE values.) In the present study, aid for RD&D has been included in the PSE only where governments themselves report separate estimates of aid for the promotion of innovation in working mines.

Payments to redundant miners. State payments to redundant miners are excluded from the estimated PSEs. It is assumed that mining companies are not exempt from contributions to redundancy schemes or redundancy payments normal for the country in question and that these have been included in the company costs. Special redundancy payments paid to induce miners to leave the industry are not part of the costs of current production.

Inherited liabilities. These form a large category of state aid to coal production. They represent current outlays that stem from past mining activities and hence do not form part of current production costs. Two broad categories can be distinguished. The first stems from the environmental consequences of mining and includes the treatment or clean-up of ground subsidence, mine-waste piles, gas emissions, ground-water pollution and the like. The other category includes outstanding financial debts of coal producing companies or commitments to former employees. The Commission of the European Community treats such aid as distinct from aid to current production.

In the normal course of events a company will make provision in its current account for future liabilities of this type. In British Coal's accounts, for example, provision is made as coal is mined to cover the Corporation's estimated future liabilities to meet the costs of surface damage expected to arise as a result of current mining. The provision is estimated on the basis of current experience and is varied according to local conditions. This provision is then transferred from the profit and loss account to a special fund out of which current claims (relating to earlier years' damages) are paid. A similar account is maintained to provide for the future costs of site restoration when mines are closed.

In the United States, mining companies are required to place a performance bond sufficient to cover expected future environmental liabilities and to restore mine sites once abandoned. Even companies that have been declared bankrupt have been held responsible for such liabilities.

It is quite possible for mining companies in a country to be making proper accounting provision for future liabilities arising from current production and for the government to be paying for the current relief of damage which originated at a time when no adequate provision was made. Such state aids do not form part of the PSE as they are unrelated to current coal production. In general, state payments for inherited liabilities would only be included in the PSE for a country where there is no evidence that current provision for future liabilities is being made. In such cases this element in the PSE would act as a surrogate for state aid to current production in order to provide such a provision.

Results

As will be seen from the above detailed points, the results of the PSE calculations are necessarily approximate, but they provide a useful though limited guide to the scale of support provided and the differences between countries. No alternative measure is available for these purposes. For purposes of comparison, the total PSE for each country has been divided in each year by the affected production, to yield an average PSE per metric ton produced. Such a calculation undoubtedly conceals any dispersion there may be in support for production within individual countries. Thus some mines may require more support than the average, some less, and some perhaps none at all.

BELGIUM

Since September 1984, when the last coal mine in the southern coalfield was closed down, all Belgian deep-mined production has come from the northern, Kempen (or Campine) coalfield. Before 1987 there were five underground coal mines, all run by a single company, Kempense Steenkoolmijnen (KS), the majority shares of which are held by the national Government. Geological conditions in the Belgian coalfields are among the least favourable in the world, and, accordingly, productivity is low, about two-thirds of the western European average.

Most direct budgetary aid to current production takes the form of deficit grants and support for coking coal sales. A problem in the interpretation of these aids is that, starting in 1980, the state has regarded such budgetary grants to the Kempen mines as acquisition of equity — its ownership share increased from 7% to 77% in 1981, and to 100% in 1988.

For some time, sales of domestic coal to coke ovens and thermal electric power producers have been guaranteed under various special arrangements. Under the current arrangement the Belgian steel industry initially agreed to purchase 3.0 to 3.1 Mmt annually through 1986, but this figure was lowered to 2.6 Mmt for 1986. The arrangement with the Pool des Calories, the central buying agency for Belgium's four largest electric generating utilities, called for purchases of approximately 2.1 Mmt of coal each year from 1984 through 1987. Negotiations are underway to develop this arrangement further.

Since the early 1970s, the price of domestic coking coal sold under contracts of one years' duration or greater have been set to more or less match imported coking coal prices. Until recently, however, this was not the case for thermal coal, particularly with regard to coal sold by the Belgian coal producers to the electric utilities. Prior to 1984, the price paid for indigenous, deep-mined coal was calculated on the basis of the weighted average thermal-equivalent price paid by the Pool des Calories for *all* its fossil fuel requirements (excluding, of course, Belgian coal) — i.e., fuel oil, natural gas, and imported coal. (This price formula was not applied, however, to coal reclaimed from mine tips; this coal has always fetched a market price.) To the extent that the thermal-equivalent price of fuel oil and natural gas were considerably above the price of imported steam coal, and

Table D-1
Aids to Belgian Coal Producers
(Millions of nominal Belgian francs)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Investment aid	510	567	593	588	630	0
b) Aid to maintain a qualified workforce	13 e/	12	16	15	12	10
c) Aid to maintain surplus producers' stocks	0	146	106	0	0	0
d) Aid to promote sales of coal and coke	3 324 e/	1 530	3 794	4 390	6 527	6 950
e) Deficit grant to help cover operating losses	3 467 e/	4 518	4 665	4 796	5 849	8 629
Subtotal	7 332 e/	6 773	9 174	9 789	13 018	13 018
2) Indirect financial aid to current production						
f) Grants to supplement miners' holiday and sickness benefits	476	533	561	544	550 e/	500 e/
3) Price Support						
g) Excess payment by public electricity producers for domestically-produced coal	nd	nd	nd	[956 e/]	[neg.]	[neg.]
Total PSE (excluding price support element)	7 808 e/	7 306	9 735	10 333	13 568 e/	16 089 e/
Per metric ton produced	BF 1 195	BF 1 200	BF 1 545	BF 1 660	BF 2 430	BF 3 650
Per metric ton sold	nd	nd	BF 1 260	BF 1 640	BF 2 485	BF 2 925
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Deficit payments to finance social security benefits (with respect to:)						
h) Old-age and survivors' pensions insurance	18 909	27 408	28 681	29 349	nd	nd
i) Disability pensions insurance	5 212	5 798	5 905	5 731	nd	nd
j) Occupational disease payments	8 000	8 766	8 240	7 781	nd	nd
Total of Category II	32 121	41 971	42 826	42 861	nd	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	39 929	49 277	52 561	53 194	nd	nd

nd = no data available.
p = provisional estimate.
e/ = IEA Secretariat estimate.

Table D-2
Aids to Belgian Coal Producers
(Millions of nominal U.S. dollars)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Investment aid	11.2	11.1	10.3	9.9	14.1	0.0
b) Aid to maintain a qualified workforce	0.3	0.2	0.2	0.2	0.3	0.3
c) Aid to maintain surplus producers' stocks	0.0	2.9	1.8	0.0	0.0	0.0
d) Aid to promote sales of coal and coke	72.7	29.9	65.7	73.9	146.1	182.9
e) Deficit grant to help cover operating losses	75.9	88.4	80.8	80.8	130.9	227.1
Subtotal	160.5	132.5	158.8	164.9	291.4	411.3
2) Indirect financial aid to current production						
f) Grants to supplement miners' holiday and sickness benefits	10.4	10.4	9.7	9.2	12.3	13.2
3) Price Support						
g) Excess payment by public electricity producers for domestically-produced coal	nd	nd	nd	[16.1]	[neg.]	[neg.]
Total PSE	170.9	142.9	168.5	174.0	303.7	424.5
Per metric ton produced	$26.10	$23.40	$26.75	$28.00	$54.30	$96.2e
Per metric ton sold	nd	nd	$21.80	$27.70	$55.60	$77.20
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Deficit payments to finance social security benefits (with respect to:)						
h) Old-age and survivors' pensions insurance	413.8	536.0	496.3	494.3	nd	nd
i) Disability pensions insurance	114.1	113.4	102.2	96.5	nd	nd
j) Occupational disease payment	175.1	171.4	142.6	131.0	nd	nd
Total of Category II	703.0	820.8	741.1	721.8	nd	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	873.9	963.7	909.6	895.9	nd	nd

nd = no data available.
p = provisional estimate.
e/ = IEA Secretariat estimate.

that these fuels accounted for a significant share of fuel purchases, this formula resulted in a price paid for Belgian coal that was significantly above the price for imported steam coal.

In 1984 the contracting parties decided to cancel this price regulation, effective 1st January 1986 and, as an interim measure, to set a maximum for the amount paid, over the average price paid for imported coal, for domestic coal purchased by the Pool in 1984 and 1985. In 1985, this maximum was fixed at BF 956 million, or about BF 500 per metric ton ($8.00 per metric ton at 1985 exchange rates). Since 1986, domestic coal supplied to the Pool des Calories has been priced the same as delivered imports.

As in other coal producing countries in the European Community, the losses of the KS company have increased, largely due to the fall in world coal prices expressed in dollars.

The implementation of plans for the coal industry has been accelerated. Mine closures are able to take place more rapidly because of the supporting social measures that have been undertaken. The mines at Waterschei and Eisden were closed in September and December 1987 respectively, and at Winterslag mining operations ceased in March 1988. These early closures are expected to result in a substantial decrease of about one third in the annual level of direct financial aid to current production between 1986 and 1988. This would free additional finance for regional development and the redeployment of miners. In the two remaining mines, at Beringen and Zolder, some 2.5 million tons are expected to be produced per annum by 700 employees.

NOTES TO TABLES D-1 AND D-2 (BELGIUM)

A Note on the Data

The numbers in the tables for Belgium have been derived from data supplied by the Belgian authorities to the European Commission. They represent, therefore, planned assistance in each year and not actual assistance provided. The actual assistance given in the various categories may have differed from these planned amounts, but the differences are believed to have been small.

Notes to Individual Line Items

(a) *Investment grants.* These grants were intended to help finance the concentration of production into fewer pits, and to increase the level of mechanisation and automation of underground operations. During the period covered, all of this aid was used in the Kempen (Campine) coalfield.

(b) *Aid to maintain a qualified workforce.* This aid has been used to help attract and to train labour suitably qualified to operate modern minining machinery.

(c) *Aid to maintain surplus producers' stocks.* These were grants to help cover the costs of building up and holding pithead stocks in excess of one-twelfth of the annual production of the coalfield. These grants were approved only for "exceptional" years, and have been disallowed since 1986 under the European Community's revised decision on aid.

(d) *Aid to promote sales of coal and coke.* These grants have helped to make up the difference between the revenues received from sales of Belgian coking coal and coke and the cost of producing these products, thereby allowing Belgian coking coal and coke to be sold at prices approximately in line with imports.

(e) *Deficit grant to help cover operating losses.* This aid is intended to make up all of the difference betwen costs and revenues received by the industry (including other direct grants).

(f) *Grants to supplement miners' holiday and sickness benefits.* The figures shown represent the total amount of grants given to help pay for season tickets to sporting events or cheap holiday tickets for employed miners; and grants to the Miners' National Pensions Fund in order to compensate for additional expenditure arising from the increase in the miners' annual holiday allowance, the introduction of new sickness benefits, and longer annual holidays.

(g) *Excess payment on purchases of domestically-produced steam coal by public electricity producers.* As described in the text, until 1986, Belgian electric utilities were obliged to take Belgian deep-mined coal at delivered prices higher than those paid for imported coal. Insufficient data are available to calculate this price support element, and therefore the PSE has been calculated without this information. The number in square brackets for 1985 represents the maximum excess payment set by the Belgian Government for that year.

(h) *Deficit payments to old-age and survivors' pensions insurance.* These payments are limited by the European Commission to the total amount that would be required to bring the ratio between the burden per miner in employment and the benefits per person in receipt of benefit into line with the corresponding ratio in other sectors. During none of the years considered did the budgeted deficit payments exceed this limit.

(i) *Deficit payments to disability pensions insurance.* The rules governing this aid category are the same as those described for old-age survivors' pension insurance, detailed above.

(j) *Deficit payments to occupational disease insurance.* This aid helps finance half of the expenditure arising from miners' pneumoconiosis (black lung disease). The rules governing this aid category are the same as those described for old-age survivors' pension insurance, detailed above.

Table D-3

Basic Statistics and Assumptions Used in Estimating PSEs to Belgian Coal Producers

	Calendar Years						Data Source
	1982	1983	1984	1985	1986	1987p	
Hard Coal							
Total saleable production							
Undergound-mined coal (Mmt) a/	6.54	6.10	6.30	6.21	5.59	4.41	[1]
Coal reclaimed from mine tips (Mmt)	1.79	1.39	1.53	1.14	nd	nd	[2]
Total deliveries, coal of domestic origin (Mmt) b/	nd	nd	7.74	6.29	5.46	5.50	[1]
Deliveries of Belgian coal to public power plants							
From underground mines	1.7 e/	2.16	2.22	2.13	2.06	2.0 e/	[3]
Recovered from mine tips	nd	0.68	0.80	0.81	0.78	0.8 e/	[3]
Total deliveries	nd	2.84	3.02	2.94	2.84	2.8 e/	[3]
Coal use in coal industry's own power plants (Mmt)	0.32	0.37	0.32	0.34	0.35	0.34e/	[1]
Deliveries of Belgian coal to coking plants	3.21	2.96	3.11	3.11	2.63	1.6 e/	[1]
Exchange Rates c/							
Belgian francs per U.S. dollar (BF/US$)	45.691	51.132	57.784	59.378	44.672	37.9 d/	[4]
Belgian francs per Eurpoean Currency Unit (BF/ECU)	44.680	45.430	45.438	44.913	43.803	43.0 d/	[4]

a/ Excluding coal reclaimed from mine tips.
b/ Including deliveries of coal reclaimed from mine tips.
c/ Average of daily market rates.
d/ Average of quarterly averge market rates for first nine months.
e/ IEA Secretariat estimate.
ECU = European Currency Unit.
nd = no data available.
p = preliminary estimate.

Sources: [1] Kempense Steenkolenmijnen, *Verslag van de Raad van Bestuur* (Heusden-Zolder, Belgium: KS, 1987), pp. 8, 16, and 17;
[2] International Energy Agency, *Energy Statistics — 1970-1985* (Paris: OECD, 1987);
[3] Commission of the European Communities, "Structural aspects of energy," No. 3/86 (Luxembourg: Eurostat, 1986), p. 7; "Rapid reports: energy," No. 1987: 9 (Luxembourg: Eurostat, 1987);
[4] International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1987).

GERMANY

Aid supporting current production in the German hard coal industry involves numerous complex grants, special tax concessions, and long-term agreements between the coal producers and the iron and steel and electricity generating industries, often supported by statute. In most cases, the burden of direct budgetary aids is shared two-thirds by the federal Government and one-third by the Länder Governments.

Several direct and indirect financial measures support coal production generally. These include grants to help fund capital investment, and special depreciation allowances. The Governments also pay for special bonuses to miners working underground. In addition, the two largest coal mining companies, Ruhrkohle AG and Saarbewerke AG, each receive assistance in the form of a "special debt claim" — in essence, a promise by the federal and Länder Governments to provide financial assistance over a period of years. These special debt claims were awarded in the early 1970s, and are expected to continue for a few more years.

In addition to these aids, producers receive reimbursements to cover a large part of the difference between the price at which they sell coking coal and coke to steel companies (in Germany as well as in other European Community countries) and their actual production costs. Sales of coking coal to German consumers are guaranteed under various long-term agreements between the coal producers and the major German steel companies. The most important agreement, covering approximately 85% of the steel companies' coking coal requirements, is the so-called Huttenvertrag contract with Ruhrkohle. Signed initially in 1969, the Huttenvertrag contract was to expire at the end of 1988, but as a result of an extension agreed in 1985 the contract will remain in force at least until the year 2000. Similar arrangements have been signed with the smaller coal producers.

Under these contracts, the German steel mills have agreed to purchase all of their requirements from domestic sources — in 1986, domestic sources accounted for 99.9% of the coal delivered to German coking plants — at

prices close to the price that they would have had to pay for imported coking coal. (Since no coking coal is imported, the "indicated competitive price," determined by the European Commission, has been used as the reference price.). In order to limit the governments' budget burden, however, the steel industries are required to pay a small surcharge on each metric ton purchased. This surcharge is determined by the federal Government, and in 1987 was set at DM 1.90 per metric ton.

The mechanisms supporting sales of German-produced steam coal are less straight-forward. The overarching framework regulating sales to electric power producers (including autoproducers and combined heat and power plants) is the "Third Law on the Use of Coal in Power Production" (the first and second laws were enacted in 1965 and 1966), or the Third Electricity Production Law for short, which was enacted in 1974 and modified in 1980. The actual details of the law are embodied in the Jahrhundertvertrag (the contract of the century), agreed in 1980. Under this contract, German electric utilities committed to buy domestic hard coal in increasing amounts through 1995: 38 Mmt in 1981; 43 Mmt by 1986; and 46 Mmt per annum from 1991 to 1995. Tied to this obligation were restrictions on coal imports. From 1981 to 1987, German utilities could import a metric ton of coal for every two metric tons in excess of 33 Mmt of German hard coal that they consumed; as from 1988, coal may be imported on a one-for-one basis for every metric ton consumed beyond this threshold. For the period 1986-1990, the utilities have licences to import some 36 Mmt.

The price paid by the electric utilities for German coal is intended to cover approximately the coal producers' break-even costs (net of direct subsidies). To partially compensate the utilities for the much higher cost of using domestic coal, as opposed to imported coal or fuel oil, electricity consumers are charged a "coal levy" (*Kohlepfennig*) on their electricity bills. The revenues thus collected are put into a special "power production fund" (the *Verstromungsfonds*), out of which the claims of the electric utilities are paid. The rate of the coal levy is set every year by the federal Minister for Economics, based on the estimated needs of the fund. Since 1975, this levy has ranged from 3.24% to 7.5%. In the case of residential consumers, this levy is also subject to the value added tax (currently 14%). In 1987 revenues from the levy are expected to amount to over DM 3 000 million.

It is important to stress that the rebates to the coal-fired power station owners only partially cover the difference between the prices of domestic and imported coal. Rebates on the first 23.7 Mmt purchased each year are calculated with reference to the price of imported fuel oil, not coal. Until 1986 the value of this portion of the rebate was negligible, as the price of fuel oil was considerably above that of German coal. For the balance of the utilities' purchases, the rebate is limited to the difference between the actual price paid for domestic coal in any given year and the price of imported coal (adjusted for inland transport costs) *in 1980*. The rest of the difference is passed on to electricity consumers in the form of higher electricity tariffs.

Table D-4
Aids to German Coal Producers
(Millions of nominal Deutsche Marks)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1). Direct financial aid to current production						
a) Investment grants	412.0e/	150.2	190.3	149.7	123.8	135.5
b) Special grants to EBV	168.0	109.7e/	66.4	0.0	120.0	67.0e/
c) Grants to promote innovation	67.0	47.2	40.6	55.3	28.6	0.0e/
d) Mineworkers' bonuses	220.0	184.0e/	183.9	184.4	184.0	184.0e/
e) Special debt claim of Ruhrkohle AG	64.1	203.4	30.2	30.2	30.2	30.2
f) Special debt claim of Saarbewerke AG	21.4e/	21.4e/	21.4	21.4	21.4	21.4
g) Special grant to promote sales of coking coal	974.5e/	810.0	1 707.1	1 439.6	2 017.5	3 510.0
Subtotal	1 927 e/	1 526 e/	2 240	1 880.6	2 525.5	3 948.1
2) Indirect financial aid to current production						
h) Special capital depreciation measures	70.0e/	50.0e/	32.0	30.0	30.0	30.0e/
i) Excess deficit payments to miners' pension fund	0.0	0.0	0.0	509.0	nd	274.0
j) Adjustment for compensation to redundant miners	-200.0e/	-200.0e/	-200.0e/	-200.0e/	-200.0e/	-200.0e/
3) Price Support						
k) Excess payment on sales of coal to public electricity and combined heat and power producers	2 285.0	3 680.0	4 560.0	3 530.0	5 125.0	6 560.0
l) Excess payment made by domestic steel producers	50.0e/	50.0e/	43.0e/	66.4	38.4	28.5e/
Subtotal	2 335.0e/	3 730.0e/	4 603.0e/	3 596.4	5 213.4	6 588.5e/
Total PSE	4 132 e/	5 106 e/	6 675 e/	5 816	7 519	10 641 e/
Per metric ton produced	DM 46.4	DM 62.1	DM 84.1	DM 70.6	DM 93.1	DM 130.1
Per metric ton sold	DM 48.6	DM 57.9	DM 70.7	DM 63.3	DM 89.3	DM 131.2

e/ = IEA Secretariat estimate; nd = no data available; p = preliminary budget estimates.

Table D-4 (Continued)
Aids to German Coal Producers
(Millions of nominal Deutsche marks)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Aid to promote industry contraction						
m) Aid to cover pre-1969 debts of Ruhrkohle AG	107.0e/	101.5e/	113.0	106.5	107.0	nd
n) Compensation to Ruhrkohle AG for the write-off of unproductive assets	48.0	48.0	0.0	0.0	0.0	0.0
o) Closure premiums	24.3	10.6	0.0	1.4	0.0	nd
p) Aid to help cover expenditure resulting from industry contraction	61.0	40.5	15.3	2.1	0.2	nd
q) Early retirement aid	202.4e/	200.0e/	221.4	248.1	259.9	256.0
r) Other "adaptation money"	7.9e/	14.2e/	14.7	15.9	22.3	nd
s) Adjustment for compensation to redundant miners	200.0e/	200.0e/	200.0e/	200.0e/	200.0e/	200.0e/
Subtotal	650.6e/	614.8e/	564.4	574.0	589.4	nd
2) Aid to help pay for mining damage						
t) Aid to control water contamination from closed mines and to help prevent subsidence damage to structures resulting from past mining	208.8e/	145.1e/	163.7	162.9	162.0	nd
3) Research and development aid						
u) Aid towards research on coal mining and technology	nd	nd	408.5	356.8	331.9	380.0
4) Miscelaneous assistance						
v) Aid to maintain "security stocks"	156.1e/	124.6e/	125.0	119.9	117.5	117.5
w) Aid to encourage CHP and district heating	35.9e/	127.8e/	128.6	151.8	181.6	160.0
5) Aid to help finance social security benefits						
x) Deficit payment to miners' pension fund	6 856.0	6 932.0	6 616.0	6 311.0	nd	nd
Total of Category II	nd	nd	8 006.4	8 185.4	nd	nd

e/ = IEA Secretariat estimate; nd = no data available; p = preliminary budget estimates.

Table D-5
Aids to German Coal Producers
(Millions of nominal U.S. dollars)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1). Direct financial aid to current production						
a) Investment grants	170	59	67	51	57	74
b) Special grants to EBV	69	43	23	0	55	37
c) Grants to promote innovation	28	18	14	19	13	0
d) Mineworkers' bonuses	91	72	65	63	85	101
e) Special debt claim of Ruhrkohle AG	26	80	11	10	14	17
f) Special debt claim of Saarbewerke AG	9	8	8	7	10	12
g) Special grant to promote sales of coking coal	402	317	600	489	929	1 918
Subtotal	794	598	787	639	1 163	2 157
2) Indirect financial aid to current production						
h) Special capital depreciation measures	29	20	11	10	14	17
i) Excess deficit payments to miners' pension fund	0	0	0	173	nd	150
j) Adjustment for compensation to redundant miners	-82	-78	-70	-68	-92	-109
3) Price Support						
k) Excess payment on sales of coal to public electricity and combined heat and power producers	942	1 441	1 602	1 199	2 360	3 585
l) Excess payment on sales of coking coal to domestic steel producers	21	20	15	23	18	16
Subtotal	962	1 461	1 617	1 222	2 401	3 600
Total PSE	1 703	2 000	2 346	1 975	3 463	5 815
Per metric ton produced	$19.10	$24.30	$29.50	$24.00	$42.90	$71.10
Per metric ton sold	$20.00	$22.70	$24.90	$21.50	$41.10	$71.70

e/ = IEA Secretariat estimate; nd = no data available; p = preliminary budget estimate;

Table D-5 (Continued)
Aids to German Coal Producers
(Millions of nominal U.S. dollars)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Aids to promote industry contraction						
m) Aid to cover pre-1969 debts of Ruhrkohle AG	44	40	40	36	49	nd
n) Compensation to Ruhrkohle AG for the write-off of unproductive assets	20	19	0	0	0	0
o) Closure premiums	10	4	0	1	0	nd
p) Aid to help cover expenditure resulting from industry contraction	25	16	5	1	*	nd
q) Early retirement aid	83	78	78	84	120	140
r) Other "adaptation money"	3	6	5	5	10	nd
s) Adjustment for compensation to redundant miners	82	78	70	68	92	109
Subtotal	186	162	128	127	179	nd
2) Aid to help pay for mining damage						
t) Aid to control water contamination from closed mines and to prevent subsidence damage to structures resulting from past mining	86	57	57	55	75	nd
3) Research and development aid						
u) Aid towards research on coal mining and technology	nd	nd	144	121	153	208
4) Miscelaneous assistance						
v) Aid to maintain "security stocks"	64	49	44	41	54	64
w) Aid to encourage CHP and district heating	15	50	45	52	84	87
5) Aid to help finance social security benefits						
x) Deficit payment to miners' pension fund	2 825	2 715	2 325	2 144	nd	nd
TOTAL OTHER ASSISTANCE	nd	nd	2 813	2 780	nd	nd

e/ = IEA Secretariat estimate; nd = no data available; p = preliminary budget estimate;
* = negligible (less than 0.5 million dollars).

In 1986, the coal levy was set at 4.5% of the tariffs, or 0.68 pfennig per kWh. Due to the sharp fall in world oil prices and the declining value of the United States' dollar, which together have deteriorated the fund, the Parliament authorised the Government to raise the coal levy to 7.5% for 1987 and 7.25% for 1988. However, in the current situation, this new rate is not sufficient to cover the difference in cost incurred when buying German hard steam coal. The Verstromungsfonds is therefore being financed by credits to a larger extent than previously. Payments to the utilities from the Verstromungsfonds in each year were as follows:

Year	Millions of DM	Millions of $
1982	1 778	730
1983	2 098	820
1984	2 136	750
1985	1 885	640
1986	2 951	1 360
1987 [1]	4 680	2 557

1. Preliminary.

Source: Der Bundesminster für Wirtschaft.

For the purposes of estimating the price component of the PSE, however, the coal levy and its associated fund are immaterial. What matters is the total payment in excess of what imported coal would have cost; this is what is used in calculating the PSE.

In December 1987, a new "Coal Round" took place with the participation of the coal mining industry, the trade unions and the federal and Länder Governments. It was the goal of this "Coal Round" to find a concept for the future role of German hard coal in energy supply and to limit subsidies to a reasonable level. In view of the continuing sales crisis a further cut in production of up to 15 Mmt per year by 1995, implying a reduction of total labour force (by at least 30 000 people), has been decided and a gradual reduction of the "coal levy" back to previous levels is under discussion.

NOTES TO TABLES D-4 AND D-5 (GERMANY)

General Notes on Sources and Data

For the years 1982 through 1985, figures relating to budgetary aid represent, in most cases, actual outlays. For 1986 and 1987, the figures relate to planned assistance. The primary source for these figures is the annual

published federal budget. The total amounts of those budgetary aids to which the Länder governments also contribute a portion have been estimated, in some cases, by dividing the federal contribution by the federal Government's share. Where possible, the data have been cross-checked against data reported to the European Commission and information provided by the federal Government.

Explanation of Individual Line Items

(a) *Investment grants (Investitionshilfe).* These grants covered up to 50% of the total cost of capital investments in coal mines, mine-mouth coking plants, briquetting plants, and mine-mouth power plants. Payments under these grants ceased by the end of 1987.

(b) *Special grants to EBV (Umstrukturierung EBV).* Eschweiler Bergwerks- Verein AG (EBV), a private company owned by Arbed Stahl of Luxembourg, has received special grants from the federal and Nordrhein-Westfalen Governments in order to cover its operating deficits. For 1982 and 1983, these aids were included in the total grants for "investment aid" reported by the European Commission. They appear to have been left out of this category for later years, however. The amounts given in 1986 and 1987 were approved by the federal Government on the condition that EBV would optimise its production capacity and reduce its the size of its workforce by 2 900 before 1990.

(c) *Grants to promote innovation.* This payment was intended to ensure that research results were applied to production as quickly as possible. According to the EEC, "the aid [was] lower than the costs borne by the undertakings and [was] granted in respect of indidividual projects which, when completed, [were] likely to prove their economic worth to coalmining in the medium term." These grants were abolished as of the end of 1986 and were subsumed into the more general aid category of "investment grants."

(d) *Mineworkers' bonuses (Bergmanspramie).* Mineworkers' bonuses, which have been paid since 1956, are given to skilled underground workers at the rate of DM 10 for every shift worked underground. According to the EC, "this bonus ensures that the qualified mineworkers, which the German coal industry needs if it is to increase its output, stay in coal mining."

(e) *Special debt claim of Ruhrkohle AG (Schuldbuchforderung RAG).* This measure stems from an agreement, dated 30th May 1972, between the federal Government, the Länder Government of Nordrhein-Westphalen, Ruhrkohle AG, and representatives of the labour unions, which established a "Schuldbuchforderung" (special debt claim) of DM 1 000 million. At the time, Ruhrkohle AG was in serious financial trouble, and had appealed to the

Governments for "economic stabilization" assistance. Rather than grant Ruhrkohle AG a lump sum, the federal and Länder governments agreed to pay out the grant over a number of years, sharing the burden two-thirds and one-third, respectively. During this period, Ruhrkohle has been able to list the total remaining claim (plus accrued interest) as a fixed, depreciating asset on its balance sheet. In principle, the debt claim was to be paid out in equal annual installments, of 2% on the unpaid balance, plus interest of 5% (nominal). In practice, the payments varied considerably from year to year. Beginning in 1984, however, the annual payments have been stable at DM 30.2 million. As of 31 December 1986, the remaining outstanding balance on this claim was approximately DM 267.4 million.

(f) *Special debt claim of Saarbewerke AG (Schuldbuchforderung SBW).* This is a debt claim similar to that received by Ruhrkohle AG.

(g) *Special grant to promote sales of coking coal (Kokskohlenbeihilfe).* This grant is given to producers of coking coal as partial compensation for the discount offered on sales of coking coal to the German iron and steel industry (see discussion in text). Although the price of this coal is tied to the price of imported coking coal, it does not match it exactly: it is slightly higher. That amount of the difference that has to be absorbed by the iron and steel industry is calculated as a separate item under the heading of price supports.

(h) *Special capital depreciation measures (Stevererps. Sonderabschreib.).* Under a special provision in the federal income tax laws, coal producers are allowed to depreciate production capital at a rate faster than normally allowed in other industries. The figure, as reported by the European Commission, relates to the effective tax advantage thereby given. This tax advantage is planned to be abolished by the beginning of 1990.

(i) *Excess deficit payments to miners' pension fund.* This item represents the amount, estimated by the European Commission, that state deficit payments exceeded the difference between the amount that would be required to bring the ratio between the burden per miner in employment and the benefits per person in receipt of benefit into line with the corresponding ratio in other sectors. (See item (x) below.)

(j) *Adjustment for compensation to redundant miners.* This adjustment represents a transfer of an assistance item out of Category I (included in the PSE calculation) into Category II (see item "s"). Following advice from the German authorities, this amount represents the cost to coal producers of covering compensation payments to redundant miners over and above the levels expected in general in German industry for this purpose, and therefore is not related to current production costs.

(k) *Excess payment on sales of steam coal to public electricity producers.* As described in the text, public electricity producers and district heating plants are bound under the Jahrhundertvertrag to purchase more than 40 Mmt each year through 1995. Electric utilities are partially compensated for the higher cost of buying German coal by a special tax levied on electricity consumers. The entry in this line does not represent the value of this tax. Rather, it has been calculated by multiplying the amount of German coal purchased under this arrangement by the difference between the delivered cost of German coal and the estimated delivered price of imported coal. The assumptions and calculations are listed in Table D-6.

(l) *Excess payments on sales to German steel industry.* Under the current agreement, most, but not all of the difference between the reference import price of coking coal and the price of coal sold to the steel companies is refunded by the "Kokskohlenbeihilfe." Some of the difference is absorbed by the coal producers, and therefore made up for by other subsidies. A relatively small amount is absorbed by the steel industries themselves, however. It is only this excess payment that is included in this category. These excess payments were abolished as of the end of 1987.

(m) *Aid to cover pre-1969 inherited debts of Ruhrkohle AG (Tilgungsraten RAG).* When Ruhrkohle AG was created from the amalgamation of a number of smaller companies in 1969, the Governments agreed to take over the outstanding debts of these companies. The numbers in the tables relate to the payments budgeted in each year.

(n) *Compensation to Ruhrkohle AG for the write-off of unproductive assets (Sonderpostens RAG).* This measure stems from an agreement, established upon the creation of Ruhrkohle AG on the 18th August 1969, between the federal Government, the Länder Government of Nordrhein-Westphalen, Ruhrkohle AG, and representatives of the labour unions, whereby Ruhrkohle would receive compensation for the loss of assets resulting from mine closures following the restructuring of the German coal industry. At the time, Ruhrkohle AG had to declare its write-offs of assets resulting from pit closures, and these were too large to be brought into the profit and loss account without bankrupting the company. Rather than grant Ruhrkohle AG a lump sum to pay off this liability, the federal and Länder Governments agreed to amortise the grant (totalling DM 480 million, plus accrued interest) over a period of ten years, from 1974 through 1983. During that time, Ruhrkohle was been able to list the total remaining claim (plus accrued interest) as a fixed, depreciating asset on its balance sheet. The final payment on this grant was made in 1983.

(o) *Closure premiums (Stillegungspramie).* Through the German Coal Mining Association (Aktionsgemeinschaft Deutscher Steinkohlenbergbau), the federal Government pays the undertakings con-

cerned a premium of DM 20 per metric ton of annual capacity for the closure carried out to rationalise production. According to the EC, "the aid covers only a small fraction of the undertakings' actual closure costs." In parallel with the ending of investment grants, this grant was abolished as of end-1987.

(p) *Aid to help cover expenditure resulting from industry contraction (Schrumpfungslasten).* This aid is given in addition to the closure premiums mentioned above, and is specific to liabilities arising out of pit closures since 31st December 1972. The aid is spread over a period of five years in the form of a flat-rate payment of DM 30 for every metric ton by which annual capacity is reduced, but cannot exceed the actual costs borne by the undertakings as a result of the contraction costs. The last payments were made in 1986.

(q) *Early retirement aid (Anpassungsgeld).* This special assistance is given to redundant elder miners until such time that they are old enough to receive a normal pension.

(r) *Other "Adaptation Money" (Anpassungshilfen & Sonstige Hilfen).* This is the value of various miscellaneous aids (in addition to those that come under the budget of the Economics Ministry) given to help retrain and relocate miners made redundant.

(s) *Adjustment for compensation to redundant miners.* See item (j) above.

(t) *Aid to control water contamination from closed mines (Erblasten), and grants for safety measures against subsidence damage from past mining (Bergschadensicherung).* The former payments are to cover the financial burden arising from mines that have been closed since 31st December 1966. As a result of pit closures, the Ruhr coal mining industry bears a heavy burden of constantly rising contributions to water control associations and the Ruhr Pumping Association (Pumpgemeinschaft Ruhr). The aid granted is considerably less than the actual costs borne by the undertakings during each year. Since 1982, at least, it would appear from Ruhrkohle's *Annual Reports* that adequate provision is being made for mining damage expected to result from current operations, and that therefore the amount of aid given by the Governments helps to cover only inherited liabilities. The second category of payments assist firms that have built structures on top of areas disturbed by past mining. Specifically, this aid is to help pay for devices that will help minimise any damage that might occur in the future as a result of ground subsidence. (See discussion under the previous entry.) Payments under this measure are scheduled to end in 1988.

(u) *Aid towards research on coal mining and technology (Kohleforschung).* This aid is paid out of a special fund to help finance R&D work on improving coal mining methods and technologies. It is assumed here that none of the aid is used to help finance productive assets.

(v) *Aid to maintain "security stocks" (Steinkohlenbevorratung).* According to the European Commission, this assistance was introduced by the federal Government in order to increase the security of energy supplies. For this purpose, the German Coal Mining Emergency Association (Notgemeinschaft Deutscher Steinkohlenbergbau) was created to establish a reserve of up to 10 Mmt of coal and coke. The federal Government covers two-thirds of the actual current cost of maintaining these stocks, and the Government of Nordrhein-Westfalen covers the remaining third.

(w) *Aid to encourage CHP and district heating (Kohleheizkraftwerke & Fernwarmeprograma)* This aid helps fund the building of combined heat and power and district heating plants. As an aid to consumption of coal generally, it is not considered an aid to current domestic production.

(x) *Deficit payment to miners' pension fund.* These payments are limited by the European Commission to the total amount that would be required to bring the ratio between the burden per miner in employment and the benefits per person in receipt of benefit into line with the corresponding ratio in other sectors. During 1985 this aid exceeded by DM 509 million the amount determined by the European Commission as representing the coal mining industry's effective burden. According to the EC's memorandum on proposed aid for that year, this exceedence was due to a change in the federal Government's budget laws, which has meant that some of the contributions to miners' pension insurance are now being paid by the general health insurance scheme under the equalisation of burdens arrangements. Data on the deficit payment to the miners' pension fund are not yet available for 1986. With regard to 1987, the European Commission has estimated that proposed deficit aid will have exceeded by DM 274 million the limits drawn by Article 7 of its Decision No. 2064/86/ECSC (30th June 1986), and "must be therefore regarded as indirect aid to current production." These excess payments have been entered under the category of aid entitled "excess deficit payments to miners' pension fund" for the appropriate years, and the total deficit payment has been reduced accordingly.

Table D-6

Basic Statistics and Assumptions Used in Estimating PSEs to German Coal Producers

Assistance Category	Calendar Years						Data Source
	1982	1983	1984	1985	1986	1987p	
Basic data (hard coal only)							
Total saleable production (Mmt) a/	89.0	82.2	79.4	82.4	80.8	81.8	[1]
Total deliveries, coal of domestic origin (Mmt)	85.1	88.2	94.4	91.9	84.2	81.1	[1]
Deliveries of German hard coal to the electric power sector b/							
Millions of metric tons	41.8	44.9	45.9	45.4	46.7	46 e/	[2]
Millions of coal equivalent tons (mtce)	37	40	41	40	41	41	[2]
Average delivered prices							
Coal of domestic origin (DM/tce)	255.50	263.00	274.00	275.00	275.00	275.00	[3]
Imported coal (DM/tce)	193.75	171.00	162.75	186.75	150.00	115.00	[3]
Price differential (DM/tce)	61.75	92.00	111.25	88.25	125.00	160.00	
Total Burden (millions of DM)	2 285	3 680	4 560	3 530	5 125	6 560	
Deliveries of German hard coal to steel mills (Mmt)	20.6	19.8	22.6	23.7	20.2	19.0	[3]
Steel industry contribution (DM/mt)	nd	nd	1.90	2.80	1.90	1.50	[4]
Total Burden (millions of DM)	50 e/	50 e/	42.9	66.4	38.4	28.5	
Exchange Rates c/							
Deutsche marks per U.S. dollar (DM/US$)	2.4266	2.5533	2.8459	2.9440	2.1715	1.83f/	[5]
Deutsche marks per European Currency Unit (DM/ECU)	2.3770	2.2705	2.2380	2.2263	2.1287	2.07f/	[5]

a/ Including production from small, independent mines.
b/ Including deliveries to district-heating plants, mine-owned power plants, and industrial autoproducers.
c/ Average customs-cleared unit values of thermal coal imports from all sources.
d/ Average of daily market rates.
e/ IEA Secretariat estimate.
f/ Average of first three quarters' values.
ECU = European Currency Unit.
nd = no data available.

Sources: [1] Gesamtverband des deutschen Steinkohlenbergbaus, "Steinkohle 1986/87," pamphlet (Essen: GDS, 1987); German Ministry of Economics;
[2] IEA, *Coal Information 1987* (Paris: OECD, 1987), p. 146; IEA Secretariat estimates based on IEA, *Energy Prices and Taxes*, Second Quarter 1987 (Paris: OECD, 1987/No.4), p. 54.
[3] German Economics Ministry, "Kennzahlen des deutschen Steinkohlenbergbaus", mimeograph (Bonn: Der Bundesminster für Wirtschaft, 14th August 1987).
[4] Various sources.
[5] International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1987).

JAPAN

Hard coal mining in Japan is concentrated at the northern and southern ends of the archipelago (Hokkaido and Kyushu islands). Most extraction takes place underground in thin, faulted seams. (Some production comes also from reclamation of coal middens.) From fiscal year 1961/62 until fiscal year 1974/75, annual production fell sharply, from around 55 Mmt to 20 Mmt. Since then, production of coking coal has fallen from 10 Mmt, reaching only 3 Mmt in fiscal year 1986/87, while steam coal production has increased slightly, stabilizing in recent years at 12 Mmt per annum.

Government support to the indigenous coal industry has been requested under a series of official recommendations on coal policy, worked out by the Coal Mining Council, and accepted by the Ministry of International Trade and Industry (MITI). The most recent coal policy plan, the 8th, was approved in late 1986 and covers the period 1st April 1987 through 31st March 1992. For the previous 15 years, Government policy had sought to maintain domestic coal production at 20 Mmt per annum. Under the Eighth Coal Policy plan, the indigenous supply of coking coal from underground operations is to cease by 1991, and deliveries of steam coal from indigenous sources are to be reduced to 10 Mmt per annum.

The Producer Subsidy Equivalent for Japanese coal production on a per-metric-ton basis has been among the highest in the IEA member countries, and has been accelerated by the recent appreciation of the yen. Direct grants to mining companies (all of which are privately-owned enterprises) accounted for approximately 13% of the PSE value calculated for fiscal year 1987/88. These grants are paid out of a special account, financed by duties on imported crude oil and fuel oil.

In addition to providing budgetary aids, the Government operates a system of import quotas for coal. These quotas are allocated to final consumers, and are set to equal their expected requirements net of deliveries from domestic suppliers. According to the Government, this system is implemented in order to secure a smooth and gradual reduction of domestic coal supply. The prices for domestic coal are set in accordance with so-called "coal index

Table D-7
Aids to Japanese Coal Producers
(Billions of nominal Japanese Yen)

Assistance Category	Fiscal Years (1 April through 31 March of the following year)					
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Grants for modernization of coal pits	10.0	10.5	11.2	11.4	10.2	6.5
b) Grants for stabilising the coal industry	8.5	8.2	8.7	8.3	7.9	11.6
c) Grants to safety measures	6.8	7.1	7.6	7.7	7.9	5.6
d) Grants for paying off interest on loans	0.0	0.0	0.0	0.0	0.0	2.3
Subtotal	25.2	25.8	27.5	27.4	26.0	26.0
2) Price Support						
e) On sales to electricity producers and non-ferrous industries	25.2	68.7	84.1	108.7	123.6	141.2
f) On sales to iron and steel, coke and gas-coke producers	23.2	33.8	36.1	42.0	30.4	25.7
Subtotal	48.4	102.5	120.2	150.7	154.0	166.9
Total PSE	73.6	128.3	147.7	178.1	180.0	192.9
Per metric ton produced	Y4 230	Y7 690	Y8 780	Y10 830	Y11 840	Y13 300
Per metric ton sold	Y4 020	Y7 200	Y8 380	Y10 310	Y12 990	Y13 930
II. ASSISTANCE NOT BENEFITTING CURRENT PRODUCTION						
1) Regional economic development aid and worker retraining						
g) Regional economic development aid to coal mining districts	7.5	8.3	7.9	7.4	7.7	7.8
h) Worker retraining	18.0	17.9	18.0	17.8	17.1	19.5
2) i) Grants to offset costs of closing collieries	3.5	0.0	0.0	0.0	3.1	3.6
3) j) Grants to help pay for subsidence damage	41.9	45.6	50.6	55.4	54.8	54.8
4) k) Coal-related R&D	24.4	23.5	28.1	27.9	26.0	22.1
Total of Category II	95.3	95.3	104.6	108.5	108.7	106.4

p = preliminary estimate.

Table D-8
Aids to Japanese Coal Producers
(Millions of nominal U.S. Dollars)

Assistance Category	Fiscal Years (1 April through 31 March of the following year)					
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Grants for modernization of coal pits	40	44	46	52	64	45
b) Grants for stabilising the coal industry	34	35	36	38	49	80
c) Grants to safety measures	27	30	31	35	49	39
d) Grants for paying off interest on loans	0	0	0	0	0	16
Subtotal	101	109	113	124	163	179
2) Price Support						
e) On sales to electricity producers and non-ferrous industries	101	291	344	492	773	974
f) On sales to iron and steel, coke and gas-coke producers	93	143	148	190	190	177
Subtotal	194	434	492	682	963	1 151
Total PSE	295	543	605	806	1 126	1 330
Per metric ton produced	US$16.90	US$32.50	US$36.00	US$49.00	US$74.10	US$93.10
Per metric ton sold	US$16.10	US$30.50	US$34.30	US$46.60	US$81.30	US$96.00
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Regional economic development aid and worker retraining						
g) Regional economic development aid to coal mining districts	30	35	32	33	48	54
h) Worker retraining	72	76	74	81	107	134
2) i) Grants to offset costs of closing collieries	14	0	0	0	19	25
3) j) Grants to help pay for subsidence damage	168	193	207	251	343	378
4) k) Coal-related R&D	98	99	115	126	163	152
Total of Category II	382	403	428	491	680	743

p = preliminary estimate.

prices" (one each for coking and thermal coal), which are determined by MITI, upon the recommendations of the Coal Mining Council. In arriving at these index prices, the Council considers the cost of coal production and the prices of imported coals and other competing fuels. By mid-1986, the prices of both domestic coking coal and steam coal were almost three times the price of imported coal of equivalent quality.

Under the Eighth Coal Policy plan, purchases of domestic coking coal will cease by the end of FY1991/92. The amounts to be taken by the steel industry in each year between FY1987/88 and FY1991/92 will be decided by negotiation with the domestic coal producers. The index price for coking coal (Yen 24 920 per metric ton) is to remain unchanged at its FY1986/87 value throughout this period. Industrial thermal coal consumers, primarily the cement, chemical, and pulp and paper industries, which altogether purchased around 1.0 Mmt in FY1986, will also be expected to phase out their purchases of domestic coal by the end of FY1991/92.

By JFY 1991, therefore, the only significant consumers of Japanese coal will be electric power producers, who will still be expected to purchase around 8.5 Mmt per annum.

NOTES TO TABLES D-7 AND D-8 (JAPAN)

General Notes on Sources and Data

For all the years except FY1987/88 (which are preliminary), figures on direct payments relate to actual government expenditures. These figures were provided to the IEA by the Japanese Government.

Explanation of Individual Line Items

(a) *Grants for modernisation of coal pits.* These grants are given generally to help improve the efficiency and general working conditions in remaining underground mines.

(b) *Grants for stabilizing the coal industry.* These are intended to help stabilize individual coal mining companies' accounts, thereby smoothing contraction in the industry.

(c) *Grants to safety measures.* These are given to mining companies to help finance safety improvements in underground mines.

(d) *Grants for paying off interest on loans.* This grant is intended to help mining companies meet the interest charges on loans used to finance surplus coal stockpiles.

(e) *Excess payments on sales of thermal coal to electricity producers and non-ferrous industries.* Excess payments have been estimated on an annual basis by multiplying the amount of deliveries of domestic thermal coal (in thermal-equivalent terms) times the difference between the imported thermal coal price (obtained from customs statistics) and the average price of domestic thermal coal delivered to electric power stations. The assumptions and data upon which these calculations are based are listed in Table D-9.

(f) *Excess payments on sales of coking coal to iron and steel, coke and gas-coke producers.* Excess payments have been estimated on an annual basis by multiplying the amount of deliveries of domestic coking coal times the difference between imported coking coal price (obtained from customs statistics) and the average delivered price of domestic coking coal to steelmakers. The assumptions and data upon which these calculations are based are listed in Table D-9.

(g) *Regional economic development aid to coal mining districts.* These are grants intended to help encourage general economic development in depressed coal-mining districts.

(h) *Grants for worker retraining.* These are grants to help pay for the retraining of miners made redundant by reductions in coal output.

(i) *Grants to offset the costs of closing collieries.* These are payments to workers who have been made redundant as a result of coal mining closures.

(j) *Grants to help pay for subsidence damage.* These grants are given to the Coal Mine Damage Corporation for the purpose of dealing with the restoration of environmental damage arising from coal mining undertaken two and three decades ago. The remaining pits, some of which are mining under the sea, extract coal in such a way as to minimise surface subsidence.

(k) *Grants for coal-related R&D.* The bulk of these grants are used for R&D work on coal liquefaction and gasification. Of the total given in 1987, 4.8 billion yen ($33 million) have been budgeted for development of improved coal production technologies (mainly for export-oriented manufacturers of mining technology) and coal use technologies. Excluded from the totals are measures to promote new technology for coal-fired power stations.

Table D-9

Basic Statistics and Assumptions used in Estimating PSEs for Japanese Coal Producers

Assistance Category	Fiscal Years (1 April through 31 March of the following year)						Data Source
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p	
Basic data (hard coal only)							
Total Saleable Production (Mmt)	17.41	16.69	16.83	16.45	15.20	14.50	[1]
Total deliveries, coal of domestic origin (Mmt)	18.29	17.82	17.63	17.27	13.86	13.85	[1]
Price support for thermal coal							
Deliveries of Japanese hard coal to the electric power sector and general industry a/							
Millions of metric tons	13.82	13.70	13.64	13.47	11.74	12.21	[1]
Millions of coal equivalent tons (mtce)	10.69	10.60	10.55	10.42	9.08	9.45	[2]
Average delivered prices							
Coal of domestic origin (Y/metric ton) b/	16 550	16 520	17 000	17 280	16 970	16 970	[3]
Imported coal (Y/metric ton) c/	16 010	12 520	11 790	10 020	7 010	5 887	[4]
Coal of domestic origin (Y/tce)	21 390	21 360	21 980	22 340	21 940	21 940	[2]
Imported coal (Y/tce)	19 030	14 880	14 010	11 910	8 330	7 000	[5]
Price differential (Y/tce)	2 360	6 480	7 970	10 430	13 610	14 940	
Total Burden (billions of Yen)	25.2	68.7	84.1	108.7	123.6	141.2	
Price support for coking coal							
Deliveries of Japanese hard coal to the iron and steel industry, coke and gas-coke producers (Mmt)	4.48	4.12	3.99	3.80	2.13	1.64	[1]
Average delivered prices							
Coal of domestic origin (Yen/metric ton) d/	23 730	23 680	24 220	24 280	23 300	23 300	[3]
Imported coal (Yen/metric ton) e/	18 560	15 480	15 170	13 240	9 050	7 647	[4]
Price differential (Yen/metric ton)	5 170	8 200	9 050	11 040	14 250	15 653	
Total Burden (billions of Yen)	23.2	33.8	36.1	42.0	30.4	25.7	
Exchange Rates f/							
Yen per U.S. dollar (Y/US$)	249.6	236.3	244.2	221.1	159.8	145.0 g/	[6]

a/ Excluding coal consumed at collieries (approximately 600,000 metric tonnes per annum), and exported coal, but including anthracite.
b/ Average price of thermal coal delivered to electric power stations.
c/ Average customs-cleared unit values of thermal coal imports from all sources.
d/ Average delivered price of soft coking coal sold to steelmakers.
e/ Average customs-cleared unit values of coking coal (all grades) from all sources.
f/ Average of quarterly average market rates.
g/ Average of 2nd and 3rd quarters' values.

Sources: [1] Ministry of International Trade and Industry, *Yearbook of Petroleum, Coal, and Coke Production Demand and Supply* (Tokyo, 1987); [2] Converted based on an average net thermal value of 5415 kilocalories per kilogram, as given in the IEA/OECD statistical data base; [3] MITI, "Official News"; [4] Ministry of Finance, *Custom Statistics* (Tokyo: 1988); [5] Converted based on an average net thermal value of 5890 kilocalories per kilogram, as given in the IEA/OECD statistical data base; [6] International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1987).

SPAIN

Spain's domestic hard coal production in 1986 covered 69% of its total coal requirements. Total output was around 21 Mmt per annum, little changed since 1983. This figure includes approximately 6 Mmt of so-called black lignite, a low-rank coal mined by surface methods. Most of the remaining hard coal is produced from underground mines. In certain areas, due to unfavourable mining conditions, a share of this production has costs that are clearly higher than the price of imported coal.

Most of the direct financial assistance budgeted for 1987 was grants to cover operating losses for mines in the Central Asturian basin. (Prices paid to lignite producers are believed to cover full costs.) In addition, some hard-coal producers were expected to receive grants to help finance investments in mines; such grants may cover up to 20% of investments, while soft loans may contribute towards 70% of total investment.

Price-supporting measures are more complex. The prices for opencast coal and waste coal are unregulated. This initial liberalisation was established by a Ministry of Economy and Treasury Order of 20th February 1987 and stems from an EEC Commission Decision of 30th June 1986 (2064/86/ECSC) which limits grants to domestic coal producers. Furthermore, coal for electricity generation can be imported under a duty-free quota agreed by the Ministry for Industry and Energy for the coastal and insular power plants and for those needing to mix higher-quality coal for environmental reasons. The imports of steam coal for cement works and other industrial users are also administered under a duty-free quota system. The quotas for the various sectors of use are decided on a yearly basis by the Ministry of Industry and Energy.

With the exception of the power plants located on the coast, however (which are supplied with imported coal), the electric utilities give a preference to indigenous coal under a new agreement before resorting to imported coal.

Indigenous coal for steelmaking is priced in line with imported coal excluding any import duty. Since the import duty (14% of the value) is applied only above an annual threshold volume, and because this volume has never yet been reached, import duties have not been applied.

In December 1986 a new contract system between the coal producing companies (CARBUNION) and the association of electric utilities (UNESA) was agreed upon. It provides for the underground coal to be sold first before taking opencast coal. Every year the reference price for underground coal is to be adjusted according to an established formula in order to tend gradually to the average price of coal sold by the four most important ECSC coal producers (United Kingdom, Germany, France and Belgium) to their respective electric generating utilities. When a given coal company's production costs are above that average price, the difference may be made up by a supplemental payment, especially if, in the view of the Spanish authorities, such a payment would help the coal company develop a profitable economic and technical strategy or a programmed closure. To finance compensation to the utilities for these supplemental payments, the Electricity Compensation Agency (Oficina de Compensaciones de la Energia Electrica, or OFICO) charges a levy on electricity tariffs (presently 2.5%). In 1987 this levy is expected to reach Ptas 8.4 billion [1].

Both the use of the particular reference price (which in certain cases leads to prices being paid that are higher than those for imported coal) and the supplemental payments are forms of price support. Because information on coal prices paid by Spanish electric utilities are not available, only the supplemental price payments are shown in Tables D-10 and D-11. These represent, therefore, the *minimum* amount of expected price support for 1987.

In line with its National Energy Plan (NEP), the Government is trying to improve the competitiveness of the coal mining sector by enhancing the economics of the enterprises, and by reducing costs through modernisation and rationalisation of exploitation. Productivity has already increased by 17% between 1983 and 1986. Further rationalisation of deep underground mines is anticipated, which would lead, over time, to a reduction of hard coal production. No reduction has yet been determined, as the social and regional economic consequences will first have to be carefully assessed. Expansion of surface mining for brown and black lignite, which are mainly used for electricity generation, is also planned for the 1990s.

1. On the average in 1987, Ptas 1 = $0.0081.

Table D-10
Aids to Spanish Coal Producers
(Millions of Spanish Pesatas)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Investment grants	nd	nd	nd	nd	nd	405
b) Grants to promote innovation	nd	nd	nd	nd	nd	150
c) Aid to cover operating losses	nd	nd	nd	nd	nd	37 117
Subtotal	nd	nd	nd	nd	nd	37 672
2) Indirect financial aid to current production						
d) Excess deficit payments on social charges	nd	nd	nd	nd	nd	526
3) Price Support						
e) Excess payment on purchases of steam coal by public electricity producers	nd	nd	nd	nd	nd	8 400
Total PSE	nd	nd	nd	nd	nd	46 590
Per metric ton produced	nd	nd	nd	nd	nd	ptas 2 415
Per metric ton sold	nd	nd	nd	nd	nd	ptas 2 415
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Assistance to help offset social security costs	nd	nd	nd	nd	nd	nd
2) Research and development aid	nd	nd	nd	nd	199	161
Total of Category II	nd	nd	nd	nd	nd	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	nd	nd	nd	nd	nd	nd

p/ = projected.
nd = no data available.

Table D-11
Aids to Spanish Coal Producers
(Millions of U.S. dollars)

Assistance Category	Calendar Years					
	1982	1983	1984	1985	1986	1987p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Investment grants	nd	nd	nd	nd	nd	3
b) Grants to promote innovation	nd	nd	nd	nd	nd	1
c) Aid to cover operating losses	nd	nd	nd	nd	nd	293
Subtotal	nd	nd	nd	nd	nd	297
2) Indirect financial aid to current production						
d) Excess deficit payments on social charges	nd	nd	nd	nd	nd	4
3) Price Support						
e) Excess payment on purchases of steam coal by public electricity producers	nd	nd	nd	nd	nd	66
Total PSE	nd	nd	nd	nd	nd	367
Per metric ton produced	nd	nd	nd	nd	nd	$19.20
Per metric ton sold	nd	nd	nd	nd	nd	$19.20
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Assistance to help offset social security costs	nd	nd	nd	nd	nd	nd
2) Research and development aid	nd	nd	nd	nd	1	1
Total of Category II	nd	nd	nd	nd	nd	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	nd	nd	nd	nd	nd	nd

p/ = projected.
nd = no data available.

UNITED KINGDOM

Since the coal industry was nationalized in the late 1940s, British Coal Corporation (until March 1987 the National Coal Board) has been responsible for virtually all of the coal produced within the Kingdom. The bulk of underground mines are owned and managed by British Coal. A large part of the opencast mining that takes place in England and Wales is also supervised by British Coal, through a distinct management unit, the Opencast Executive (OE). (Opencast mining in Scotland has been handled by the Scottish deep-mined area since April 1984). The OE does not actually undertake mining itself, but pays private-sector specialist contractors to do it on British Coal's behalf; the coal thus produced is then marketed by British Coal. In addition to the coal output controlled by British Coal, one to two million metric tons of coal are produced each year by private firms operating under licenses issued by British Coal who either market their coal independently, paying British Coal a royalty on each ton mined, or sell it to British Coal.

British Coal's main market is the state-owned electricity generating industry, which in fiscal year (FY) 1986/87 accounted for 78% of British Coal's inland sales. The Central Electricty Generating Board is British Coal's largest single customer, accounting for almost 95% of sales to power stations during FY1986/87. The smaller, South of Scotland Electricty Board (SSEB) purchases annually around 5 million metric tons.

From 1979 to 31 March 1985, sales of steam coal to the CEGB were governed by a non-contractual, framework agreement, known as the *Joint Understanding*. Under the original Understanding the two Boards agreed initially "to use their best endeavours" to supply and take up to 75 million metric tons annually. The original understanding also stated explicitly that the CEGB was entitled to import such additional quantities of coal as it judged necessary. The price paid by the CEGB was set broadly in line with the NCB's average operating costs, and provided that prices in future years would rise no faster than the rate of U.K. inflation.

In the event, the CEGB's electricity sales fell short of expectations, and its fuel requirements were correspondingly reduced. In 1982 the Joint Understanding was amended, and for the year ending 31 October 1983, the CEGB agreed to take and pay for 73 million metric tons of NCB coal under a two-part pricing arrangement:

(i) 70 million metric tons were to be supplied according to the previous price formula; and

(ii) the next 3 million metric tons would be priced more closely aligned with import prices. (This price was also available for a further 2 million metric tons if required.)

In light of the CEGB's continuing difficulties in taking the agreed-upon volumes, the NCB and CEGB negotiated further modifications to the price and volume provisions. The resulting "Revised Joint Understanding" was to apply to the four years from 1 November 1983 to 31 October 1987, thereby extending the period of the original Joint Understanding by about two-and-a-half years. Two significant changes were incorporated. First, the CEGB agreed to take not less than 95% of their estimated annual coal requirements from the NCB, in place of the fixed volume that had existed before. Second, a base tonnage (65 Mmt in the first year) was to be supplied at a price based on a formula reflecting the Coal Board's average costs, linked to U.K. inflation (but with a guaranteed reduction in real terms over the years), and world market prices for fuels. The balance of the CEGB's estimated requirements would be supplied at prices aligned to those of imported coal delivered to the Thames estuary.

In June 1986 another revision to the Joint Understanding, known now as the New Joint Understanding, was announced. The new agreement, designed to run for five years, from 1 April 1986 to 31 March 1991, divides tonnages and prices into three tranches rather than the two, as previously. In the first year of the agreement (FY1986/7), 52 million tonnes of coal was to be priced on a production cost basis at £46.88/tonne ($68.7/tonne) pithead, 12 million tonnes at £29.50/tonne ($43.2/tonne) related to international coal prices and 10 million tonnes at £33/tonne ($48.4/tonne) reflecting competition from fuel oil or delivery of imported coal to inland power stations (price conversion at the average 1986 exchange rate of £1 = $1.466) [1].

Over the five-year period of the agreement to 1991 the volume of the highest priced tranche will fall to 40 million tonnes and the volumes of the lower priced tranches will rise accordingly. The prices are renegotiated each November to take account of changes in the international price of coal and

1. Source: National Association of Licensed Opencast Operators, "Memorandum 88," in *Memoranda Laid Before the Energy Committee (Session 1985-86) on the Coal Industry*, HC 165, Vol. 1 of 2, pp. 397-400 (London: HMSO, 1987), p. 399.

Table D-12
Aids to U.K. Coal Producers
(Millions of nominal British Pounds Sterling)

Assistance Category	Fiscal Years (1 April through 31 March of the following year)					
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Deficit grant	374	875	2 225	50	288	91
b) Recruitment of skilled workers	11	13	7	21 e/	18	16
c) Coke stocking aids, and aid to promote sales of coal to electricity producers	12	0	0	0	0	0
Subtotal	397	888	2 232	71	306	107
2) Price Support						
d) Excess payment on purchases of steam coal by public electricity producers	207	442	292	374	805	nd
Total PSE	604	1 330	2 524	445	1 111	nd
Per metric ton produced	£5.00	£12.60	£59.10	£4.30	£10.70	nd
Per metric ton sold	£5.30	£11.70	£44.75	£4.10	£10.60	nd
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Assistance to help offset social security costs						
e) Government social grants	65	197	119	429	513	nd
f) Payments under the Redundant Mineworkers' Pension Schemes	80	189	199	563	610	nd
g) Contributions for increased pensions to workers who retired before 6 April 1975	58	60	63	63	63	42
h) ECSC readaptation grants	2	5	0	8	7	nd
Subtotal	205	451	381	1 063	1 193	nd
2) Research and development aid						
i) EEC and ECSC grants for R & D	5	5	4	7	7	10
Total of Category II	210	456	385	1 070	1 200	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	814	1 786	2 909	1 515	2 311	nd

nd = no data available.
p = projected.
The figures in this table include the effects of the long-term arrangements between coal producers and major coal consumers described in the penultimate paragraph of the previous section and on page 58 of Chapter V.

Table D-13
Aids to U.K. Coal Producers
(Millions of nominal U.S. Dollars)

Assistance Category	Fiscal Years (1 April through 31 March of the following year)					
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p
I. ASSISTANCE INCLUDED IN PSE CALCULATION						
1) Direct financial aid to current production						
a) Deficit grant	625	1 306	2 795	69	427	145
b) Recruitment of skilled workers	18	19	9	29 e/	27	25
c) Coke stocking aids, and aid to promote sales of coal to public electricity producers	20	0	0	0	0	0
Subtotal	663	1 326	2 803	98	454	170
2) Price Support						
d) Excess payments on purchases of steam coal by public electricity producers	362	671	390	485	1 180	nd
Total PSE	1 025	1 997	3 193	583	1 634	nd
Per metric ton produced	$8.50	$19.00	$74.80	$5.60	$15.70	nd
Per metric ton sold	$9.00	$17.60	$56.60	$5.30	$15.50	nd
II. ASSISTANCE NOT BENEFITING CURRENT PRODUCTION						
1) Assistance to help offset social security costs						
e) Government social grants	109	294	149	591	761	nd
f) Payments under the Redundant Mineworkers' Pension Schemes	134	282	250	776	905	nd
g) Contributions for increased pensions to workers who retired before 6 April 1975	97	90	79	87	93	67
h) ECSC readaptation grants	3	7	0	11	10	nd
Subtotal	343	673	479	1 465	1 770	nd
2) Research and development aid						
i) EEC and ECSC grants for R & D	8	7	5	10	10	nd
Total of Category II	351	681	484	1 474	1 781	nd
TOTAL ASSISTANCE TO THE COAL INDUSTRY	1 376	2 678	3 677	2 057	3 415	nd

nd = no data available.
p = projected.
The figures in this table include the effects of the long-term arrangements between coal producers and major coal consumers described in the penultimate paragraph of the previous section and on page 58 of Chapter V.

oil and in the retail price index. The British Government has announced its intention of privatising the electricity supply industry. Any new arrangement after 1991 will need to be negotiated on the basis of this decision.

For the reasons given on page 58 in the main text, and for the purposes of this study, the effects of this agreement have been included in the calculations of the PSEs.

The Government and British Coal are committed to phase out deficit grants by FY1988/9. In addition, responsibility for compensation for redundancies after 1987 will rest with British Coal.

NOTE TO TABLES D-12 AND D-13 (UNITED KINGDOM)

General notes on data and sources

For the years up to and including fiscal year 1986/87, the data on bugetary assistance refer to actual payments received by British Coal, as listed in its annual *Report and Accounts.* The exception is the amount estimated to apply to "aid to maintain a qualified workforce," the amounts of which have been obtained from estimates reported by the European Commission. The data on budgetary assistance for FY1987/88 are those approved by the Commission in its Decision No. 87/451/ECSC (31 July 1987).

Explanation of individual line items

(a) *Deficit grant.* This is a general grant, intended to make up the difference between total costs incurred and total revenues received (including other grants) during each year. British Coal's accounts for FY1982/83 showed a net loss of UK£111 million after crediting the deficit grant. In every year since then, however, the deficit grant has covered exactly the Corporation's annual losses. The very high figure for FY1984/85 represents a special payment to help cover extraordinary expenses resulting from the year-long industrial dispute. A portion of this grant was not used in FY1984/85 and was carried over to FY1985/86.

(b) *Aid to maintain a qualified workforce.* This is the amount of aid, according to the European Commission, that is used to help offset half of British Coal's costs of relocating skilled underground workers that have been transfered from closed mines to other, operating mines. This aid is not itemized separately in the Corporation's annual *Report and Accounts,* but is included under the more general category of "social grants." Accordingly, the totals given in the table for "Government social grants" have been reduced by this amount.

(c) *Coke stocking aids and grants for the promotion of sales to public electricity producers.* These payments ceased after FY1982/83.

(d) *Excess payment on purchases of thermal coal by public electricty producers.* This has been calculated in three steps. First, the difference between the average price paid by U.K. power stations for coal from *all* sources, and the average price of imported power-station coal (based on imports to the European Community as a whole), has been calculated. From the resulting number, an estimated average charge for inland transport to power stations is subtracted. Finally, the difference is multiplied by the number of tons of coal equivalent consumed in the particular year. Note that since only annual (that is, calendar year) data are published for U.K. power station coal prices, the calculations have been performed on a calendar year basis, rather than on a fiscal year basis, as have the other aid elements.

(e) *Government social grants.* According to British Coal's *Report and Accounts* for FY1986/87 (p. 36), these grants are made to the Corporation "with the objectives of accelerating the redeployment of employees, eliminating uneconomic capacity, and meeting the extra cost of pension benefits to employees made redundant." The figures given in the table have been adjusted downwards by the amount estimated by the European Commission as representing equivalent costs for the recruitment of skilled workers.

(f) *Payments under the Redundant Mineworkers' Pension Scheme.* These are payments to miners who have been made redundant as a result of industry rationalization. The amounts shown are those payments that have been paid directly by the Government and not to British Coal.

(g) *Contributions for increased pensions to workers who retired before 6 April 1975.* These are reimbursements to the Corporation for additional payments made by the Corporation in order to bring the benefits paid out under the Mineworkers' Pension Scheme to workers who retired before 6 April 1975 into line with those received by workers who have retired on or since that date.

(h) *ECSC readaptation grants.* These are grants paid by the ECSC towards the costs of adapting to changes in market conditions.

Table D-14

Basic Statistics and Assumptions Used in Estimating PSEs for U.K. Coal Producers

	Fiscal Years (1 April through 31 March of the following year)						Data Source
	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88p	
Basic data (hard coal only)							
Saleable Underground Production (Mmt) a/	94.9	90.1	27.6	88.4	88.0	89.0e/	[1]
Total Saleable Production (Mmt) b/	120.9	105.3	42.7	104.5	103.3	104.0e/	[1]
Total deliveries, coal of domestic origin (Mmt)	94.1	113.4	56.4	109.6	104.7	104.0e/	[1]
Exchange Rates c/							
U.S. dollars per British pound sterling (£/US$)	1.672	1.493	1.256	1.378	1.484	1.60 d/	[2]
ECU per British pound sterling (£/US$)	1.715	1.734	1.669	1.681	1.448	1.40 d/	[2]

a/ Including coal reclaimed from coal tips (about 0.3 million metric tons per annum) and coal extracted in the course of capital roadway development (so-called "capital coal").
b/ Including opencast and coal from independent (licensed) producers.
c/ Average of quarterly average market rates.
d/ Average of 2nd and 3rd quarters' values.
e/ IEA Secretariat estimate.

Sources: [1] British Coal, *Reports and Accounts 1986/87* (London: British Coal, 1987);
[2] International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1987).

Table D-14 (Continued)
Basic Statistics and Assumptions Used in Estimating PSEs for U.K. Coal Producers

	Calendar Years						Data Source
	1982	1983	1984	1985	1986	1987p	
Price support for thermal coal f/							
Fuel input of hard coal to the U.K. electric power sector							
Millions of coal equivalent tons (mtce)	66.7	68.0	44.9	60.3	68.8	61.0e/	[3]
Average delivered prices							
Coal from all origins (£/tce)	50.7	52.5	52.7	54.0	52.6	nd	[4]
Reference price for imported coal (£/tce) g/	39.6	38.0	38.2	39.8	32.9	nd	[5]
Internal transport charge (£/tce)	8.0	8.0	8.0	8.0	8.0	nd	[6]
Price differential (£/tce)	3.1	6.5	6.5	6.2	11.7	nd	
Total Burden (millions of £)	207	442	292	374	805	nd	
U.S. dollars per British pound sterling (£/US$)	1.7505	1.5170	1.3363	1.2963	1.4670	1.59	[2]

e/ IEA Secretariat estimate.
f/ Quantities and prices refer to calendar years. The price calculations had to be calculated in this manner since the price data available from the U.K. Department of Energy are reported for calendar years only.
g/ Weighted quarterly average values of spot and long-term contract prices (c.i.f.) for power-station coal imported by all EEC member countries. Note, until 1986, prices for coal imported by Portugal and Spain are not included.

Sources: [2] International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1987).
[3] International Energy Agency, *Coal Information* (Paris: OECD, various years 1985-1987);
[4] United Kingdom, Department of Energy, *Digest of Energy Statistics* (London: HMSO, 1987);
[5] Commission of the European Communities, *Bulletin of Energy Prices*, No. 1/1987 (Luxembourg: Eurostat, 1987), p. 24.
[6] Estimated on the basis of information provided by the Central Electricity Generating Board, "Memorandum 9" in U.K. House of Commons, *Memoranda laid before the Energy Committee (Session 1985-86) on the Coal Industry*, Vol I (London: HMSO, 1987), p. 101.

OTHER COUNTRIES

Canada

The coal industry in Canada is predominantly privately owned, and this part of the industry receives no direct state aids. Government grants are given, however, to the Cape Breton Development Corporation (CBDC), a federal crown corporation created by an act of Parliament in 1967. In the fiscal year ending 31st March 1987, the Corporation produced some 2.6 million metric tons of coal, about 0.5 Mmt of which were exported. The Corporation has run an operating deficit each year from FY1982/83 through FY1986/87, and each year grants have been approved by the Parliament to cover these losses. In the financial year 1986/7 direct state aid to cover CBDC's operating losses, plus the assumed depreciation of fixed assets not covered by this deficit grant, totalled C$46.9 million (C$17.80 per metric ton of coal produced).

The CBDC was created initially to rationalise the ailing Nova Scotia coal industry, and in the process it inherited considerable actuarial liabilities. Among the costs contributing to the Corporation's operating losses in FY1986/7 therefore were outlays of $C18.7 million for pensions and pre-retirement leave benefits, some part of which relate to liabilities assumed under the 1967-68 Act, and which therefore are unrelated to current production. In addition, about C$2.8 million in workers' compensation was paid out to workers laid off from the No. 26 colliery, which was closed because of a fire in 1984.

Italy

Coal production in Italy is currently limited to some small-scale mining of lignite in Tuscany and Umbria, with a total 1986 output of 0.6 Mtce. Under the authority of legislation passed on 27th July 1985, a new mining complex is being built near Sulcis, on the southwest coast of Sardinia, the output from which will fuel electric power plants throughout the island. The coal from this deposit is of rather poor quality: *in situ* sulphur content ranges from 4% to 7% by weight, and ash content is around 40%. After

beneficiation, the ash content will be reduced to less than 19%. When the mine reaches full capacity, sometime in 1989 or 1990, it is expected to produce 1.7 Mmt of cleaned coal, with a thermal content of approximately 4 800 kilocalories per kilogramme.

The Italian Government has granted ENI, the operator of the mine complex, approximately 500 billion lira ($380 million at mid-1987 exchange rates), to be paid out over five-years, from 1985 through 1989. This grant is intended to cover part of the cost of developing the mine and its associated infrastructure, and to enable ENI to find economically and environmentally acceptable solutions for the extraction and utilisation of this coal. Under the 1985 law, the coal can be consumed only in Sardinia.

New Zealand

About 70% of New Zealand's hard-coal output is produced by a single state-owned coal mining company, Coal Corporation of New Zealand Ltd (Coalcorp), until April 1987 part of a separate division of the New Zealand Ministry of Energy (State Coal Mines in the Mines Division of the Ministry). Annual deficit grants were provided by the State, amounting in fiscal year 1984/5 to NZ$38.2 million, or NZ$22 (US$12) per metric ton. Electricity consumers were also supporting coal production through high prices — the value of this price support element was around NZ$20 million in 1985, according to Government sources. Coalcorp has responsibility for matters such as development, production and pricing similar to those of any other commercial concern. Currently, one mine receives an annual subsidy, amounting to NZ$2.3 million in 1986/87. In addition, some capital transfer may have been associated with the restructuring of Coalcorp. Besides supplying a large share of the country's domestic requirements for coal, Coalcorp exports around 0.35 Mmt of coal, mainly coking coal to Japan, each year.

Norway

Coal is produced at two underground mines on Spitsbergen in the Svalbard archepelago (located about 700 kilometres north of the Norwegian mainland). Output in recent years has been steady at around a half million metric tons per annum. Most of the coal produced is of coking quality, and the bulk of it is shipped to Norwegian steel plants. Of the 0.2 Mmt of coal exported annually, about half is sold to power plants in northern Germany. The mining companies' operating deficits are covered by Government grants; actual payments were 79.7 million Norwegian krone (Nkr) ($9.3 million) in 1985, and Nkr 129.6 million ($17.5 million) in 1986.

Portugal

Coal is produced at only one mine in Portugal, with an annual production of some 0.2 Mmt. The bulk of the output is used in a nearby power station

owned by the state power company, Electricidade de Portugal (EDP). State aid to current production takes two forms. The first is a direct deficit grant, which is expected to have amounted to 296.1 million Escudos (about US$2.3 million) in 1987. In addition, the price of domestically produced coal used in electricity generation is related to the price of heavy fuel oil on a heat content basis, rather than to the price of equivalent quality imported coal. It is expected that the price formula for this coal will be modified some time in 1988.

Turkey

Falling coal prices in world markets have made imported coal increasingly attractive in recent years. Between 1971 and 1986, imports of hard coal grew from 0.7 million to 2.7 million metric tons. In the summer of 1986, the Government imposed an import duty of US$10 per metric ton on all coal imported for uses other than the steel industry. The aim of this measure was to grant relief to the state-owned Turkish Hard Coal Board (TTK), much of whose output was having to be stockpiled. As a result of this measure, coal stocks experienced a net drawdown in 1986, and imports of steam coal fell to 122 000 metric tons, from 279 000 metric tons in the previous year.

Coal imports for power plants to be constructed under BOT (build, operate and transfer) schemes are to be exempt from the import duty, as these plants are to be sited in free trade zones.

United States

The only measures identified as supporting current production are those mandating the use of United States' coal at Department of Defense (DOD) installations. From fiscal year (FY [1]) 1962 through FY 1987, the DOD was required to burn United States-produced bituminous coal or anthracite in boilers located at its military bases in Germany. After reaching a peak in the late 1960s, these mandatory coal purchases declined steadily, dropping to less than 0.6 Mmt per annum between FY 1982 and FY 1985. In the FY 1985 Defense Appropriations Act (P.L. 98-473), the United States' Congress mandated the purchase in 1986 of an additional 0.5 Mmt of United States' coal to build up a "strategic reserve" for the United States' Armed Forces in Europe. The following year's Defense Appropriations Act (P.L. 99-190) required the DOD to purchase 274 000 metric tons of anthracite each year through FY 1994 and to increase its total coal purchase, by FY 1994, to a level of 1.45 Mmt per annum above what it consumed in FY 1985; an increasing proportion of this coal was to be used at bases in the continental United States. Under the current Defense Appropriations Act, the DOD is

1. The United States' Government's fiscal year runs from 1st October through 30th September; thus FY 1985 began 1st October 1984 and ended 30th September 1985.

still required to purchase 272 000 metric tons of anthracite during FY 1988. For the first time since 1982, however, none of this anthracite will be shipped overseas. Rather, most of it will be put into stockpile in eastern Pennsylvania.

The cost to the DOD of burning United States-produced coal overseas was high. For example, in FY 1985, the average cost of Pennsylvanian anthracite delivered to United States' bases in Germany was $150 per metric ton of coal equivalent. (Part of the high cost was due to the requirement, pursuant to the 1904 Cargo Preference Act, that the anthracite had to be carried in United States' flag vessels.) The corresponding cost of imported bituminous coal from all sources was, at the time, around $65 per metric ton of coal equivalent. The difference, multiplied over the 218 000 metric tons purchased in that year, amounts to $18.5 million. The burden to the DOD of mandatory purchases of United States' coal in FY 1988 is of the same order of magnitude: according to the United States Office of Management and Budget, elimination of the mandatory coal purchasing programme could save the Government $26 million.

INTERNATIONAL ENERGY AGENCY

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