

Aspects of corporate power in world coal production and trade

By Jan Willem Biekart

The structure of the world coal industry has changed considerably since the late fifties when coal lost its battle against oil.

With the reemphasis on coal as an energy source after the 1973 and 1979 oil crises, new ownership patterns have emerged.

This article indicates which corporations dominate the industry and tries to analyse some aspects of world coal production and trade.

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Introduction

Until about 1920 coal was the world's most important energy source. However, when oil became widely and cheaply available, coal gradually lost its top position. This happened first in the United States, somewhat later in Western Europe. Between 1939 and 1970 the share of coal in the US energy supply declined from about 50 per cent to 20 per cent. Many thousands of mines were closed down.

In Western Europe the decline was much slower due to protectionistic measures by the governments of the producing nations.

Despite the stagnation in the consumption of coal many oil companies anticipated an important role for coal over the long term, as oil reserves would become progressively depleted. During the sixties they bought up small coal companies and their yet unexploited reserves, especially in the western United States.

The oil companies thus initiated a major restructuring of the coal market. These structural changes accelerated in the course of the seventies. The OPEC oil embargo and oil price increases of 1973 made the world aware of its dependence on oil, particularly in those countries where most of the oil had to be imported. Coal thus became an attractive possibility for diversification. Moreover, the oil price increases made coal competitive on those markets where it could easily be supplied. The doubling of oil prices in 1979 strengthened this effect so that long transportation routes no longer formed an unsurmountable obstacle.

Massive investments in coal production were not only made by the oil companies. Mining companies joined in too, as well as some large consumers, in particular power companies. This meant that although only a few large independent coal companies survived, especially in the United States, South Africa and Australia, competition remained strong in the world market.

In Western Europe the situation was quite different. Since the fifties most of Europe's coal industries were nationalized and large, centralized state-monopolies, such as the British National Coal Board (NCB) and the French Charbonnages de France (CdF) have been created. The domestic coal consumers were (and still are) obliged to take a certain percentage of their needs from this domestically and expensively produced coal.

The market for hard coal

There are two main markets for hard coal: on the one hand the steel industry for metallurgical or coking coal, on the other hand the power companies, cement industry and the households for steaming coal.

Metallurgical or coking coal is used as support, energy source and reducing agent in the blast furnaces of the steel industry. Consumption and trade in coking coal is thus dependent on the weal and woe of the steel market. As steel production tripled from the early fifties to the early seventies, consumption of coking coal increased too, though less than twofold. New steel making techniques requiring less coal were responsible for this.

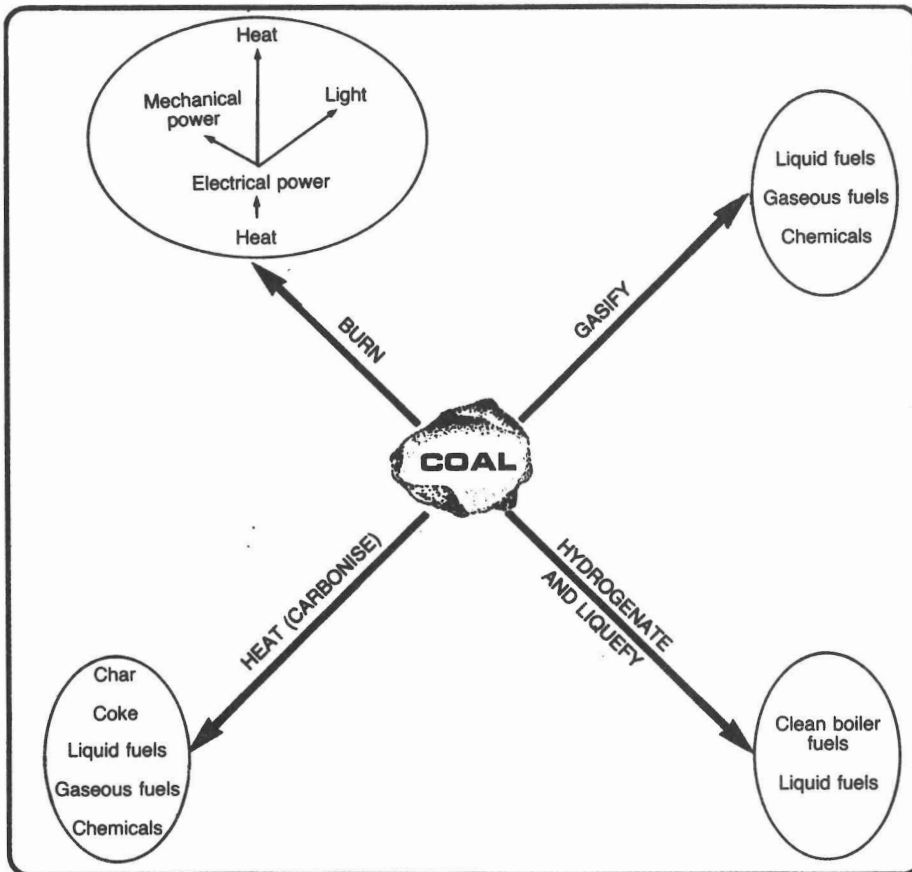
Consumption and trade in coking coal have stabilized since the mid-seventies due to the stagnation in the steel industry. Coking coal production fell 9 per cent between 1973 and 1983, while coking coal trade grew by 19 Mt.¹ This growth is the result of a partial shift in steel production to a number of less developed countries (LDCs), mainly in Asia and Latin America.

Prior to 1973 most of the international trade in coal was comprised of coking coal. In 1983 its share had declined to 50 per cent, which corresponded to 30 per cent of world demand, i.e. 135 Mt, in 1983.²

Steaming coal has to compete with other energy sources such as oil and nuclear power. Prior to 1973 steaming

The major usages of coal.

From Optima Vol 34 No 1, March 1986.



coal generally was competitive in the domestic markets of the producing nations. However, the oil price rises of 1973 and 1979 made steaming coal competitive on an international scale too. Demand for coal increased, particularly in those countries which had a rather small national coal production. International trade expanded, which can be illustrated by the growth in the exports of steaming coal from Australia and South Africa:

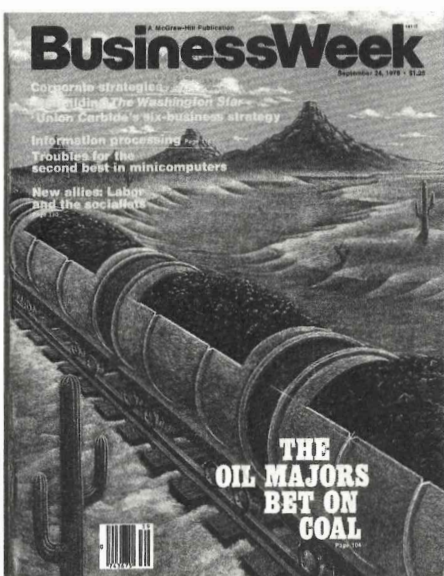
- Australia exported only 2.1 Mt in 1970/71, but in 1983/84 exports had increased to 22.4 Mt, a rise of 1 080 per cent.

- South Africa, which in 1970 was exporting only tiny amounts, by 1984 was exporting at a rate of 38.1 Mt. After gold, coal has become that country's most valuable revenue earner.

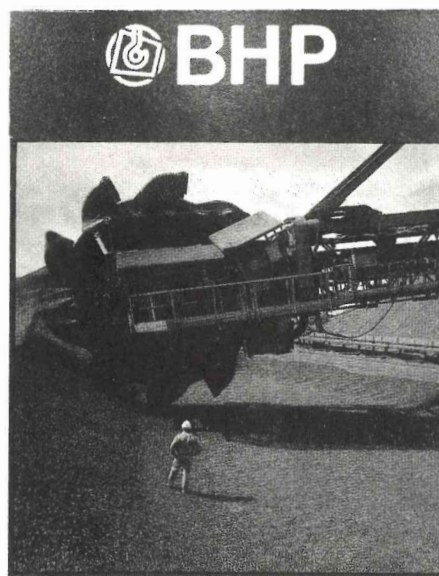
Today, 50 per cent of world coal trade consists of steaming coal, i.e. 127.8 Mt in 1983, though these exports satisfy only 5 per cent of world needs.³

The high expectations of industrial growth in the seventies led to a flood of optimistic projections on the role of steaming coal in the energy supply of the industrialized world. One of the most influential reports was the World Coal Study (WOCOL), published in 1980.⁴ This international study stressed the importance and potential of coal as a cheap and widely available energy source. However, the combination of economic recession, energy conservation and industrial restructuring have changed the projections of explosive growth in the use of coal. An important reason for this is that environmental problems, overlooked by some in their flush of optimism, remain substantial.

The exaggerated projections of coal needs was an important factor in the creation of today's excess productive capacity. Since 1983 this oversupply has depressed prices, although they have stabilized recently and an upward trend may be discerned.⁵ Yet the development of a new, export-oriented coal project still seems to be a high-risk venture.



In the late 1970s the oil companies expanded their investments in the coal industry. From the cover of Business Week 1979-09-21.



BHP, an Australian natural resources conglomerate has emerged as a major actor in the coal industry during the last decade.

Despite these problems many companies and producing countries are going through with their earlier plans to expand production and exports.

The geography of supply and demand

One of the main features of world coal production, consumption and trade has been its almost complete restriction to countries of the industrialized world, capitalist or centrally-planned. Almost no LDCs have yet entered the market, although important changes are occurring in this respect. Of the LDCs only India has a substantial and expanding production. In the near future Botswana, Indonesia, and in particular Colombia, will become important producers and exporters of steaming coal.

Table 1 lists the ten largest hard coal producing countries of the world. About 80 per cent of the world's hard coal production consists of steaming coal and 20 per cent of coking coal.⁶

It is important to note that some of these countries have a better chance to maintain or improve their position on the list than others. Production levels in countries like West Germany and the United Kingdom will remain rather constant. Other producing nations like France and Japan have a continuously declining production and now are among the largest importers of both steaming and coking coal. Poland's production is expected to grow modestly and it is probably capable of meeting the growing demand from Western Europe, should it wish to. Production in Australia, Canada, China, North Korea, and South Africa is still booming.

In general the largest coal producers are also the largest coal consumers. Notable exceptions are Czechoslovakia, France, Italy, Japan and South Korea, which belong to the largest consumers

of hard coal, but have a rather low, or no production of their own.

Table 2 lists the world's main coal exporting countries in order of their 1984 exports. The United States, for the first time in history, lost its position as the world's leading hard coal exporter. Australia, which has seen its exports

grow 26 per cent in one year, is now number one.

In Table 3 the coal flows internationally traded in 1983 are given. One can see that by far the most important markets for traded coal are the EEC and the Far East. A small part of the trade is intraregional. For example, within

Table 1
Principal producers of hard coal 1984^a
(in Mt)

Country	Production
United States	751.2
China	731.0
USSR	555.0
Poland	192.5
South Africa	162.0
India	144.0
Australia	115.4
FR Germany	84.9
DPR Korea ^b	70.0
United Kingdom ^c	49.3
Canada	46.2
Czechoslovakia	26.4
Rest of the world	106.5
World total	3 034.4

Notes:

^a Important lignite producers like the German Democratic Republic, the USSR, Yugoslavia, the US and Czechoslovakia, some of which may produce more than 200 Mt per year, will not be dealt with here.

Lignite and subbituminous coals are generally used locally.

^b Approximate figure taken from Mining Journal, 1985-04-05.

^c Very low as a consequence of the miners' strike. In 1983 the production of the United Kingdom was 116.4 Mt.

Sources:

BP, *Statistical Review of World Energy*, June 1985, p 26.

Table 2
Principal hard coal exporting countries 1984
(in Mt)

Country	Total	Steaming/coking
Australia	76.5	29.1/47.4
United States	73.3	21.6/51.7
Poland	43.1	33.1/10.0
South Africa	38.1	35.5/2.6
USSR	22.6	na
Canada	25.4	3.6/21.7 ^a
FR Germany	10.4	na
China	7.0 ^b	na

Notes:

^a Estimate based on *Engineering & Mining Journal*, March 1985, p 39.

^b Estimate.

Source:

Weglokoks, *Polish Coal Review* (Katowice), Vol 32 (7-9), 1985, p 3, and mining statistics of the individual countries.

Western Europe Germany exports coking coal to other EEC members, while Canada imports both steaming and coking coal from the United States.

Corporate power

We will now deal with the major companies in the largest twelve producing

countries. For seven countries this is fairly simple, as all production and export is directed through the hands of one state-owned company. In order of importance these firms are the *China National Coal Import Export Corp*, the *Ministry of Coal Industry* (USSR), *Weglokoks* (Poland), *Coal India Ltd*,

the *National Coal Board* (United Kingdom), *Krametal* (Czechoslovakia) and the state company of North Korea.

Of the remaining five countries we will mention the largest producing or exporting companies. We will also try to unravel their links with oil, mining and other companies.

Table 3

Total coal flows, 1983^a (in Mt/year)

Exporters/ Importers	United States	Australia	Poland	South Africa	USSR	Canada	FR Germany	United Kingdom	China	Colombia	Others	Total
<i>Western Europe</i>	31.4	11.0	16.0	20.1	3.8	1.4	9.6	6.3	—	—	6.5	106.2
steam/metal	14.1/17.3	3.7/7.3	12.8/3.2	19.9/0.2	1.6/2.2	1.1/0.3	3.7/5.9	5.7/0.6	—	—	2.7/3.8	65.3/40.9
France	3.8	2.7	2.2	5.0	—	—	3.7	1.6	—	—	1.2	20.2
Italy	7.3	1.7	2.2	3.0	0.1	0.1	1.9	0.1	—	—	1.1	17.5
Belgium	2.3	0.4	0.4	4.0	0.1	—	2.2	0.1	—	—	0.3	9.8
Denmark	1.6	0.5	2.0	2.9	0.4	0.3	—	1.6	—	—	—	9.3
FR Germany	1.6	0.4	2.2	2.4	0.1	0.8	—	0.8	—	—	1.0	9.1
Netherlands	3.6	1.5	1.0	0.3	—	—	0.8	0.4	—	—	0.1	7.7
Spain	3.0	0.7	1.0	0.9	0.1	—	—	0.1	—	—	0.1	6.5
<i>Far East</i>	19.0	42.6	—	9.1	1.9	13.7	—	0.2	5.3	—	0.7	92.5
steam/metal	4.0/15.0	7.6/35.0	—	6.5/2.6	0.5/1.4	0.9/12.8	—	0.2/—	3.7/1.5	—	0.7/—	24.1/68.4
Japan	15.6	35.8	—	5.9	1.9	10.8	—	—	3.8	—	0.2	74.0
Rep Korea	1.8	3.3	—	1.4	—	2.4	—	0.2	0.6	—	0.3	10.0
<i>Eastern Europe</i>	0.4	0.5	17.4	—	16.2	—	0.8	—	0.3	—	1.8	37.4
steam/metal	—/0.4	—/0.5	16.9/0.5	—	10.7/5.5	—	0.8/—	—	—/0.3	—	1.3/0.5	29.6/7.8
<i>South America</i>	3.8	0.2	2.0	—	—	0.9	—	—	—	0.1	—	7.0
steam/metal	—/3.8	—/0.2	—/2.0	—	—	—/0.9	—	—	—	0.1/—	—	0.1/6.9
<i>Canada</i>	14.7	—	—	—	—	—	—	—	—	—	—	14.7
steam/metal	8.7/6.0	—	—	—	—	—	—	—	—	—	—	8.7/6.0
Total^b	69.4	54.3	35.4	29.1	21.9	16.0	10.4	6.5	5.6	0.1	9.0	257.8
steam/metal	26.8/42.6	11.3/43.0	29.7/5.7	26.4/2.7	12.8/7.1	2.0/14.0	4.4/6.0	5.9/0.6	3.7/1.9	0.1/—	4.7/4.3	127.8/130.0

Notes:

^a Hard coal; preliminary data.

^b Totals may not equal sum of components due to independent rounding.

Source:

Energy Information Administration, *Annual prospects for world coal trade, 1985, US DOE/EIA — 0363(85)*, Washington DC, Government Printing Office, May 1985, from SRI International, *International coal trade: historical trade flows and projected coal import demand*, (February 1985).

United States

The coal producing areas in the United States are in the Appalachians and in the western states, e.g. Utah and Colorado.

Production in the mines of the Appalachians is extremely fragmented. Numerous producers operate mostly small, underground mines; an inherited structure of the past.

Coal production in the western states is completely different and looks much more like that in Australia and Canada: large open pit mines exploited by major companies. Joint ventures are scarce, however, in contrast to Canada and Australia. Although concentration in coal production is still rather low, the fifteen largest companies provide 46.9 per cent of the country's total output, Peabody, Consolidation and AMAX being the largest (see Table 4).

Six out of the fifteen largest US companies are owned by oil corporations, three by electric power companies and four by mining conglomerates. An analysis of all US companies producing more than 0.5 Mt per year in 1979 revealed the following ownership structure: oil companies 25 per cent, electric power companies 14.8 per cent and independent coal companies 11.6 per cent. The rest remaining (49.4 per cent) is owned by mining groups and financial institutions, railway companies, etc.⁷

The largest reserves in the country are held by Burlington Northern, a railway company (13.3 Gt), Consolidation Coal (12.4 Gt), Rocky Mountain Energy (owned by Union Pacific, 9.1 Gt), Exxon (8.6 Gt), Peabody (7.8 Gt) and Phillips Petroleum (7.3 Gt).⁸ Large reserves are also held by a wide range of oil transnationals like Occidental, Shell, Mobil, Chevron and mining companies like AMAX. Most of these reserves are in the western states and are lignite or sub-bituminous, thus only of domestic importance.

A substantial number of the larger

producers trade and export their own coal, as well as coal from the many small producers.⁹ These firms thus act as brokers, forming an extra layer of intermediaries between producer and consumer. Independent brokers exist too and these play an important role in the Appalachian trade.

Furthermore there is a wide range of trading companies, some of which are owned by large producers. European and Japanese consumers often have their own representatives, though this does not mean that they will always deal directly with producers, ignoring the trading companies.

Table 4
Principal coal producing companies in the United States^a
(in Mt)

Company/Group ^a	Production	Share (%)	Owner ^b
Peabody Group	64.4	8.0	Group led by Newmont Mining
Consolidation Group	46.7	5.8	Conoco/Dupont
AMAX Group	41.4	5.2	AMAX
Texas Utilities	29.2	3.6	Texas Utilities
Anaconda Minerals	24.1	3.0	Atlantic Richfield
A T Massey Group	23.5	2.9	Fluor Corp/Shell
Exxon Coal USA	23.2	2.9	Exxon Corp
North American Coal Corp	18.7	2.3	North American
Kerr-McGee Coal Corp	16.9	2.1	Kerr-McGee
NERCO	16.3	2.0	Pacific Power & Light
Utah International	15.2	1.9	Broken Hill Prop
Pittston Co	15.1	1.9	Pittston Co
Old Ben Coal	14.6	1.8	Standard Oil of Ohio
American Electric Power	13.5	1.7	American Electric Power
Pittsburg & Midway	13.3	1.7	Standard Oil of California ^c
Largest fifteen	376.1	46.9	
All others	426.3	53.1	
Total^d	802.4	100.0	

Notes:

^a Not including bituminous, subbituminous and lignite coals.

^b Only large shareholders are mentioned.

^c Formerly of Gulf Oil Co, which merged with Socal.

^d Total may not equal sum of components due to independent rounding.

Sources:

Coal Age, April 1985, p 15; BP, *Statistical Review of World Energy*, June 1985, p 26.

According to estimates of the US Coal Exporters Association in 1980, some eighteen firms accounted for 80 to 90 per cent of US coal exports. Statistics are not readily available, however. Recent export figures from the important coal terminal at Hampton Roads, Virginia, indicate a significant role for

Pittston, Sprage, Ino. McCall, Island Creek and A T Massey.¹⁰

Although no restrictions exist on foreign ownership, the significance of foreign controlled production is very limited, in particular if compared with other large producing nations. An exception forms the Australian Broken

Hill Proprietary (BHP), owner of the eleventh largest US producer, Utah International Inc.

South Africa

Coal production in South Africa is conducted almost solely by domestic producers which are heavily concentrated (see Table 5). The three largest companies produced about 65 per cent of the country's yearly output. Apart from Lonrho which is of British origin, the state-owned companies SASOL and ISCOR, all larger firms are subsidiaries of the large domestic mining companies which also control the production of South Africa's other minerals like gold, platinum and chromium. All the coal mined by SASOL is used in its three coal-to-oil conversion plants which provide for 30 to 40 per cent of the nation's oil needs. Coal provides about three quarters of the total energy needs of South Africa, a higher percentage than in any country of the Western world.¹¹

South Africa's coal export started in the early seventies, but the real expansion began with the coming on stream of the coal terminal Richards Bay in 1976, stimulated by the entry of Royal Dutch/Shell, BP and Total in the South African coal production. Initially the terminal could handle 20 Mt per annum, but several expansions have been carried out since. Capacity now stands at around 45 Mt year, whilst a new expansion (phase IVa) is expected to enlarge the terminal's capacity exports to 80 Mt/year in 1990 are handled through this terminal, with only a small percentage moving through the port of Durban.

The prime export market for South African coal is Western Europe. France and Italy take most of this coal, followed by Denmark and the West Germany. Japan is also an importer of South African coal, though a comparatively minor one: 4.6 Mt in 1984 or 6.5 per cent of the Japanese coal imports.

Table 5

Principal hard coal producing companies in South Africa, 1983 (1984)^a (in Mt)

Company	Sales		Share (%)		Owner
Amcoal	35.4	(37.7)	24.9	(23.7)	Anglo American Corp of South Africa
SASOL Operations (Pty) Ltd ^b	30.6	(34.0)	21.5	(21.4)	SASOL Industries (Pty) Ltd
Trans-Natal Corp Ltd	20.6	(36.7)	18.3	(23.1)	General Mining-Union Corp Ltd (GENCOR)
Witbank Colliery Ltd	13.9	(16.7)	9.8	(10.5)	Rand Mines Ltd ^c
Transvaal Cons Land & Expl Co Ltd	5.5	(4.8)	3.9	(3.0)	ibid
Tavistock Collieries Ltd	4.3	(4.3)	3.0	(2.9)	Johannesburg Cons Investment Corp Ltd
Clydesdale Transvaal Collieries Ltd ^d	4.2	(na)	3.0	(na)	Gold Fields of South Africa Ltd
ISCOR ^b	3.7 ^e	(na)	2.6	(na)	ISCOR
Duiker Exploration	2.8	(3.3)	2.0	(2.1)	Lonrho Management Services Ltd (UK-based)
Apex Mines Ltd ^d	2.4	(2.3)	1.7	(1.4)	Gold Fields of South Africa Ltd
All others	11.4	(na)	8.0	(na)	
Total	142.3	(159.1)	100.0		

Notes:

^a Includes bituminous coals and anthracite. The 1984 production figures were not yet available for all mines, but are mentioned between brackets if known.

^b State-owned.

^c Rand Mines also owns Welgedacht Exploration Co Ltd, which produced 1.9 Mt in 1983. Total coal production of Rand Mines thus amounts to 21.3 Mt.

^d The Clydesdale Transvaal Collieries Ltd and Apex Mines Ltd merged in 1985 to form Gold Fields Coals Ltd.

^e 1982 production. More recent data are not available.

^f Totals may not equal sum of components due to independent rounding.

Source:

Republic of South Africa, Department of Mineral and Energy Affairs: *Operating and Developing coal mines in the Republic of South Africa*. Directory 2/85, compiled by ATM Mehliiss (June 1985).

In order to assure cheap and secure domestic coal supplies, the export volume of coal is subject to government restriction. It makes use of export permits, thus exercising a great influence on the structure of the trade. Export allocations for phase III of Richards Bay are given in Table 6.

The *Transvaal Coal Owners Association* (TCOA) is the holder of the largest export allocation. However, as the initiator and main share holder (40 per cent) in Richards Bay, this quatum has been a disappointment to the association. Until 1976 the TCOA handled 75 per cent of South African coal exports. Other large producing companies like Johannesburg Consolidated Investments and Gold Fields of South Africa did not get export permits.

In 1976 Royal Dutch/Shell, BP and Total were given the right to enter the South African coal market. Here they have acted mainly as marketing organizations and capital suppliers, stimulating coal exports. BP and Total have since formed a joint venture with Trans-Natal in the Ermelo Mine. Total has another joint venture with Tavistock Collieries, and BP with Witbank Colliery and Kanhym Ltd (a subsidiary of GENCOR). Royal Dutch/Shell has a joint operation in the Rietspruit mine, together with Transvaal Consolidated Land & Exploration.

One third of the export allocations are given to these oil companies, detrimental to national companies. This policy of the government is said to be an assurance against oil supply disruptions. Amongst the conditions imposed upon the oil companies before entering the coal market was a clause that they would continue to provide South Africa with imports of liquid petroleum products.¹²

South African coal exports are sold directly to overseas buyers by the holders of the export permits. The TCOA, BP, Total and Royal Dutch/Shell act solely as trading and marketing organizations, as they do not

actually produce. This may change in the future though.

The TCOA exports some of the coal produced by members which are actually subsidiaries of Anglo American, GENCOR or Rand Mines. Shell also trades some of the coal produced by Anglo American. In the future, probably other (smaller) producers will be involved in the export trade too, as indicated by the phase IVa allocations shown in Table 6.

One analyst anticipates a somewhat larger role for South African steaming coal on the Pacific coal market, depending on price developments and political events.¹³ But given recent developments in South Africa, the international call for an economic boycott of the country, and the fluctuating rate of the dollar, projections are very uncertain.

Denmark has already announced that

it will switch to Colombian coal for political reasons, and the same probably holds for the Netherlands, though it is not yet officially announced.¹⁴ Strikes now threaten South African coal exports and the management of the companies do not seem to be very optimistic.¹⁵

Australia

Australia has two about equally important coal producing provinces: Queensland and New South Wales. The country exports more than 60 per cent of its total annual output of hard coal. Most of these exports (66 per cent) consist of coking coal and are destined for Japan and Western Europe.

Steaming coal exports have increased in importance since the late seventies. Japan, which diversified its energy use

Table 6
South African coal export — allocations phase III (IVa)^a
(in Mt)

Company	Allocation phase III	Allocation phase III
Transvaal Coal Owners Association	10.0	+ 1.0
GENCOR ^b	7.5	+ 4.0
Anglo American	7.3	+ 4.0
Shell South Africa	5.5	+ 1.0
B P Coal Southern Africa	5.5	+ 0.5
Rand Mines	3.9	+ 4.5
Total Exploration South Africa	2.5	+ 0.5
Kangra Holdings	2.2	+ 0.4
Total^c	47.7	+ 28.2

Notes:

^a Both bituminous coal and anthracite. The figures for phase IVa should be added up to the phase III allocation.

^b Includes allocation of Kwa Ngoma Mines.

^c total may not equal sum of components due to independent rounding.

Source:

Republic of South Africa, Department of Mineral and Energy Affairs: *Operating and developing coal mines in the Republic of South Africa*. Directory 2/85, compiled by ATM Mehliss (June 1985).

on a large scale and constructed many large, coal-fired power plants, has been the dominant market. But the West European market has become increasingly important, as European consumers wanted to diversify into Australian coal, while the Australians were inclined to sell to other consumers than Japan and South Korea. Overdependence on the Australian market has caused concern in Australia in several cases, e.g. when Japan which in 1985 decided to cut purchases.¹⁶ This has troubled Queensland exporters since in the past Japan has been in position to negotiate low prices for their coal.¹⁷

A characteristic of the Australian coal production is the activity of foreign actors, like Japanese trading houses, power and steel companies, and West European consumers. Usually this activity takes the form of a joint venture with a large Australian producer which holds majority interest.

Insistence on Australian majority control is an active federal government policy. Restrictions on foreign ownership are imposed in order to:

" . . . enable Australian companies to secure a stake in the boom. In late 1980 two important coal projects, one owned by a consortium of CRA, Atlantic Richfield and Japanese companies, and the other by Houston Oil & Minerals together with MIM Holdings, were refused permission to proceed with development plans, until Australian partners were brought in."¹⁸

Moreover, all export contracts are controlled, and must be authorized.

As of late 1985 Australian coal producers are enjoying an even more favourable position in the European market due to the high exchange rate of the American dollar and the critical political situation in South Africa.¹⁹

The major operating coal producing groups (see Table 7) are very large Australian mining companies, especial-

Table 7

Principal hard coal exporting companies in Australia 1983 (in Mt)

Company/Group	Potential exports		Share (%)	Owner ^b
	1983	(1985) ^a		
Utah Development ^c	18.5	(18.5)	23.1 (14.4)	General Electric (USA) ^c
BP Australia ^d	8.2	(11.0)	10.3 (8.5)	British Petroleum (UK)
CSR ^e	6.1	(8.8)	7.6 (6.8)	CSR
Howard Smith ^f	5.7	(8.6)	7.1 (6.4)	Howard Smith
CRA	5.1	(7.8)	6.4 (6.1)	Rio Tinto-Zinc (UK)
Broken Hill Proprietary ^c	4.7	(11.0)	5.9 (8.5)	Broken Hill Prop
Mitsubishi Group	4.0	(5.2)	5.0 (4.0)	Mitsubishi (Japan)
Shell Co of Australia ^g	3.3	(5.1)	4.1 (3.9)	Royal Dutch/Shell
Arco Australia	2.2	(3.9)	2.8 (3.0)	Atlantic Richfield (USA)
Peko-Wallsend	2.2	(3.4)	2.8 (2.6)	Peko-Wallsend
Coalex Pty	1.9	(3.5)	2.4 (2.7)	Oakbridge
White Industries	1.8	(3.3)	2.3 (2.6)	White Industries
Mount Isa Mines	0.0	(6.1)	0.0 (4.7)	Asarco (USA)
All others	13.5	(29.4)	16.9 (22.8)	
Total	80.0	(128.7)	100.0	

Notes:

^a The 1983 exports are preliminary; realized exports are much lower, i.e. 60.5 Mt (76.5 Mt in 1984). Total production amounted to 98.7 Mt (114.8 Mt in 1984). Figures relate to exports on equity basis.

^b Mentions only largest share-holder.

^c In April 1984, Broken Hill Prop bought Utah from its American parent company, thus forming by large the most important coal company in Australia.

^d Mainly through its subsidiary Clutha Development Pty.

^e Includes exports through its subsidiary Thiess Holdings. In October 1985 its 22 per cent share in the joint venture Thiess/Dampier/Mitsui Coal Pty was acquired by BHP which is not taken into account in the figures. See Financial Times, 1985-10-05.

^f Howard Smith acquired the Arco Australia share in RW Miller Holdings in 1984, which is contributing 1.9 Mt to its 1985 projection. RW Miller Holdings thus has become a wholly-owned subsidiary of Howard Smith.

^g Includes its 42 per cent share in the production of the major company Austen & Butta, which had an export potential in 1983 of 3.2 Mt.

^h Totals may not equal sum of component due to independent rounding.

Source:

Compiled from Australian Department of Trade, *Australian Coal Exporting Projects*, Australian Government Publishing Service, Canberra, 1983; Australian Department of Trade, *Australian Coal Exporters and Potential Exporters*; Australian Government Publishing Service, Canberra, 1983; and Joint Coal Board, *Black Coal in Australia, 1983—1984*, Joint Coal Board, Sydney, December 1984.

The Balmer surface mine in British Columbia is controlled by Westar Mining Ltd. Production in 1984 was 5.2 Mt of coking coal (top).

A brill rig underground at the Arnot Colliery, controlled by the AAC.

and very large foreign mining and oil companies like BP, Royal Dutch/Shell and CRA.

By far the largest producer is BHP, a natural resources conglomerate which in 1984 acquired the considerable coal interests of Utah International, formerly a subsidiary of International General Electric. Others, like Shell and BP, have acquired substantial interests in the past by taking over the coal activities of Consolidated Gold Fields and D K Ludwig respectively.

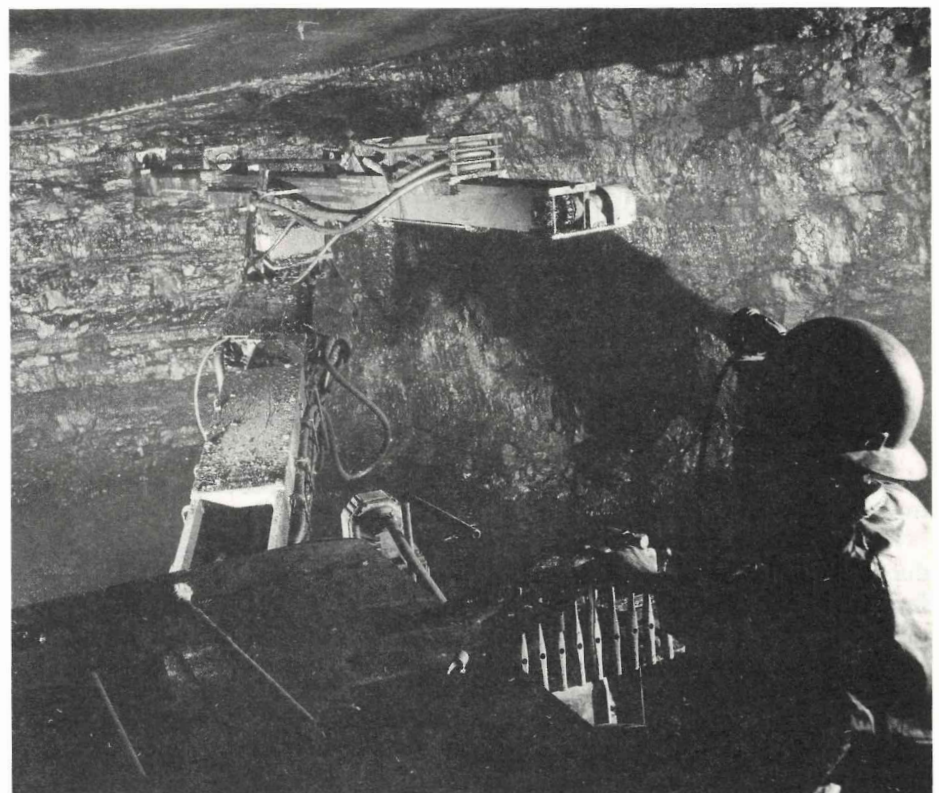
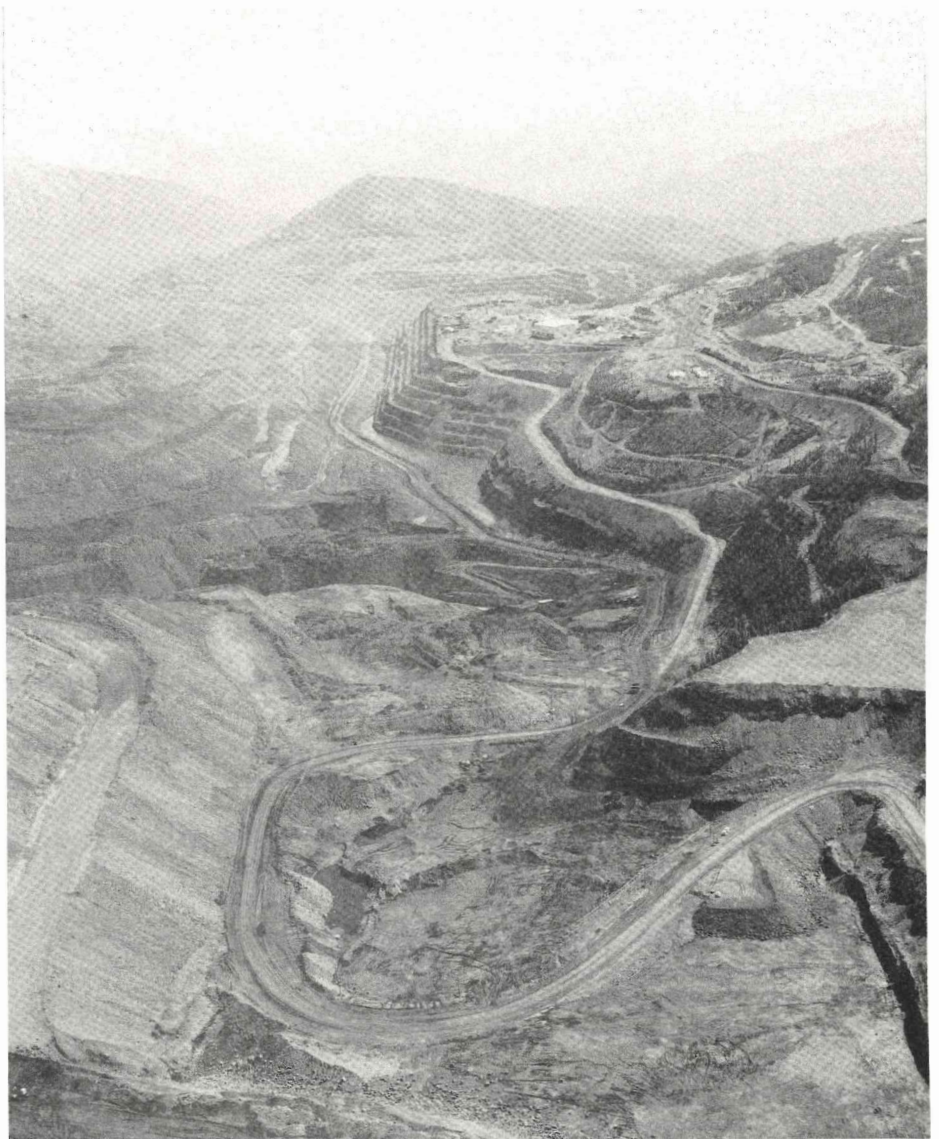
Foreign producers, like BP's subsidiary Clutha Development Co, are considered by the government "naturalized" once 51 per cent or more of their shares are held by Australians.

No data are available on the relative strength of principal producing companies in Australia, though these will be about the same as the principal exporting firms, with BHP leading the way. A new name, however, is ELCOM, the state-owned power company of New South Wales, accounting for 3.2 per cent of the nation's production. Other indigenous producers are generally small to medium-sized.

The regulatory powers of the Australian Department of Trade reach further than the issue of investment and export permissions. Export prices are subject to control since 1973. Recently, BHP has requested the abolition of these minimum prices after a recent conflict between the trade unions and the Australian Coal Association, causing a renewed discussion on the question of government control.²⁰

The Department of Trade not only regulates exports, investments and prices, it also serves as an important source of information to the industry of the recent price developments on the market.²¹

Many producers trade and market their coal through agents, but direct sales occur too. Some large traders like the Dutch SSM, Anker Coal, and the French ATIC, are represented, as are some consumers. Shell Australia par-



ticipates both in production and, on a more substantial scale, as an export trader for other producing companies.

For the future a continued concentration in the industry is anticipated, although this will not necessarily affect competition in the market.²² As most new mining developments are joint ventures with participation of both producing and consuming firms, interests in production are becoming so varied that competition will be maintained. Still, the industry will probably be dominated by a few large producing groups, some of which are still fastly growing through take-overs, like BHP, or the development of new mining projects, for example MIM Holdings.

Canada

The Canadian coal fields of importance to the international markets are situated mainly in the western provinces, chiefly British Columbia and Alberta.

Western Canadian exports are heavily dependent on consumer markets in the Far East, i.e. Japan, South Korea and Taiwan. They consist mainly of coking coal. (See Table 3) Although at a slight competitive disadvantage to Australian coal, mainly because of higher transportation costs, diversification by foreign importers has led to an steadily increasing export. Coal is now Canada's third largest energy export commodity after oil and natural gas.

Coal exports to Western Europe are still of minor importance (1.9 Mt in 1984), though increasing since 1974. Steaming coal forms the largest part of these exports. Still, Canada is not likely to become a major supplier of coal to the European markets, due to its transportation costs disadvantage.

The investment pattern in the Canadian coal industry is rather similar to recent developments in Australia. Most mining projects are joint ventures between large mining firms or their subsidiaries (See Table 8), progenitor of which is Westar Mining, 67 per cent

owned by the B C Resources Group and with the remaining 33 per cent is in the hands of Japanese investors like Mitsubishi. Most of the larger firms in the

Canadian coal industry are partly or wholly owned by foreign companies. Indigenous coal companies are rare, though the public sector is well repre-

Table 8
Hard coal producing companies in Canada, 1984
(in Mt)

Company/Group	Raw coal production ^a	Share (%)	Owner ^b
Manalta Coal	15.8 ^c	24.7	Manalta
Westar Mining	10.5 ^d	16.6	BC Resources Group (67%) plus Japanese investors
Luscar	7.7 ^d	12.2	Luscar
Quintette Denison Mines	6.8 ^d	10.8	Denison Mines (50%) + Sumitomo Mitsui, CdF, etc
Fording Coal	6.7 ^d	10.6	Canadian Pacific Railway/Cominco
Cape Breton Development	3.5	5.5	State-owned
Crows Nest Resources	2.7 ^d	4.3	Royal Dutch/Shell (NL/UK)
Bullmoose Tech Corp	2.6 ^d	4.1	Tech corp
Cardinal River Coals	2.5 ^d	4.0	Luscar (50%)/Consolidation Coal (50%) (USA)
McIntyre Mines	2.1 ^d	3.3	Superior Oil (USA)
Byron Creek Collieries	1.5 ^d	2.4	Esso Resources Canada (USA)
Union Oil Co Canada	0.9	1.4	Union Oil (USA)
N B Coal	0.6	1.0	na
Total^e	63.1	100.0	

Notes:

^a Net production of hard coal in Canada was 47.5 Mt.

^b Generally only largest share-holder is mentioned.

^c Produces mainly for the domestic market of Canada (power generation).

^d Production is (mainly) destined for export to Japan, South Korea and Western Europe.

^e Total may not equal sum of components due to independent rounding.

Source:

Energy, Mines and Resources Canada, *Statistical Review of Coal in Canada, 1984* (no other data.)

sented through the Cape Breton Development Corp, Petro Canada, and a number of power companies.

The oil majors, as elsewhere, control a substantial part of coal production. Important producers include Crows Nest Resources (Royal Dutch/Shell) and McIntyre Mines (Superior Oil). British Petroleum is developing a mine, as is Socal (via Gulf Canada Resources).

Many smaller oil companies are also present, even two Japanese ones. Other smaller participants in joint ventures are the Japanese trading houses, steel mills and power companies like Mitsui, Mitsubishi, the Japan Coal Development Corp (steel mills) and the Electric Power Development Corp (state-owned). Korean steel mills like Pohang Steel have joined in recently.²³

The European investors are not as well represented as in the Australian coal industry. CdF (Quintette Denison Mines) and Ruhrkohle are investing though. Their main reason is probably selling their technological know-how (see tidings in Mining Journal).

Furthermore, the Coal Association of Canada lists a substantial number of non-producing members, many of them engaged in different stages of exploration, evaluation or awaiting approval of exploitation.²⁴

The Canadian export is supplied by the companies indicated in Table 8. Westar Mining is the leading firm, followed by Denison, Fording and Luscar. Byron Creek only exports to Europe. The others produce large amounts of coking coal for the Far East markets.

Canada is a federal state and all exploration and exploitation licences are granted by the provincial governments. Restrictions imposed by them concern environmental and infrastructural matters. But in general the governments are eager to encourage the developing coal industry as a major source of employment.

Foreign ownership is a matter of concern as there are no official limits to foreign shares in investments, as in

Australia. Although investments are controlled by the Foreign Investment Review Agency, a federal government agency, its regulatory powers do not seem to be very strong. Foreign participation was encouraged recently by the Canadian Minister of State (Mines), particularly in the development of new coal technologies.²⁵ However, investment proposals can be rejected, as illustrated by the case of Sumitomo Coal Canada which has been denied investment approval in a coal development scheme for this reason.²⁶

Federal Republic of Germany

There are only a few producing companies in Germany (See Table 9). Pro-

duction is concentrated in the Ruhr district in the western part of the country. This area delivers 79 per cent of the country's output.

Coal production has an long history in Germany, but has been steadily declining since 1957, when production reached 149.4 Mt. Coal mining has become increasingly expensive as most of the remaining deposits lie deep underground or in thin seams.

Much of the country's coal output is of coking quality and some of it is exported, whilst some steaming coal is imported.

Six major companies provide for all of the country's output. Ruhrkohle AG, an extensive conglomerate of mines which was formed in 1969, produces 71

Table 9

Principal hard coal producing companies in the FR of Germany 1984 (in Mt)

Company	Production	Share (%)	Owner
Ruhrkohle AG	56.1	71.2	Major shareholder is VEBA AG (37.1%)
Saarbergwerke AG	10.2	12.9	State-owned
Eschweiler Bergwerksverein	5.1	6.5	Arbed Finanz SA ^b
Gewerkschaft Auguste-Victoria	3.0	3.8	BASF
Preussag AG Kohle	2.3	2.9	Preussag AG
Gewerkschaft Sophia-Jacoba	2.1	2.7	Dutch share-holders
Total^d	78.8	100.0	

Notes:

^a Bituminous coals only.

^b Based in Luxemburg.

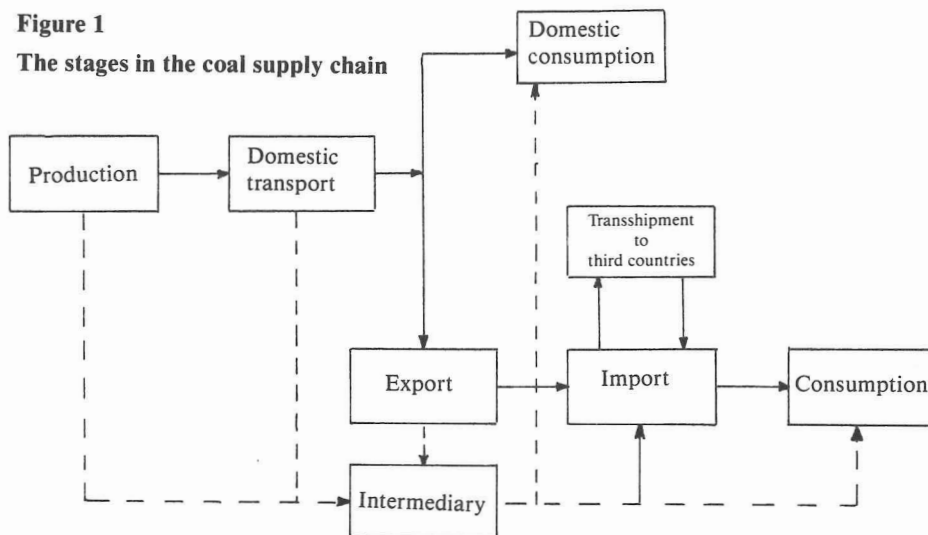
^c Total production figure for 1984 differs from that given in BP's *Statistical Review of World Energy* for unknown reasons, which states a figure of 84.9 Mt. An equal difference is noted between the 1983 production figures, i.e. 81.7 and 89.6 Mt respectively.

^d Total may not equal sum of components due to independent rounding.

Source:

Statistik der Kohlenwirtschaft e V (1985) and Commerzbank, *Branchenbericht* B10, 1984-12-10.

Figure 1
The stages in the coal supply chain



per cent. The company has many owners, of which the most important are VEBA (majority), Holding Hoechst Stahl and Thyssen Stahl. Ruhrkohle has also diversified in non-energy activities and has foreign interests in the US, Canada (STEAG Coal Power), Botswana and Australia.

Saarbergwerke, a state-owned company, also has foreign interests in the US and Australia, just as Eschweiler Bergwerks Verein controlled by ARBED in Luxemburg (Arbed Coal USA and PHB Westerhütte in Australia). The Gewerkschaft Sophia-Jacoba is owned by Dutch share-holders.

Germany has import restrictions that go back to the height of the coal-oil battle in 1959. These restrictions were used to protect the high cost indigenous industry just as was done in the United Kingdom, France, Belgium and the Netherlands during that time.

In 1981 the import restrictions were relaxed. Power companies and other consumers now get annual flexible import licences. The present agreement requires that for each extra tonne of imported coal, two tonnes of coal of EEC origin must be consumed. As EEC sources will probably not be able to meet this demand in the future, the control system will be further relaxed and in 1987 this ratio is expected to become 1:1.²⁷

By that time consumers will also be free to decide through what channels they can import, and they will not be obliged to use the established importing traders, as they are now. However, according to a well-known analyst, this does not mean that the importing traders will disappear and all consumers will be buying their supplies directly.²⁸

Some aspects of the coal market

The structure of the coal market is rather complicated. Some of the most revealing analyses of the organization of international coal markets has been

undertaken by Professor Maxwell Gaskin. In a series of reports written for IEA Coal Research, and referred to earlier in this paper, he has identified a number of distinguishing characteristics about the trade.²⁹

- Firstly, coal is a commodity with a highly variable quality, differing in heat value, ash and sulphur content, etc; a certain coal qualification may be non-important or even advantageous for one consumer, while an obvious disadvantage for another.
- Secondly, the market is by no means impersonal. Personal contacts and knowledge of the reliability of certain producers are of greater importance than in other markets.
- Thirdly, every coal producing, exporting and/or importing nation brings its history in the coal trade and thus has its own traditions, legal restrictions, etc.

In many instances an intermediate between producer and consumer is found. This may be an agent, who only brings two parties together at the table, or acts as the one responsible for shipping. It may also be a trader who acts as a principal, i.e. actually owns a cargo of coal at a certain moment in the trade.

Thus we meet many different actors in the coal supply chain: producers, exporters, importers, consumers and agents/intermediaries. Figure 1 gives an idea of the stages of the coal supply chain in which the different actors may be involved.

In general one can say that there is a trend towards direct dealing between producers and consumers, whilst avoiding intermediaries.³⁰

Vertical integration

Forward, or downstream integration by large producers is an increasingly important feature of the market. Transport and marketing are the areas in which producers most commonly integrate.

Weglokoks, the Polish export agency, markets its own product in many countries of Western Europe. The Transvaal Coal Owners Association (TCOA) from South Africa, an association of some 26 producers, is the initiator and 40 per cent owner of the vital coal terminal at Richard's Bay. TCOA has its own technical and marketing representatives in South Africa, as well as abroad, who deal directly with consumers. Many American companies also trade their own coal and sell directly to overseas importing houses or consumers.

Some oil TNCs, especially Royal Dutch/Shell, are also acting as trading and marketing organizations. Many of these companies export and market only the coal from their own mines, that of their subsidiaries or that of their partners in joint ventures. Shell, however, also trades and markets coal produced by other companies on a large scale.

Oil TNCs have also acquired interests in other parts of the coal supply chain, though generally on a small scale. Thus some of them (partially) own bulk carriers or transshipment facilities. Shell, for example, participates in the large Maasvlakte Coal Terminal in Rotterdam, the Netherlands.

On the other hand one may observe backward or upstream integration too, i.e. consumers getting into import, transport and/or production of coal. An oligopsonic trend is discerned with the Japanese steel mills, for example,

which coordinate their buying activities on the Australian and Canadian markets. Ten Japanese power companies, united in the Japanese Coal Development Co (JCDC), are expected to pool their buying activities or are already doing so.

In Western Europe pooled buying occurs in Belgium, Denmark and France. Monopolistic purchasing characterizes the importing behaviour of a consortium of Danish power companies.

The reasons for vertical integration may differ considerably. Knowledge of the production side of the trade seems to be an important stimulus. A second argument why consumers venture into production is the reduction of risks in their supply. This is of special impor-

tance for steel and power companies which usually deal with long-term contracts. This in contrast to the other major consuming group, the cement industry.

The large producers are getting into export, marketing and transport as a consequence of the scale of their operations or, as with Royal Dutch/Shell, in accordance with their tradition. Cost controlling will also be of importance. As the coal market cannot exactly be characterized as oligopolistic, downstream integration cannot simply be interpreted as an attempt to monopolize trade.

Horizontal integration

A quite different aspect is the horizontal

integration of oil and mining majors into coal production and trade. For many years now the oil companies have been diversifying into other energy industries such as nuclear power, alternative energy sources and coal.

As indicated, the interest of the oil companies in coal started already in the sixties, and accelerated briefly in 1979. In the United States oil companies now have a share of about one third in the country's coal production. In Australia especially British Petroleum, Royal Dutch/Shell and Atlantic Richfield are very active. A further illustration is Exxon, the sole partner of the state-owned Carbocol in the 15 Mt/year El Cerrejon Norte project in Colombia. The oil

Table 10

Oil companies in the international coal supply (mid 1985)

Oil company (home country)

Private

	Australia	Canada	South Africa	USA	Botswana	Madagascar	Swaziland	Zimbabwe	China	Indonesia	Colombia	Brazil
Exxon (USA)	D	P		P							P	
Royal Dutch/Shell (NL/UK)	P	P	p	P	F		(F)	E	F	(F)		
British Petroleum (UK)	P	(F)	p	P	E	F				E		
Mobil (USA)				P		E				E		
Atlantic Richfield (USA)	P			P						F		
Occidental (USA)		E		P		E			D			x
AMOCO (USA)				P		E						
Conoco (USA)	P	P		P						E		
Union Oil (USA)		p		P								
Chevron (USA)		F		P								
Marathon Oil (USA)	e			P								
CFP/Total (France)			p	p	E							
Texaco (USA)	p											
State-owned												
ENI/Agrip (Italy)	p		e	p		E				E	F	
Petrofina (Belgium)				p								

Note:

Capital letters denote equal or majority equity position; small letters minor position; brackets former involvement. E = exploration, prospecting or reserve-holdings; F = feasibility or pre-feasibility studies; D = mine under development; P = mine producing; x = kind of activity unknown.

Source:

Amended from R P Steenblik, *International coal supply and the bargaining power of the developing countries*; paper presented at the 7th International conference of the IAEE, Bonn, Germany, June 1985, and Mining Journal tidings.

TNCs have acquired interests in the best and most extensive reserves in the United States, Australia, and many other countries. A quote from a spokesman of Royal Dutch/Shell, early in 1975:

"Two years ago we formed the view that growth in the oil business would eventually slow and that someone with coal reserves would have a profitable asset, and so the original idea was to acquire a spread of coal reserves around the world and then sit on them."³¹

Table 9 shows the presence of oil TNCs in international coal production.

These diversifying activities were possible as a consequence of the huge cash flows of the companies in the 1970s and early 1980s. The oil majors needed an outlet for their capital and investment in another energy sector seemed a sensible thing to do. A project like the three billion US dollar El Cerrejon Norte project could hardly have gone through without the financial strength of Exxon, unless more partners had been sought for the joint venture.

In spite of their considerable and influential activities in coal and other mining industries, only about 15 per cent of the investments made by the US oil industry in 1981 (which totalled 60 billion US dollars) were made in the mining industry.³²

Recently, a relative decline can be observed in the coal activities of the oil majors, at least in the United States. Depressing financial results, after overoptimistic projections on the future role of coal, have contributed to this development. Furthermore, low rates of return on investments are becoming an expensive burden, in particular for oil companies, which are increasingly vulnerable for takeover bids.

Mining companies are the other horizontally integrating group of firms. They too were investing in the coal industry as early as the sixties. Peabody Coal, for example, still the largest US coal producer, is now owned by a mining

consortium led by Newmont Mining. Other mining TNCs with large coal subsidiaries include the mining giant Anglo American Co of South Africa and the American AMAX. Anglo's subsidiary Amcoal is the largest producer of South African coal, while AMAX is the third US coal producer. AMAX has also coal interests in Australia and Canada, and Anglo in African countries like Botswana and Zimbabwe.

Table 11 lists the most important mining TNCs in the international coal industry. One should, however, keep in mind that some of these mining majors may be partially owned by oil companies, for example, AMAX which is 20.6 per cent owned by Standard Oil of California (Socal).

The third, and in production volume most important, group involved in coal production is those companies which have coal production as their base. Many of them are wholly or partly state-owned and some were formed during the times of the dramatic decline in coal consumption around 1959, in order to protect the national production. The state-owned companies, in capitalist and socialist countries, account for about two thirds of world coal production. Their share in international trade, however, is considerably smaller, as shown in Tables 1 and 2.

Initially formed as a national coal company, many of them are now diversifying and becoming transnational, just as the privately-owned coal companies

Table 11

Mining transnationals in the international coal supply — mid 1985

**Mining company
(home country)**

	Australia	Canada	South Africa	USA	Botswana	Swaziland	Zimbabwe	Indonesia	Colombia
BHP/Utah (Australia)	P ^a	E	E	P				F	
Rio Tinto-Zinc (UK)	P	P		P			F	E	
AMAX (USA)	p	E		P	E				
Anglo American (South Africa)			P		P	E	P		
Cons Gold Fields (UK) ^b			P	p			E		

Notes:

^a Capital letters denote equal or majority equity position; small letters minor position. E = exploration, prospecting or reserve holdings, F = feasibility or pre-feasibility; D = mine under development; P = mine producing.

^b 49 %-owner of Gold Fields of South Africa, the fifth coal producer of that country.

Source:

Same as for Table 10.

Table 12

Coal companies in the international coal supply — mid 1985

Coal company (home country)

(See Table 12). The NCB of the United Kingdom, for example, the largest coal producing company in the western world, has acquired a minority holding in an Australian coal mine. Saarberg-werket AG of Germany has a share in Ashland coal of the US, a subsidiary of Ashland Oil, and in Australia through its subsidiary Saarberg Coal Australia.

These investments in overseas production are sometimes made to give the national coal companies a possibility to sell technical know-how.³³ This is the case for the NCB, and to some extent for the French CdF, which has been very active since 1974, e g in the United States (Hawley Mining Co), Canada (Quintette Denison Mines), Australia (Wambo Mining Co), Africa, Colombia and India.

Besides the internationalization of their coal production, many of these firms, both state-owned and private, have been diversifying into other sectors like transport, finance and even into oil, although on a comparatively small scale. An example of the latter is Peko-Wallsend of Australia which now owns Beach Petroleum.

This overview of vertical and horizontal integration in the world's coal industry may give the impression that medium sized companies can no longer enter the coal market, but we must stress that this is not our view. Coal mining is not complicated technically and, as said, neither production, nor access to new reserves is yet monopolized. However, Gaskin in his summary report on the Pacific and Atlantic coal markets remarks that in a near future producers-exporters might find just 20 to 30 large coal buyers on the Pacific, and 10 to 20 on the Atlantic market.³⁴

Concluding remarks

The two most significant conclusions on the future of the coal industry which can be drawn from the preceding analysis are:

- The international coal market has

	Australia	Canada	USA	Botswana	Mozambique	Swaziland	China	Colombia
<i>Private</i>								
Peabody (USA)	(p)		P					(F)
Ruhrkohle (Germany)	p	d	P	E				
<i>State</i>								
National Coal Board (UK)	p						S(d)	
Empr Nacional Siderurgia (Spain)	p							
INI (Spain)								F
CdF (France)	p	d	p	E		E	S(d)	F
CPRM (Brazil)					E			
Saarbergwerke (Germany)	p		p					

Note:

Capital letters denote equal or majority equity position; small letters denote minor position; brackets former involvement. E = Exploration, prospecting or reserve holdings; F = Feasibility or prefeasibility studies; D = mine under development; P = mine producing. S(d) = servive contract for mine development.

Source:

Same as for Table 10 and 11.

become very dynamic and susceptible to change, given the future role of coal for power generation.

- There will be a distinct trend towards concentration, both on the producers' and the consumers' side.

The great change in the structure of the coal trade occurred in the early seventies, as steaming coal recaptured its position in the international energy market. The significance of this change can be demonstrated by the seventy per cent increase in world coal trade between 1973 and 1983, or, more clearly, the quadrupling in the volume of traded steaming coal in this period.

The presence of the oil companies on the list of the principal exporting coal companies of the world (Table 13), is another illustration of the structural changes in the international coal industry, as these companies were almost absent prior to 1973.

They are also an expression of the trend towards concentration in coal pro-

duction while a number of leading mining TNCs, e g Anglo American, have built up a very strong position as steaming coal exporters in just a few years time.

In 1983, twelve companies supplied 53 per cent of world seaborne export sales. Table 13 reflects the continued strength of the concentration trend, as BHP bought Utah International Inc in April 1984.

Besides these leading companies, a mass of oil and mining TNCs, private and state-owned coal companies are acting on the international market, and new ones are still entering. Some of these will probably become of considerable significance. For example, if the Cerrejón Norte project is fully on stream in 1989, Colombia's exports will rise to 15 Mt per year, traded by Exxon's Intercor and the Colombian state-owned Carbocol, which will then probably enter the list.

Although concentration is occurring,

Table 13

Concentration in world seaborne coal exports, 1983 (estimated)

Company/Group	Export sales (in Mt)	Share (%)
Utah International (USA) ^a	17	9
Weglokoks (Poland)	16	8
Shell Coal International Group (UK/NL)	12	6
British Petroleum (BP Coal) Group (UK)	11	6
Anglo American Corp (AMCOAL) (S Africa) ^b	9	5
Pittston (USA)	7	4
Westar Mining (Canada)	6	3
Broken Hill Proprietary (Australia) ^c	6	3
National Coal Board (UK)	6	3
CSR (Australia)	5	3
China National Coal Import-Export Corp	4	2
Ministry of Coal Industry (USSR)	4	2
Largest twelve	103	53
All other enterprises	91	47
World total^d	194	100

Notes:

^a Includes sale by Utah Development Co, which in 1983 was 89 per cent owned by Utah International. In April 1984 Utah International was purchased by Broken Hill Proprietary Co.

^b Includes sales through the Transvaal Coal Owners Association.

^c See note a.

^d Including intra-EEC seaborne trade.

Source:

R P Steenblik, *International Coal supply and the bargaining power of the developing countries*, paper presented at the seventh annual international conference of the IAEE, Bonn, Germany, June 1985.

coal production is not so specialized that one may expect a monopolized market in the future, and certainly not a definite grip of the oil majors on the world's coal production, although in a few producing countries they will be quite powerful.

On the consumer side, pooled buying will diminish the number of actors on the Atlantic and Pacific markets. Japanese and West European steel mills and power companies will thus strengthen their position on the market.

Concerning the role of steaming coal in the world energy supply, the re-introduction of coal has proceeded less spectacularly than generally expected in the 1970s, leading to oversupply and heavy competition. For the near future this situation will probably continue, or even sharpen.

Notes:

¹ Shell Briefing Service, *Coal in perspective*, 4/1984, p 3 and 6.

² Ibid, p 6.

³ Ibid, p 6.

⁴ World Coal Study, *Coal: Bridge to the future*, Cambridge, Ballinger, 1980.

⁵ *Engineering and Mining Journal*, March 1985.

⁶ See note 1, p 6.

⁷ Energy Information Administration, *Directory of Coal Production Ownership, 1979*, DOE/EIA-310, Washington, DC, US Government Printing Office, October 1981, p 3.

⁸ Mining Informational Services, *1984 Keystone Coal Industry Manual*, New York, McGraw-Hill, 1984.

⁹ Maxwell Gaskin, *Market aspects of an expansion of the international steam coal trade*, IEA Coal Research, EAS Report No G 2/81, London, August 1981, p 33.

¹⁰ *Financial Times International Coal Review Coal Statistics Monthly*, 1985-08-16.

¹¹ William van Rensburg, *Mineral supplies from South Africa, their place in world resources*, EIU Special Report No 59, London, August 1979, p 22.

¹² Ruurd Huisman, *Zwarte diamanten uit Zuid Afrika; steenkoolexport naar Nederland*, Dossier Werkgroep Kairos, Utrecht, summer 1981, p 52.

¹³ Maxwell Gaskin, *Organization and structure of the Pacific steam coal trade*, IEA Coal Research, EAS Report No G 4, London, October 1983, p 30 and 31.

¹⁴ *Engineering and Mining Journal*, July 1985.

¹⁵ *Engineering and Mining Journal*, July 1985 and *Financial Times International Coal Review Coal Statistics Monthly*, 1985-08-16.

¹⁶ *Engineering and Mining Journal*, January 1985.

¹⁷ Kitazawa Yoko, *Integrating the Pacific Basin: Japanese and Australian capital restructure Southeast Asia and the Pacific*, *AMPO Magazine* 14(1), 1982, p 4 and 5.

¹⁸ Tony Corrighan, Australia, *The politics of the minerals boom*, *Raw Materials Report* 1(1), 1981, p 47.

¹⁹ *Mining Journal*, 1985-02-15.

²⁰ *Engineering and Mining Journal*, January 1985, and *Financial Times International Coal Review Coal Statistics Monthly*, 1985-08-16.

²¹ See note 13, p 24.

²² BHP recently acquired the interests of CSR in the joint venture Thiess/Dampier/Mitsui.

²³ *Engineering and Mining Journal*, November 1985.

²⁴ See note 13, p 26.

²⁵ See note 23.

²⁶ *Mining Journal*, Vol 302, No 7762, 1984.

²⁷ See note 9, p 24.

²⁸ See note 9, p 27.

²⁹ See notes 9 and 13.

³⁰ Maxwell Gaskin, *The international steam coal trade: a summary comparison of the Atlantic and Pacific markets*, IEA Coal Research, EAS Report No G 5, London, December 1983, p 5 and 6.

³¹ Ken Kann, Shell's coal game, *Pacific Research* 7(5), 1976, p 12.

³² *De Volkskrant* (Amsterdam), 1981-03-19.

³³ See note 9, p 36.

³⁴ See note 30, p 11. ■