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ECONOMIC INTELLIGENCE REPORT

**SOLID FUELS AND COAL GAS IN
EAST GERMANY**



CIA/RR 40

1 September 1954

CENTRAL INTELLIGENCE AGENCY

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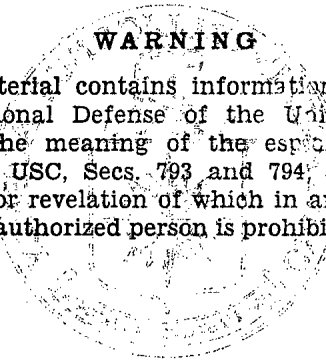
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(ORR Project 26.196)

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Map

Coal Production in East Germany: 1953 Inside Back Cover

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SOLID FUELS AND COAL GAS IN EAST GERMANY*

Summary

Solid fuels provide the main sources of primary energy in East Germany. In 1953, almost 99 percent of the total supply of primary energy in East Germany was derived from coal and 1 percent from fuelwood. Hydroelectric power supplied only 0.1 percent of the total.

Brown coal** is the basic industrial fuel in the East German economy. Of the total supply of primary energy in 1953, brown coal provided 94.1 percent and hard coal*** 4.8 percent. Reserves of brown coal are adequate to supply the predicted needs of East Germany, but reserves of hard coal are scanty and are expected to be virtually exhausted by 1960.

Total production of coal in East Germany in 1953 was about 176 million metric tons,**** of which only 3 million tons were hard coal. In terms of tonnage production of coal, East Germany ranks second to Czechoslovakia among the European Satellites and produces slightly more than half as much coal as does the USSR. In terms of energy equivalents, however, Polish production, although it amounted to only 95 million tons in 1953, exceeded East German production by about one-third. Almost all of the coal produced in Poland is hard coal.

Production of brown coal in East Germany, in spite of adequate reserves, has not been sufficient to meet all requirements. Industrial consumption, particularly by the electric power industry, has often been curtailed, and household needs have been only partially satisfied.

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 July 1954.

** The term brown coal in European terminology includes all grades of brown coal and lignite.

*** The term hard coal, used in this report in the European sense, includes all grades of coal which, in US terminology, would be called anthracite or bituminous coal.

**** Tonnages throughout this report are given in metric tons.

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In 1953, about 3.5 million tons of brown coal were imported from Poland, but the supply still failed to meet the demand.

Domestic production of hard coal in 1953 supplied only about one-third of East Germany's consumption. Imports, primarily from Poland, amounted to about 5.3 million tons. Hard coal is essential to the production of metallurgical coke, which, in turn, is a basic requirement for the iron and steel industry upon which East Germany's industrial economy is based.

The estimated 1953 use pattern for brown coal in East Germany was as follows: 73 percent of total supply for the manufacture of brown-coal briquettes, and the remainder for use in the unprocessed state -- 24 percent for thermal power stations, 1.3 percent for the chemical industry, 0.7 percent for gasworks, 0.3 percent for railroads and inland water transportation, and 0.7 percent for "other users." The estimated 1953 brown-coal briquette use pattern was as follows: 11 percent of the total brown-coal briquette consumption by railroads, 30 percent by synthetic fuel plants, 14 percent by thermal plants, 10 percent by domestic users, and 35 percent by "other users."

Significant in the coal use pattern of East Germany is the attempt to substitute brown-coal briquettes for scarce hard coal, particularly in the operation of railway locomotives. This substitution effort has involved the conversion and reconversion of locomotives originally designed to burn hard coal. In general, brown-coal briquettes are not an efficient fuel in locomotive operation, and the East German railroads have suffered a serious loss in efficiency.

The coal industry in East Germany is controlled by the Ministry for Heavy Industry. The industry is state owned as a part of the Vereinigung Volkseigner Betriebe (VVB), the Federation of People-Owned Enterprises. All installations previously under Soviet Ownership -- SAG's (Staatliche Aktiengesellschaften -- State Corporations*) -- had been returned to East German ownership by 1 January 1954. There are now 3 VVB's for brown coal subordinate to a Main Administration for Brown Coal and 1 VVB for hard coal subordinate to the Main Administration for Hard Coal.

The East German Five Year Plan (1951-55) production goal for 1955 is 225 million tons of brown coal and 3.5 million tons of hard

* Formerly Sowjetische Aktiengesellschaften -- Soviet Corporations.

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coal. Achievement of the planned production of brown coal, about 50 million tons more in 1955 than in 1953, will depend on greater mechanization and better maintenance of facilities, and it appears to be possible but doubtful. Achievement of the planned production of hard coal in 1955 appears very unlikely, considering the dwindling reserves and the 1953 performance of the producers of hard coal. The shortage of spare parts and repair materials for coal mining equipment and the difficulty of obtaining new equipment, formerly imported from the West, constitute serious limitations to the capabilities of the East German solid fuels industry.

The industrial economy of East Germany is almost completely dependent on coal. Many of the basic industries of the country -- the synthetic fuels, railroads, and metallurgical industries, among others -- cannot operate without coal and are therefore vulnerable to stoppage or curtailment of coal supplies. Particularly vulnerable is the metallurgical industry, which depends on imports of hard coal and coke from Poland and Czechoslovakia for about one-fourth of its requirements. Throughout the European Satellites there is a shortage of metallurgical coke, and the operation of East Germany's iron and steel industries would be seriously affected should that shortage become acute. At the present time it appears unlikely that East German attempts to produce metallurgical coke from brown coal will be successful enough to ease the pressure materially.

The solid fuels industry of East Germany is an indicator of intentions only to the extent that unusual efforts to increase production and imports of coal would indicate unusual industrial expansion, which, in turn, might indicate production for military use. At the present time, all production and import plans appear to be designed to meet the normal needs of the East German industrial structure.

I. Introduction.

The supply of primary energy in East Germany is derived almost entirely from solid fuels. Only a fraction of 1 percent of the total 1953 supply was furnished by hydroelectric power, and the remainder was provided by coal and fuelwood. In 1953, 94.1 percent

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of the total primary energy supply came from brown coal, 4.8 per cent from bituminous coal, 1 percent from fuelwood, and 0.1 per cent from hydroelectric power.

Table 1 gives the estimated balance of sources of primary energy in East Germany in 1953.

Table 1

Estimated Balance of Sources of Primary Energy in East Germany
1953

Source	Production		Standard Fuel Equivalent a/ (Thousand Metric Tons)	Percentage of Total Primary Energy
	Amount	Unit		
Coal				
Hard	3,000,000 b/	Tons	3,010	4.8
Brown	173,125,000 c/	Tons	59,357	94.1
Hydroelectric Power	700,000,000 d/	Kilowatt-Hours	86	0.1
Fuelwood	3,250,000 e/	Cubic Meters	604	1.0
Total			<u>63,057</u>	<u>100.0</u>

- a. Standard fuel equivalent of 7,000 kilocalories per kilogram.
 b. Average heat value of 7,030 kilocalories per kilogram.
 c. Average heat value of 2,400 kilocalories per kilogram.
 d. Average heat value of 860 kilocalories per kilowatt-hour.
 e. Average heat value of 1.3 million kilocalories per cubic meter.

II. Coal.A. General.1. History. 1/*

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Before 1945, production of coal within the present boundaries of East Germany represented a relatively small part of the total production of coal in Germany. The present industrial significance of East German production of coal stems from the inter-war years when the burden of World War I reparations and of preparations for future wars forced the German Reich to develop all possible domestic sources of energy and of raw materials previously imported. It was then that the provinces of Sachsen and Sachsen-Anhalt became the center of the synthetic liquid fuel and chemical industries based on brown coal as the raw material.

Production of hard coal in East Germany has always been confined to small areas in the Erzgebirge region and in the southwest section of Sachsen. These areas are still productive. Minor quantities of hard coal have been produced from time to time in the Wettin-Loebejuen and Nieder Lausitz districts.*

In 1937, production of hard coal in these areas reached a high of 3.6 million tons. The total German production of hard coal during that same year was 184.5 million tons. During World War II, production of hard coal decreased steadily to a low of 2.5 million tons in 1944. 2/

Although East Germany is short of hard coal, there are ample supplies and reserves of brown coal. In prewar Germany, approximately two-thirds of all production of brown coal had been derived from the central and east German brown-coal beds, now almost entirely within East Germany. There are three brown-coal fields in East Germany: the Lausitz field, the Braunschweig-Magdeburg field, and the Thueringen-Sachsen field. The reserves of the entire Lausitz field and of the Halle-Leipzig district of the Thueringen-Sachsen field are the most important. Before World War II the fields were divided into districts commonly named after their principal cities, as follows:

a. Lausitz Field

Senftenberg District
Forst District
Goerlitz District

* See the map, Coal Production in East Germany: 1953, inside back cover.

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b. Braunschweig-Magdeburg Field

Oschersleben District
 Egelstassfurt District
 Nachterstedt-Aschersleben District
 Bernburg and Schonbeck District

c. Thuringen-Sachsen Field

Koethen District
 Halle-Leipzig District
 Geiseltal District
 Zeitz-Weissenfels District
 Meuselwitz-Rositz District
 Northwest Sachsen District
 Bitterfeld District

The shift of practice from shaft mining (75 percent of total brown-coal mining in Germany in 1890) to strip mining (85 percent of total brown-coal mining in Germany immediately preceding World War II) was influential in increasing production. Another major influence was increased mechanization through the use of more and better equipment, which helped to increase German production of brown coal from 138 million tons in 1926 to 183.5 million tons in 1937. Of this total, 114.3 million tons were from mines in the area which is now East Germany. Strip mining of coal reduces the tonnage losses incurred in mining. An average of 35 to 40 percent is lost in deep mining, but only 10 percent is lost in mechanized strip mining. Although equipment for modern strip mining requires large initial capital investment, it has a low investment rate per unit of coal mined. Its efficiency and the consequent low labor costs have made feasible the exploitation of the German low-grade brown coal.

During World War II, production of brown coal decreased only slightly in comparison with the decrease in production of hard coal. The prewar production high for mines in the area which is now East Germany, 169 million tons, was reached in 1940. By 1944, production had decreased only slightly -- to 150 million tons. 3/

2. Organization.a. Pre-World War II. 4/

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Hard-coal mining and brown-coal mining in Germany prior to World War II were controlled by the Ministry for Economic Affairs (Wirtschaftsministerium). One of the 3 units of this ministry was the Reich Industrial Group (Reichsgruppen Industrie), consisting of seven divisions, one of which was the Mining Division (Bergbau Wirtschaftsgruppe). Hard-coal mining and brown-coal mining were 2 of 8 subdivisions of the Mining Division. The Hard-Coal Mining Subdivision had seven regional sections, of which Sachsen was one. The Brown-Coal Mining Subdivision consisted of three regional sections, of which one was central Germany. Sales and distribution of coal were effected by the private coal syndicates, which were partially controlled by the Reich Coal Council. The syndicates dealing in hard coal were:

The Rhine-Westphalia Coal Syndicate
 The Upper Silesian Hard-Coal Syndicate
 The Lower Silesian Hard-Coal Syndicate
 The Sachsen Hard-Coal Syndicate (now in East Germany)
 The Lower Sachsen Coal Syndicate

The three syndicates connected with the brown-coal industry were:

The Rhenish Brown-Coal Syndicate
 The East Elbe Brown-Coal Syndicate (now in East Germany)
 The Central German Brown-Coal Syndicate (now in East Germany)

During the years immediately preceding the war, this organization was superseded by the Reich Association of Coal (Reichsvereinigung Kohle), which was directly under the control of the Minister for Armament and War Economy. 5/

b. Post-World War II.

Under Soviet occupation the East German coal industry was divided into two sections. One, controlled directly by Soviet personnel and administered for Soviet purposes, consisted of 8 sections each called Sowjetische Aktiengesellschaft (SAG-Soviet Corporation). The other, the socialized, or VVB, segment of the industry was subordinate to the East German Central Administration for the Fuel Industry as of 1945.

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In 1948, in conjunction with all other socialized industries, the VVB segment of the coal industry became subordinate to the newly formed German Economic Commission. In 1949, with the establishment of the German Democratic Republic and its various ministries, the coal industry came under the Main Administration for Coal in the Ministry for Heavy Industry. This Administration comprised 8 VVB's for brown coal -- Borna, Meuselwitz, Merseburg, Bitterfeld, Magdeburg, Mueckenberg, Senftenberg, and Welzow; 1 VVB for hard coal -- Zwickau; and the VVB for the Construction of Equipment and Shaft Installations for the Coal Industry (GESKO). 6/

Early in 1952, an administrative reorganization divided the Ministry for Heavy Industry into a Ministry for Smelting and three State Secretariats. One of these secretariats, the State Secretariat for Coal and Power, controlled the Main Administration for Coal. 7/

In October 1953, there was created a new Ministry for Heavy Industry which was to absorb, among other things, the State Secretariat for Coal and Power. Under the Minister for Heavy Industry was established the office of State Secretary and First Deputy Minister, which was immediately above 4 Deputy Ministers, one each in charge of Coal, Power, Metallurgy, and Heavy Chemistry (including Liquid Fuels). The new organization plan became effective on 1 November 1953. New achievement plans for the Ministry were to have become effective on 1 January 1954. 8/

The SAG group of mines produced about one-third of total production of brown coal in 1948. The total operating activity of the plants was not greatly different under the Russians 9/ than it had been under the Germans. (See Appendix A.) These mines, of which there were 8, were transferred entirely to Soviet ownership and management by Orders of the Military Governor, numbers 124 and 126, dated December 1945.

Information dated March 1951 stated that all the SAG's concerned with coal production were combined to form SAG Brikett, with headquarters in Leipzig. 10/

As of 1 May 1952 the following combines which had been under SAG administration were reportedly returned to German management and came under VVB administration: Borna, Deutzen, Deuben, Profen, Pfaennerhall, Nachterstedt, and Lauchhammer (SAG

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Synthese). 11/ It is believed that the actual physical transfer of the combines did not occur until 31 December 1952. The remaining brown coal SAG's, Espenhain and Boehlen, became part of the SAG for synthetic fuel (SAG Synthese), and it is believed that their entire production was consumed by synthetic fuel plants.

After the riots of June 1953 and the resulting development of the "New Course," it was decided to return to German ownership all those enterprises still under SAG control. Included in this group were the brown-coal installations at Espenhain and Boehlen (Kombinat Otto Grotewohl). Ostensibly this transfer was to occur on 1 January 1954. 12/

Although SAG production of coal has always been included in total production figures for East Germany, plans, allocations of funds, and distribution of end products have customarily been carried out by a Soviet body independent of the East German State Planning Commission.

B. Supply.

1. Production.

a. Hard Coal.

Since World War II, production of hard coal in East Germany has been insufficient to fill the industrial requirements of the area. Some conception of the discrepancy may be obtained by comparing peak prewar requirements of 17 million tons with peak postwar supplies of 8.2 million tons. Despite the establishment of the high production goal of 4 million tons in 1951, 13/ which was designed to stimulate productivity, extraction has lagged seriously. In 1952 the hard-coal administration went through the throes of purge and reorganization because the production of 2.8 million tons that year 14/ was 400,000 to 700,000 tons below the goal. 15/

Some gains in production were made in the first 5 years following World War II. The postwar low of 2 million tons in 1945 was surpassed in 1946 by an apparently large increase to 2.5 million tons. Actually, this was merely a return to the 1944 level. War damage and dismantling apparently had little effect on the hard-coal industry.

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Because of the variety of plan figures available for 1953, it is difficult to estimate the actual production of hard coal in that year. Because of the variety of plan figures available, these figures range from 3.3 million to 2.9 million tons. Information dated mid-August 1953 shows an expected underfulfillment of plan by 150,000 tons. 16/ Assuming this relates to the latest full-year plan up to that time, estimated production for 1953 would be 3,125,000 tons. Actual production for the first half of 1953, 1,460,000 tons, and the revised production plan for the second half, 1,535,000 tons, 17/ total, however, only 2,995,000 tons. It is believed that production of hard coal did not exceed 3.1 million tons nor fall below 2.9 million tons, and an average of these 2 estimates, 3 million tons, is used for 1953 production of hard coal.

Realizing the poor conditions of the already existing shafts, the Main Administration for Coal in the Ministry for Heavy Industry, in an attempt to increase production, planned the development of three new shafts in the Freital and Doberlug-Kirchain areas. 18/ By 1950, however, the mines in Freital were producing only about 136,000 tons 19/ a year, and development work at Doberlug had just reached the coal-bearing formations. 20/

During 1947 and 1948, small gains were made in the production of hard coal, and only in 1949 was the output of 3.0 million tons greater than the World War II peak of 2.9 million tons. 21/

Planned figures for 1950 and 1951 were 3.3 million and 4 million tons, respectively. 22/ Attainment of these goals seemed possible at the end of 1949. In June of 1950, however, a meeting of the representatives of the Main Administration for Coal decided that these goals would be reached only through expansion and reorganization of the Zwickau coal mines. Primary equipment requirements were the installation of emergency haulage cables and the procurement of 1,813 mine cars. Additional power and steam generation were to be provided with new boiler installations, and a new high-tension power line was to be brought from outside the area. Actual total production for 1950 (2.8 million tons) and 1951 (3.2 million tons) indicates that the pressing needs of the important Zwickau area were not supplied. 23/

The original Five Year Plan for industry, drawn up in 1950, reestablished a more realistic production goal of 4 million

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tons of hard coal for the year 1955. 24/ According to a 1950 Berlin press release, this increase was to be attained by continued mechanization of the conveying and excavating processes, improved ventilation, additional compressed air and power supplies, increased labor, and better underground communication facilities. 25/ During the first quarter of 1951, planned production was not realized, reportedly because of the increased stone content and the decreasing thickness of the coal seams. In April 1950, Polish blasting methods were applied for the first time. 26/ Because of the geological conditions prevailing in the coal seams in Sachsen, such hard blasting was thought to be hazardous and unprofitable and might result in the loss of large developed areas. 27/ The Martin Hoop mine disaster in April 1952 and four other fatal accidents have been attributed to the use of explosives. 28/

During the first quarter of 1952, revised plan objectives gave tacit recognition to the fact that existing hard-coal mines in Sachsen are nearing the end of their productive lives. Instead of a 4.0-million-ton target for 1955, extraction is to decrease from 3.2 million tons in 1953 to 3.1 million in 1955. 29/ Even these planned figures seem too high, for only 2.8 million tons were obtained in 1952 30/ and planned production of hard coal for 1953 was varied from 3.3 million tons to 2.9 million tons. Plans for 1954 and 1955 have recently been revised upward to 3.5 million tons in each year. Estimated achievement in 1953 does not indicate the fulfillment of these plans, which could be achieved only through enlargement of capacity by means of the new mines at Doberlug.

The basic causes of failure in 1952 were more complex than the political sympathies for which 12 technicians from the Zwickau District were arrested in early 1953. First of all, the hard-coal resources are limited, and deposits are so irregular that mining is difficult, hazardous, and unproductive. 31/ Second, equipment and machinery are in bad repair and short supply. For instance, at 1 mine there were only 92 pneumatic hammers for 170 miners 32/; ventilation and compressed air pipes were leaky, and lack of sufficient air lowered the efficiency of the miners and their hammers 33/; signal devices are lacking 34/; and hoisting cables have been repaired so often that they are presently in an irreparable condition. 35/ Perhaps the most important deficiency of all has been the severe shortage, since 1950, of trained and experienced labor. At that time the Annual Report for VVB Zwickau claimed that the shortage of personnel was the restricting factor in the achievement of planned

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production in every mine, despite the transfer of personnel from closed or exhausted shafts. 36/ The main contributing factors to the labor shortage were the greater salary attraction of the Wismut uranium mines 37/; insufficient food, clothing, and wages, which reduce the will and incentive to work 38/; the 50-year average age among the trained workers; and the inexperience of the youthful labor draftees. 39/ In 1951 the labor problem became so pressing that recruitment among juveniles, convicts, 40/ and even women was instituted, and in May of that year, at the Karl Marx Mine in Zwickau, the first woman employee began training as a foreman. 41/ The results of the unfavorable conditions mentioned have been fires, flooded mines, explosions, and the failure of the hard-coal industries to meet their goals. The actual and planned production of hard coal in East Germany is given in Table 2.*

b. Brown Coal.

Coincidental with the dropping of the Iron Curtain in 1948, intensified efforts were directed toward increased production of brown coal in East Germany. Before that time, in the 2½ years following the end of World War II, the industry was one of those which suffered heavily from the dismantling policy of the Soviet Occupation government. 42/ Because of this policy and because of military operations in the brown-coal areas, production was 83 million tons in 1945. 43/ This production increased to 109.7 million tons in 1946, 44/ but in 1947, production slumped again to 101.7 million tons 45/ as the full impact of the dismantling was felt. By the end of 1948, however, the 1947 production loss of 8 million tons had been recovered, and annual production reached 110.8 million tons. 46/

In 1948 a Two Year Plan for 1949 and 1950 was established, 47/ a preliminary to the first East German Five Year Plan (1951-55), which was still in its formative state. In this plan, production goals for brown coal were set at 117 million tons in 1949 and 122.5 million tons in 1950. 48/ In early 1949 there was doubt in some quarters that these targets would be reached. By November of 1949, however, it became clear that 1949 production would equal that planned for 1950. Production figures for the first 9 months of 1949 for the VVB's alone showed an increase in output of 9.2 percent over the output during the first 9 months of 1948. 49/

* Table 2 follows on p. 13.

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Table 2

Production of Hard Coal in East Germany
1936-55

Year	Thousand Metric Tons		
	Actual Production <u>50/</u>	Planned Production	
		Original	Revised
1936	3,523		
1937	3,694		
1938	3,513		
1939	3,300 <u>a/</u>		
1940	2,934		
1941	2,950 <u>a/</u>		
1942	2,925 <u>a/</u>		
1943	2,820 <u>51/</u>		
1944	2,500 <u>a/</u>		
1945	2,000 <u>a/</u>		
1946	2,513		
1947	2,753		
1948	2,848		
1949	3,019	2,850 <u>52/</u>	
1950	2,807	3,300 <u>53/</u>	
1951	3,200 <u>54/</u>	4,000 <u>55/</u>	
1952	2,850 <u>56/</u>	3,565 <u>57/</u>	3,000 <u>58/</u>
1953	3,000 <u>a/</u>	3,350 <u>61/</u>	3,275 <u>62/</u>
1954	3,200 <u>b/</u>		3,500 <u>63/</u>
1955	3,300 <u>b/</u>	4,000 <u>64/</u>	3,500 <u>65/</u>

a. Estimated average based on reported expected underfulfillment of plan by 150,000 tons 59/ and the sum of actual first half of 1953 production, 1,460,000 tons, and revised production plan for second half of 1953, 1,535,000 tons. 60/

b. Estimate.

For these months there were similar increases in productivity per worker: 11.8 percent in removal of overburden, 14.5 percent in

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strip mining, and 18 percent in underground mining. 66/ Total production for 1949 was 124.4 million tons.

On 15 March 1950 the Long-Range Plan, 1949-1958, Brown Coal Production (Perspektivplan 1949-1958, Rohkohlenforderung, Braunkohlenverwaltung), was drawn up by the Ministry for Heavy Industry, Main Administration for Coal. This document established a production figure for 1949 of 122.9 million tons, which had already been surpassed and was even more than the original target figure for 1950. 67/ Future goals for the industry showed progressive annual increases ranging from 4.4 million tons more in 1951 than in 1950 to 21.5 million tons more in 1955 than in 1954. In 1950 the production of 137.5 million tons 68/ of brown coal was greater than the planned amount to be extracted during 1951 (132.6 million tons) and almost reached the quantity planned for 1952 (138.4 million tons). In spite of these considerable gains during 1949 and 1950, the production of 155.6 million tons in 1951 69/ was still not up to the peak wartime production of 168.7 million tons in 1940. 70/ During 1951, however, the Five Year Plan was revised upward, and the 1955 goal was increased from 205.1 million tons to 225.0 71/ million tons. There were proportional increases made in planned figures for 1952 and 1953. Table 3* gives the actual and planned production of brown coal in East Germany for 1949-55.

Actual production of brown coal in East Germany in 1953 has been inadequately reported, but it is known that difficulties were encountered in the very beginning of the year. During the first quarter, total brown-coal production at all brown-coal enterprises (excluding mining operations subordinate to the liquid fuel authorities) was 600,000 tons below plan. That this trend toward underfulfillment continued into the second quarter is indicated by the fact that on 28 May increased production norms were introduced in an attempt to raise production. The Berlin riots of 17 June were reflected by conditions of general strike in all the brown-coal fields of East Germany, and it is believed that total production quotas were not met in the second quarter and that during the same period output certainly did not approach the production of over 44 million tons achieved in 1952. 72/ The most recent information indicates that 1953 production was 125.9 percent of 1950 production -- a 1953 production of 173,125,000 tons. Another percentage increase reported is 110 percent of 1952 production. If total production for 1952 is accepted as 173,154,000 (101 percent of plan), this shows a

* Table 3 follows on p. 15.

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Table 3

Actual and Estimated Production of Brown Coal in East Germany
1949-55

Million Metric Tons				
<u>Year</u>	<u>Actual Production</u>	<u>Two Year Plan</u>	<u>Five Year Plan 73/</u>	<u>Revised Five Year Plan</u>
1949	124.4 <u>74/</u>	117.0 <u>75/</u>	122.9	
1950	137.5 <u>76/</u>	122.5 <u>77/</u>	128.2	
1951	155.6 <u>78/</u>		132.6	
1952	173.1 <u>a/</u>		138.4	171.4 <u>79/</u>
1953	173.1 <u>a/</u>		152.1	174.5 <u>80/</u>
1954			183.6	N.A.
1955			205.1	225.0 <u>81/</u>

a. Estimate

production of 190,469,000, an improbable figure which cannot be reached by any addition of quarterly or monthly, actual, or average production figures. It is believed that 110 percent has been applied to total VVB production in 1952, 158,462,000 tons. Such an application would place 1953 production in a more favorable light, than would direct comparison with total SAG and VVB production for 1952. This is a possible statistical feat, because there were 8 SAG's in the coal industry, at least statistically, through 1952, and only 2 during 1953. According to Premier Grotewohl, increased brown-coal and power production is "the foremost and crucial" task of the East German people in 1954 and 1955.

Table 4* gives actual, estimated, and planned production of brown coal in East Germany, 1936-55.

The continuous revival of the production of brown coal through 1952 was achieved in spite of the dismantled condition of the industry. Production goals were attained largely because it was possible to overcome unfilled requirements for production equipment by the addition of more labor. 82/

* Table 4 follows on p. 16.

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Table 4

Production of Brown Coal in East Germany
1936-55

<u>Year</u>	<u>Production</u> Thousand Metric Tons
1936	101,056 <u>83/</u>
1937	114,300
1938	119,647
1939	145,000
1940	168,716
1941	167,000
1942	166,000
1943	165,101
1944	150,000
1945	83,000
1946	109,796
1947	101,713
1948	110,863
1949	124,480
1950	137,510
1951	155,626 <u>84/</u>
1952	173,154 <u>a/</u>
1953	173,125 <u>b/</u>
1954	180,000 <u>c/</u>
1955	190,000 <u>c/</u>
1955 (Plan)	225,000 <u>87/</u>

a. An estimate based on production during the first, second, and third quarters of 1952 plus an estimated fourth-quarter production of 37.2 million tons. 85/

b. An estimate based on 125.9 percent of 1950. 86/

c. Preliminary estimate.

The extent to which the Russians dismantled the installations for mining and processing brown coal is unknown, but it is estimated that 200 million reichsmarks worth of equipment, all of modern design, was removed from approximately 40 percent of the mines. The equipment that remained is reported to have placed the

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industry on a productive basis equal to that of the 1880's. The installations of the former I.G. Farben mining concerns were dismantled of equipment valued at 104 million reichsmarks (1944). 88/

The first steps toward the reconstruction of the dismantled areas were taken during 1947. 89/ During 1948, other mines in Sachsen and Sachsen-Anhalt were restored. 90/ The cannibalization of remaining equipment and its transfer to the most productive areas (such as Borna and Senftenberg) contrived to increase production of brown coal. 91/

In addition to the reconstruction and rehabilitation of certain mines, the development of new deposits also has been undertaken. According to the Two Year Plan, the opening of 6 new mines and the expansion of 5 others was to be completed by 1950. This development was not accomplished until 1952. 92/ The Five Year Plan provides for the opening of 3 more new mines 93/ and the expansion of 19 other open-pit mines. 94/ It is noteworthy that all planned development of brown coal was and is in open-pit mining rather than in deep mining.

The postwar labor force has almost doubled since the prewar period, on both the production and office levels. Considerable increase in employment has occurred on the office and controlling level, causing the same kind of confusion as exists in the hard-coal industry. It is estimated that because of the serious lack of machinery and the increase in personnel, the annual productivity per employee has decreased from 3,400 tons per man-year in 1938 to 1,500 tons per man-year in 1950. 95/ As long as the labor supply is sufficient to compensate for the decreasing efficiency of the machinery, production goals will be met. The number of laborers, however, will have to increase out of proportion to the deficiencies of equipment, for lack of food and clothing and low morale are impairing the efficiency of the labor force. The participation of the labor force in the June strikes is a good example of how increasing the number of employees, under poor working conditions, may not increase production.

Concurrent with the steadily growing labor force, there has been a serious shortage in new machinery, hauling equipment, and spare parts. The only plant technically equipped for the production of large, open-pit brown-coal excavators is the Lauchhammer Excavator, Conveyor, and Apparatus Construction Plant in Sachsen-Anhalt.

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Production at this plant is limited by the shortage of metals, both nonferrous and ferrous. 96/ According to Sobottka, chief of the Main Administration for Coal in 1950, there was a shortage of 10,000 mine cars in that year in the hard-coal and brown-coal industries. 97/ In 1952 there was such a shortage of railroad coal cars that the unshipped piles of extracted coal hampered the operation of mine equipment. 98/ Since the Western blockade had cut off the legal procurement of spare parts from West Germany, the official East German agencies have been obtaining parts illegally but not in sufficient quantities to fill requirements. 99/

2. Imports and Exports.a. Imports.

The area which constitutes East Germany has been a net importer of hard coal and hard-coal coke since before World War II. At that time the total industrial requirements for hard coal were 17 million tons, of which more than 13 million were supplied from the Ruhr and Upper and Lower Silesia. 100/ Although East Germany has made serious efforts to convert industries using hard coal to the use of brown coal, hard-coal requirements are still in excess of production. Because of the Western blockade, these requirements must be filled almost exclusively by imports from Satellite countries. 101/ Czechoslovakia and Poland are the most important sources of East German coal imports.

The earliest postwar records of coal imports from Poland and Czechoslovakia are for 1947 and 1948, and because they are Polish and Czechoslovak export figures for all of Germany, they are not conclusive. The decrease in imports from Czechoslovakia in 1948 from those in 1947 is of no great significance; the over-all tonnages in both instances were small. It is probable that the distribution of the bulk of the imported Polish coal followed the traditional prewar distribution pattern of Silesian coal. The destination of the Czechoslovak coal cannot be determined as easily, but the proximity of the hard-coal fields of Czechoslovakia to the southern border of East Germany is a possible indicator that this area was the logical destination. The shipment of a comparable amount of coal in 1949 to West Germany from Czechoslovakia, however, offers the other possibility that prior to 1950 all reported Czechoslovak exports went to West Germany.

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Imports of Polish coal have fluctuated during the years 1947 through 1953 and reached a postwar high in 1953 with an estimated delivery total of 5.19 million tons. The peak of Czechoslovak exports to East Germany was reached in 1950 with the arrival of 528,621 tons. 102/ It is evident that the industrial expansion planned in the Two Year Plan, 1949-50, was beginning to increase requirements for hard coal for the metallurgical, manufactured gas, and electric-power industries.

In May and June of 1951 the East German Minister for Heavy Industry, pressed by the increasing need for coking coal, made personal visits to Poland and Czechoslovakia in an attempt to assure increased shipments. 103/ By mid-May of that year, no formal agreement had been signed with Poland, and Polish deliveries were proceeding at a monthly rate of 2.7 million tons per year, no qualities or types specified. 104/ The original requested tonnage for this year was 3.7 million tons, but the actual deliveries were only 2.68 million tons. Czechoslovak deliveries also fell off during 1951, and no tonnages were reported after the first quarter of the year. Deliveries from the USSR, which had started in 1949 at the low figure of 10,000 tons, 105/ increased to 25,500 in 1950, 106/ and by the end of the first half of 1951 were almost double the total for 1950. 107/ Planned imports for 1952 and 1953 were 100,000 tons per year. This coal, however, was of use only to specialized consumers in the manufacture of buna rubber, nitrogen, and electrodes by SAG plants. In no way did these imports ease the pressing need for coking or gas coal. 108/

The probable reason for the falling off of Czechoslovak imports in 1951 was that Czechoslovak production for 1951 was substantially below plan. 109/ The decrease in imports from Poland may have been caused by several factors: (1) increased requirements in Polish industry, (2) increased demand by the USSR for reparations in the form of coal, and (3) failure of East Germany to supply Poland with the desired manufactured items as its part of the bargain for coal.

In 1952, East German coal imports from the other Soviet Bloc countries increased considerably over 1951 imports. By 30 September it was reported that 86 percent of the planned imports for the year had already been received. 110/ The total imports for 1952 are reported to have included 100,000 tons of Donets anthracite

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from the USSR 111/ and at least 23,000 tons of Czechoslovak coal. 112/ The remainder was of Polish origin. (See Table 5.)

Plans for 1953 imports of coal originally specified a quantity of 3,690,000 tons. 113/ In view of the breakdown by country of origin for 1952, it is presumed that 100,000 tons were to be Donets anthracite and 90,000 tons were to be Czechoslovak coal, leaving 3,500,000 tons to be obtained from Poland. A 1953 trade agreement with Poland provided for Polish delivery of 3.5 million tons, which bears out the presumption. 114/ The results of the upheavals in June had a marked effect on foreign coal procurement. If the then stated promise to make available more brown-coal briquettes for household consumption was to be kept, it became apparent that the additional quantities of brown coal would have to be withdrawn from allocations to other consumers, primarily railroads, which are among the most inefficient consumers of brown coal. These quantities would therefore have to be replaced by increased coal imports. 115/ According to Otto Grotewohl's speech in August of 1953, 2 million tons of hard coal were to be supplied to East Germany by the USSR between 1 September and 30 December 1953. 116/ It has been reported that this coal was delivered by Poland to the USSR and then sold to East Germany. 117/ It is believed that bilateral negotiations for increased deliveries by Poland and Czechoslovakia had been under way during July and August and that the failure to arrive at any acceptable solution precipitated Soviet intervention. In September, Poland was ordered to ship the 2 million tons of coal forthwith, starting on 26 September. Under these circumstances it is believed that total imports of hard coal in 1953 would be as follows:

	<u>Metric Tons</u>
Estimated quantity received 1 January to 1 September 1953	3,296,000*

* This figure is an estimate based on daily freight reports of activity at the border freight stations of Forst, Frankfurt-an-der-Oder, Horka, Guben, and Kuestrin. Where complete figures are not available because of discontinuation of a specific source, monthly averages have been derived from previous or pursuant monthly data. This has been done for Forst for the months of June, July, and August. It should be noted that Kuestrin was not a coal-importing station until 25 August 1953.

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	<u>Metric Tons</u>
Delivery required by USSR from Poland from 1 September through 31 December 1953	2,000,000
Total	<u>5,296,000</u>

The final total of about 5.2 million tons is about 400,000 more than would have been reached had shipments continued at the monthly rate achieved during the first 8 months of the year (399,543 tons per month, or 4.8 million tons per year). It is doubtful, however, whether this rate would have been maintained during the harvest months of September and October, or that any more than planned tonnage of 3,690,000 tons would have been delivered, in the long run, had not the USSR stepped in.

A study of coal traffic through the border crossing points at Horka, Guben, and Kuestrin (bituminous coal) and Frankfurt-an-der Oder (anthracite) reveals a steady rise in the monthly import rate from Poland through December 1953. It is believed that the final total of Polish hard coal imported was approximately 5 million tons.

Plans for 1954 imports of coal are even higher than those of 1953: bituminous coal, 6,790,000 tons; anthracite, 190,000 tons; and brown coal, 4,250,000 tons. 118/ An actual coal trade agreement, reported in May 1954, was signed by East Germany, Poland, and the USSR, but it did not raise the Polish coal quota, which is still listed as 2.5 million tons. 119/

East German imports of brown coal from Poland cannot be considered as ordinary imports. They exist only because the postwar Polish-East German border happens to separate the former German brown-coal mines of Turow, in Poland, from the traditional consumer of their product, the Hirschfelde brown-coal briquette plant in Germany. It is believed that the total output of the mines is imported by East Germany. A possible explanation of the gradual decrease in quantity of these imports from 4.2 million tons in 1947 to 3.6 million tons in 1951 is the gradual exhaustion of the mines. An alternative explanation is increased local distribution for civilian consumption because of the heavy demands of reparations and industrial requirements upon other Polish coal supplies. It is estimated that total 1953 imports of brown coal from Poland did not

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exceed 3.5 million tons. The marked decline in imports from West Germany which occurred in 1952 may be explained by the constantly tightening border control of personnel and freight.

East German imports of hard coal, by countries of origin, are given in Table 5 and of brown coal, in Table 6.*

Table 5

East German Imports of Hard Coal, by Countries of Origin
1948-53

Country of Origin	Thousand Metric Tons					
	1948	1949	1950	1951	1952	1953
Czechoslovakia <u>120/</u>	0	0	528.6	450.0 <u>a/</u>	30.0 <u>b/</u>	0
Poland <u>122/</u>	1,562.1	2,966.7	3,389.2	2,686.0	3,856.0	5,196.0 <u>c/</u>
USSR <u>123/</u>	0 <u>d/</u>	10.2	25.5	88.0 <u>e/</u>	100.0 <u>f/</u>	100.0 <u>f/</u>
West Germany <u>124/</u>	458.0	0	29.3	340.0	0	0
Total	<u>2,020.1</u>	<u>2,976.9</u>	<u>3,972.6</u>	<u>3,564.0</u>	<u>3,986.0</u>	<u>5,296.0</u>

a. Estimate based on exports through April 1951 of 213,000 tons, or a monthly rate of approximately 50,000 tons, and an average monthly decrease from May to December of 6,000 tons to reach the 1952 monthly average of 2,500 tons derived from planned imports of 30,000 tons for the year 1952.

b. Fulfillment expected, as first 6 months showed no backlog. 121/

c. Estimated on basis of daily freight reports. See text above.

d. Estimated to be none.

e. Estimate based on twice the reported figure of 43,800 tons received during the first half of 1951.

f. Plan.

* Table 6 follows on p. 23.

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Table 6

East German Imports of Brown Coal, by Countries of Origin
1948-53

Country of Origin	Thousand Metric Tons					
	1948	1949	1950	1951	1952	1953
Czechoslovakia <u>125/</u>	a/	5.0	a/	a/	100.0 b/	0 c/
West Germany <u>126/</u>	1,520.0	1,532.0	1,965.0	2,053.0	842.0	0 c/
Poland <u>127/</u>	4,261.0	3,619.0	3,840.0	3,633.0	3,500.0 c/	3,500 c/
Total	<u>5,781.0</u>	<u>5,156.0</u>	<u>5,805.0</u>	<u>5,686.0</u>	<u>4,442.0</u>	<u>3,500</u>

a. Negligible.

b. Plan. At the end of 6 months 50,000 tons were contracted for delivery.

c. Estimate.

b. Exports.

There are no exports of hard coal or brown coal from East Germany. Exports of brown-coal briquettes are discussed later in this report. (See III, B, below.)

3. Stocks.

There has been little or no accumulation of coal stocks in East Germany since World War II. The extreme shortage of hard coal, the poor storage qualities of brown coal, and the inability of the transportation facilities to keep the various consuming industries supplied with more than their most urgent day-to-day needs have made stockpiling impossible. It is probable that each consumer has attempted to maintain operational stocks, but the general tenor of reports has been that, if the day-to-day deliveries did not pick up, plants would be forced to decrease production or to shut down. Gasworks and thermal power stations have been particularly affected, although their total stocks did show a gain in 1949, increasing from 257,407 tons on 1 January 1949 to 295,453 tons on 1 January 1950. 128/

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A constant effort has been made to maintain railroad stocks of coal at a safe level. There is little information concerning operational or emergency stocks for the railroad prior to December 1949. At that time, however, there were distributed among the 8 Reichsbahn (Reich Railroad) Directorates sufficient stocks for 20 days of operation. 129/ By January 1950 these had dwindled to an amount sufficient for only 7 days of operation, 130/ probably as a result of the heavy traffic in winter, when water transport is curtailed. It is probable that during the winter of 1950 railroad coal stocks continued to decrease and in April were sufficient for only 2 days of operation. 131/ In February of 1951, stocks were adequate for 6 days of operation at the daily consumption rate of 20,000 metric tons. 132/ By October of that year, stocks had increased to 320,000 tons, sufficient to cover 14.5 days of operation at the increased consumption rate of 22,000 tons per day. 133/ During the first quarter of 1952, railroad stocks of coal continued to increase to 302,780 tons in April, 134/ enough coal for 15.2 days of operation. Hard-coal stocks in April constituted 47 percent of the total. During the summer of 1952, Reichsbahn stocks of coal fell off again to a 12 days' operational supply. 135/ In order to forestall any such shortages as occurred in 1950, the Soviet authorities ordered the Reichsbahn to accumulate, by the end of 1952, 480,000 tons each of brown-coal briquettes and hard coal, the equivalent to 60 days' requirements. 136/ In November 1952 the Secretariat of Coal and Power made known the necessity for the construction of 2 large storage sites for 50,000 tons of coal, one at Frankfurt/Oder and the other at Fuerstenberg/Oder. 137/ It is not known whether these were to be railroad reserves or storage places for Polish coal delivered by water. In any case, there were many indications in 1952 that 60 days' supply for railroads was desired.

Railroad stocks continued to deteriorate during 1953. The quantity of coal on hand between April and June 1953 ranged from 8 to 11 days' supply, compared with 16 to 17 days' supply during the same period in 1952. 138/ Instead of increasing to a normal summer reserve of 20 days' operational requirements, stocks declined to 8 days' supply in July 1953, 139/ 6.4 days' supply in August, 140/ and 5 days' supply in October. 141/ The supply situation became increasingly serious when the winter started in November and there were stocks sufficient for only 9 days. 142/ The situation was aggravated by the almost complete conversion of locomotives to the use of hard coal and the transfer, according to the "New Course" plan, of their brown-coal briquette allocations to

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other consumers. 143/ Although increased imports from Poland were having some effect on stocks, they also caused increased operational requirements. A drop in coal imports from Poland in late December, however, brought railroad stocks down again to a 7-day level. 144/

During the first 4 months of 1954, railroad coal stocks continued to decline. To a certain extent it might have been expected that no noticeable increase would occur in this period. The constant decline which took place, however, continued from the coldest month of the year, January, into April. Stocks at the end of January were sufficient for 6 days of operation. 145/ The lowest point was reached on 14 April when stocks were sufficient for 4.9 days. 146/ In the following week, a slight increase occurred, bringing stocks up to 5.6 days' supply. 147/ All available information indicates a protracted shortage of coal for Reichsbahn operation during the winter of 1953-54.

C. Consumption.1. Hard Coal.

Total estimated hard coal available in East Germany for the years 1947-53 has ranged in quantity from 4.2 million tons to 8.2 million tons, as is shown in Table 7.* Compared to peak prewar availability conditions, this is a reduction in total available supplies of from 9 million to 14.8 million tons. Under these circumstances, it is not surprising that only the most critical consuming industries have received supplies. Household heating with hard coal has ceased, and various attempts have been made to convert railroads, thermal power stations, and other industries to the use of brown coal, both in pulverized and briquetted form. Complete conversion has not been feasible in the metallurgical industry, particularly in the ferrous metallurgy industry; in certain chemical industries, such as the buna-producing and carbide-producing industries; in gasworks; and in the railroad industry. The conversion to brown coal in already existing thermal power plants has been fraught with technical difficulties, but new facilities have been based on brown coal.

Because available data is inadequate, it is difficult to estimate the consumption pattern for hard coal during 1953. It is

* P. 27, below.

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expected that in the future, data will show that the bulk of the increase in available hard-coal supply, from 6.8 million tons in 1952 to 8.2 million tons in 1953, was consumed by the railroads. This would appear to be an essential result of the channeling of added brown-coal briquettes to household consumers. It is also probable that the gasworks which use hard coal may show an increased consumption.

Consumption of hard coal in East Germany during 1947-53 increased most notably in the thermal power and gas-manufacturing industries. This increase is a result of the expanding industrial requirements for these secondary sources of energy. Through 1951 the increased consumption of hard coal by thermal power plants was brought about by the rehabilitation of existing thermal power plants rather than by the construction of any new power plants which used hard coal. The relatively static consumption of hard coal by the metallurgical industry, ranging from 298,000 to 347,000 tons, has been caused by the limited coking capacities of the industry and by the limited supply of suitable coking coal.

In 1948 the first steps were taken toward the conversion of locomotives from hard-coal firing to raw brown-coal firing. In May of 1949 the first locomotive using brown coal made a trial run. Apparently it was decided about this time to convert all locomotives to raw brown-coal firing. 148/ In April 1952, 72 locomotives had been converted. Only 32 of these were in service, however, and the remainder were under repair. A satisfactory method of using raw brown coal had not been developed, and the conversion of locomotives was stopped. As of April 1952, however, the only hard-coal locomotives operating in East Germany were those of international express trains and of freight trains hauling Soviet exports and imports to and from Germany. 149/ Therefore, consumption of hard coal declined sharply in 1952, and the railroads' requirements of solid fuel were met by brown-coal briquettes. In 1953, reconversion of all locomotives to hard coal was ordered. In Table 7,* which gives the estimated consumption of hard coal in East Germany, 1947-53, allowance has been made for the resulting expected increase in the consumption of hard coal. Because of the great number of locomotives and the limited facilities for their conversion, however, it is difficult to estimate the day-to-day increase in hard coal use. It is indicated that the reconversion plan was not carried out by the end of 1953 as ordered.

* Table 7 follows on p. 27.

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Table 7

Estimated Consumption of Hard Coal in East Germany
1947-53

Consumer	Thousand Metric Tons						
	1947	1948	1949	1950	1951	1952	1953
Railroad	340 ^{a/}	430 ^{151/}	720 ^{b/} ^{152/}	800 ^{153/}	1,036 ^{c/}	635 ^{d/}	1,009 ^{e/}
Inland Water	46 ^{f/}	64 ^{155/}	55 ^{156/}	68 ^{g/}	67 ^{g/}	66 ^{g/}	66 ^{g/}
Thermal Power Gasworks ^{k/}	850 ^{h/} ^{157/} 1,100	1,046 ^{h/} 1,271	1,400 1,643	1,650 ^{i/} 2,196	1,850 ^{i/} 2,526	1,803 ^{i/} 3,064	1,750 ^{j/} 3,033
High-Tempera- ture Coke ^{l/}	298	302	319	329	344	347	395
Other Industry ^{m/}	1,626	1,755	1,859	1,737	941	921	2,043
Total	<u>4,260</u>	<u>4,868</u>	<u>5,996</u>	<u>6,780</u>	<u>6,764</u>	<u>6,836</u>	<u>8,296</u>

a. Estimate based on consumption by the railroads of 8 percent of available hard coal in 1948.

b. Plan figure.

c. Estimate based on average daily consumption of 2,840 tons and 365 operational days per year.

d. Estimate based on average daily consumption of 1,736 tons and 365 operational days per year.

e. Estimate based on daily average consumption of 1,736,000 tons for the first 8 months, and a return to 1951 daily average of 2,840 tons for the last 4 months. This is justified by the order for reconversion of all locomotives fired by brown-coal briquettes to hard-coal firing by 30 December 1953 and assumed partial compliance with the order.

f. Estimate based on annual consumption by inland water transport of 1.3 percent in 1948, and 0.9 percent in 1949, of total available hard coal. 154/

g. Estimate based on past performance.

h. Estimate based on average percentage of consumption by thermal-power stations of 20 percent of total hard coal available in 1947 and 23.3 percent in 1949. 158/

i. Estimate based on annual kilowatt-hour production by hard coal in 1947 and 1949.

j. Estimate based on an estimated kilowatt-hour production of 25 billion kilowatt-hours in 1953, 93 percent of which was supplied by brown coal in various forms. 159/

Table 7

Estimated Consumption of Hard Coal in East Germany
1947-53
(Continued)

k. Input of hard coal in the manufacture of gas is based on a conversion factor of 350 cubic meters of gas per ton of hard coal and the following percentage of gas from plants based on hard coal: 1948, 63.9 percent (386.195 million cubic meters); 1948, 55 percent (444.807 million cubic meters); 1949, 55 percent (575 million cubic meters); 1950, 55 percent (768.57 million cubic meters); 1951, 55 percent (883.96 million cubic meters); 1952, 55 percent (1,072.5 million cubic meters). 160/

l. Coal input for the production of high-temperature coke is derived from the production of coke and a percentage yield basis as follows: 1947 and 1948, coke yield of 67 percent of coal input, coke production known; 1949-52, coke yield of 75 percent of coal input, coke production known and estimated (see IV, below).

m. A residual figure including the synthetic rubber, carbide, and other industries.

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At the beginning of January 1954, hard-coal imports from Poland declined, and at the end of the quarter they were considerably lower than they had been during the last quarter of 1953. Railroad stocks of hard coal immediately registered the lack of supply, and brown-coal briquette deliveries to the railroads were increased at the expense of household allocations. 150/ In March 1954 the only locomotives using hard coal were those of the best passenger trains, and even these were using a half-and-half mixture of brown-coal briquettes and hard coal.

The use of hard coal for inland water transport in East Germany is almost negligible, and its slight upward trend, estimated from 40,000 tons in 1947 to 66,000 tons in 1953, may have been caused by increased traffic rather than by any increase in the number of vessels dependent on hard coal.

The consumption of coal by "other industry" fluctuates with the increase and decline of supplies. If hard coal is not available, the industries in this group must find other fuel or must shut down.

2. Brown Coal.

Raw brown coal is consumed in the greatest volume by the brown-coal briquette industry. Raw brown coal is not an efficient fuel for most purposes. Its low heat value per ton, its excessive moisture content of 45 to 56 percent, 161/ and its high friability result in difficult and incomplete combustion. The manufacture of briquettes from raw brown coal improves its heat value by drying and reduces friability. It is understandable, therefore, that on the average, 72 percent of total production of brown coal has gone to briquette plants during 1947-53. Each year from 69.8 million to 129 million tons of an inefficient coal, which cannot even be transported satisfactorily, has been transformed into 26 million to 41 million tons of a relatively satisfactory fuel. (See III, below.) In order to maintain an increasing briquette production, it is believed that the allocations to railroads and to "other uses" were reduced in 1953.

In 1947, thermal power stations depended upon raw brown coal for the production of approximately 68 percent of the total kilowatt-hours produced. Thermal power stations consumed about 29 percent of total brown coal available. 162/ From 1949 through 1952

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the consumption of brown coal reached a stable relationship with the total availability of brown coal, and this relationship is expected to continue as the capacity of electric power plants and the production of brown coal increase proportionally. 163/ In spite of an increasing consumption of brown coal, total requirements of fuel by these plants have not been met recently. In 1947, shortages were explained by the failure of the transportation facilities to deliver the coal. 164/ In 1950, although planned kilowatt-hour production was allegedly surpassed, electric power restrictions remained in force. 165/ Early in 1953, thermal power plant requirements for brown coal were not filled, possibly because of transportation difficulties. 166/

The conversion of railroad locomotives to the use of raw brown coal was tried and proved unsatisfactory. Brown-coal briquettes are preferred. Because of its high moisture and sulfur content, raw brown coal has corrosive effects on locomotive boilers. In addition, during the operation of the locomotive the raw brown coal tends to break into small pieces which fall through the boiler grate before combustion is complete. For these reasons, the consumption of raw brown coal by railroads has declined. Brown-coal briquettes are now used in a tonnage roughly four times that of raw brown coal. 167/

In 1947, approximately 20 percent of the total coal gas produced in East Germany was derived from gasworks using brown coal. Approximately 90 percent of the gas was manufactured at the SAG Boehlen plant near Leipzig. 168/

A probable explanation of the rise in the allocation of crude brown coal to "other uses" may be the availability of other fuels. In 1947, brown-coal briquettes were in short supply, and crude brown coal was used wherever possible. By 1949 the production of brown-coal briquettes had increased considerably, and briquettes were used to replace brown coal. Since 1949 the Western blockade and general East German industrial expansion have brought about a coal crisis which has forced industries classified as "other uses" to use other types of coal. The use of crude brown coal by these industries therefore increased from 6.3 million tons in 1950 to 11.9 million tons in 1951. It is believed that the various plants producing brown-coal coke as a byproduct in the manufacture of low-temperature carbonization tar are included in the "other uses" group. Because of the complexities of this process and its relationship to the

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synthetic liquid fuel and chemical industries, it is not possible to make any definite statements of the actual or estimated tonnages required. The production of brown-coal coke is discussed in IV, below.

Table 8* gives the estimated consumption of brown coal in East Germany, 1947-53.

D. Reserves.1. Hard Coal.

Reserves of hard coal in East Germany, as estimated for 1951, approximate 88,526,000 tons. Deposits which are currently being mined, however, had reserves of only 23,196,000 tons and, according to planned production quotas, were expected to last until 1960. The reserves at the other deposits which constitute the greater part of the total have not been exploited up to the present time because of the difficulties encountered in mining operations. A mine is under construction, however, in this area. The characteristics of deposits and qualities of coal are discussed in detail in Appendix B.

Table 9** shows the comparative position of reserves of hard coal in East Germany in selected years, 1913-51. 169/

2. Brown Coal.

In order of magnitude of reserves, the three brown-coal areas of East Germany are the Lausitz Field, the Thuringen-Sachsen Field, and the Braunschweig-Magdeburg Field. It is estimated that the reserves of brown coal will suffice for 1,000 years at the production rate of 200 million tons per year. Table 10*** shows reserves of brown coal in East Germany as estimated in 1936 and 1947. A downward correction of 22 percent has been made in the total for the Lausitz Field in 1936 because of the transfer of part of the Goerlitz Field to Poland at the end of World War II. A detailed description of qualities and deposits of brown coal is given in Appendix B.

* Table 8 follows on p. 32.

** Table 9 follows on p. 34.

*** Table 10 follows on p. 35.

Table 8

Estimated Consumption of Brown Coal in East Germany
1947-53

Consumer	Thousand Metric Tons						
	1947	1948	1949	1950	1951	1952	1953
Brown-Coal							
Briquettes <u>a/</u>	69,758	78,897	90,214	100,074	107,577	122,902	129,046
Inland Water							
Transport	100 <u>b/</u>	100 <u>b/</u>	108 <u>170/</u>	93 <u>171/</u>	90 <u>b/</u>	90 <u>b/</u>	90 <u>b/</u>
Railroads	500 <u>c/</u>	480 <u>172/</u>	430 <u>173/</u>	400 <u>c/</u>	385 <u>d/</u>	440 <u>d/</u>	400 <u>d/</u>
Thermal							
Power <u>e/</u>	30,875 <u>174/</u>	31,000 <u>175/</u>	30,800 <u>176/</u>	33,900 <u>f/</u>	38,200 <u>f/</u>	42,521 <u>f/</u>	42,657 <u>g/</u>
Gasworks <u>h/</u>	108	512	869	931	1,071	1,180	1,239
Chemical							
Industry <u>178/</u>	218 <u>i/</u>	1,000	1,100	1,500	2,000 <u>j/</u>	2,300	2,301
Other Uses <u>k/</u>	5,459	4,655	6,115	6,417	11,989	8,173	892
Total	<u>107,018</u>	<u>116,644</u>	<u>129,636</u>	<u>143,315</u>	<u>161,312</u>	<u>177,596</u>	<u>176,625</u>

a. Allocations of brown coal to the brown-coal briquette industry are estimated for 1947-53 on the basis of known and estimated production of brown-coal briquettes and estimated requirement of 2.6 tons of raw brown coal for every ton of briquettes.

b. Estimate based on actual consumption in 1949 and 1950.

c. Estimate.

d. Estimate based on daily average consumption by railroads of 1,054 tons of brown coal in 1951, and 1,210 tons in 1952.

e. Includes raw brown coal and dry brown coal.

f. Estimate based on 1949 performance and extrapolated through 1952.

g. Estimate based on past performance.

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Table 8

Estimated Consumption of Brown Coal in East Germany
1947-53
(Continued)

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- h. Estimated on the basis of 19 and 19.6 percent of all coal gas produced from brown coal in 1947 and 1949 respectively, at a rate of 300 cubic meters of gas to 1 ton of brown coal. 177/ For 1950-52, 20 percent of total gas production has been used. For total gas produced see V, below.
- i. Four times requirements for the fourth quarter of 1947.
- j. Estimate based on planned allocation of 2 percent of total 1955 availability to the chemical industry in 1955.
- k. Residual figure which shows a sharp rate of increase in 1951 and 1952 because of the increased availability of brown coal in those years and decreased availability of hard coal.
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Table 9

Reserves of Hard Coal in East Germany
Selected years, 1913-51

	Thousand Metric Tons			
	<u>1913</u>	<u>1928</u>	<u>1950</u>	<u>1951</u>
Zwickau				
Karl Marx Mine	N.A.	N.A.	6,557	6,180
Martin Hoop Mine	N.A.	N.A.	6,969	6,459
August Bebel Mine	N.A.	N.A.	170	N.A.
Subtotal	<u>85,000</u>	N.A.	13,696	12,639
Lugau-Oelsnitz				
Liebknecht Mine	N.A.	N.A.	7,306	6,384
Deutschland Mine	N.A.	N.A.	4,039	4,000
Subtotal	<u>125,000</u>	<u>150,000</u> a/	<u>11,345</u>	<u>10,384</u>
Freital	15,000	6,000	244	173
Gittersee	b/	b/	b/	330
Doberlug-Kirchhain	<u>b/</u>	<u>b/</u>	<u>b/</u>	65,000
Total	<u>225,000</u>	<u>156,000</u>	<u>25,285</u>	<u>88,526</u>

a. Includes Zwickau Basin reserves.

b. Not known.

III. Fuel Briquettes.A. General.

In the past 8 years the manufacture of brown-coal briquettes has been developed to a greater extent in East Germany than in any other country. In 1951, about 72 percent of the total production of brown coal was made into briquettes. 179/* Since the end of World War II, this industry has become vital to the economic life of the

* Using 2.6 tons of raw brown coal for each ton of briquettes (1955 Plan).

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Table 10

Estimated Reserves of Brown Coal in East Germany
1936 and 1947

	Thousand Metric Tons	
	1936	1947
Lausitz Field	12,771,400	10,405,000
Braunschweig-Magdeburg Field	1,025,700	a/
Thuringen-Sachsen Field	8,738,200	10,227,000
Total	22,535,300	20,632,000

a. Included in reserves of the Thuringen-Sachsen Field.

area. Decreases in supplies of hard coal have compelled many of the coal-consuming industries and domestic consumers to use the available brown coal, in raw, pulverized, or briquetted form. ^{180/} To satisfy the demands of industry, domestic consumption of briquettes has dwindled from a prewar 60 percent ^{181/} of total production of briquettes to 8 percent in 1949. The emphasis in the "New Course" upon the satisfaction of all aspects of demand for consumer goods, however, leads to the belief that in the future greater allocations of briquettes will be made to householders.

B. Supply.*

The production of brown-coal briquettes increased steadily after 1946 and reached an estimated 49.2 million tons in 1953. (See Table 11.***) This total surpasses the wartime high of 44,619,000 tons in 1943. ^{182/} Output of 26,837,000 tons in 1947 was only 60 percent of that in 1943. ^{183/} This decrease was the result of postwar chaos lasting through 1946-47 and the dismantling program carried out on both mines and plants by the USSR. ^{184/} The most serious effect of the dismantling program was decreased production of coal, which, in turn, limited the quantity of brown coal available for briquettes. The briquette plants themselves have been severely affected by the stopping of machine imports from West Germany since the establishment of the blockade in 1948. The replacement of worn-out equipment, chiefly molds and presses, ^{185/} has been curtailed,

* Because East Germany does not import fuel briquettes, total supply is limited to production.

*** P. 37, below.

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and production of briquettes has been retarded. For example, in 1949, only 71 percent of the 1938 stocks of briquette presses was available. 186/

In 1950 the Planning Commission of East Germany envisaged an increase in total production of brown-coal briquettes to 38,195,000 tons in 1952 187/ and to 56 million tons in 1955. In 1949 and 1950, production goals were surpassed by a considerable amount. Had the plan figures for 1951 remained unchanged from the original Perspectiv-plan, 1951 production would have surpassed the plan by approximately 5 million tons. Encouraged by past performance in 1949 and 1950, however, the government increased the 1951 goal from 36.5 million to 41.7 million tons 188/ and on 10 August 1950, introduced measures for increased mechanization. The actual production did not quite reach the revised target, a fact which indicated that some difficulty was experienced in attempts to increase the mechanization of the briquette plants. 189/ Original plans for 1952 were increased in early 1952 from 38 million tons 190/ to 47.2 million tons. 191/ Estimated production of brown-coal briquettes for 1952, based on 100 percent achievement of plan, was about 47.3 million tons. 192/ Production in 1953 did not reflect the downward trend of production of brown coal but continued upward to an estimated 49.6 million tons, 193/ about 300,000 tons over the planned 49.3 million tons. 194/ It is believed that a slowing up in annual production gains will continue because of shortages of machinery, and it is improbable that the planned achievement for 1954 will be reached. Annual increases in production during 1950-53 have averaged 3.5 million tons. At this rate of increase, output in 1955 could be approximately 56.0 million tons, equal to planned tonnage for that year.

Table 11* gives estimated production of brown-coal briquettes in East Germany, 1938, 1943, 1946-53, and 1949-55 plans.

Concurrent with the drive to increase production, there has been a tendency to allow the moisture content of the briquettes to increase, thereby decreasing their over-all efficiency and increasing the net weight. This has occurred, probably, through shortening of the process in order to meet output goals. Cognizant of this condition, the State Planning Commission has decided upon a reconstruction, expansion, and conversion program which will involve changes in 17 briquette plants. 195/

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* Table 11 follows on p. 37.

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Table 11

Estimated Production of Brown-Coal Briquettes in East Germany
1938, 1943, 1946-53, and 1949-55 Plans

<u>Year</u>	<u>Production</u> Thousand Metric Tons
1938	30,334 <u>196/</u>
1943	44,619 <u>197/</u>
1946	28,912 <u>198/</u>
1947	26,830 <u>199/</u>
1948	30,345 <u>200/</u>
1949 Plan	33,810 <u>201/</u>
1949	34,698 <u>202/</u>
1950 Plan	35,058 <u>203/</u>
1950	38,490 <u>204/</u>
1951 Plan	41,700 <u>205/</u>
1951	41,376 <u>206/</u>
1952 Plan	47,270 <u>207/</u>
1952	47,270 <u>208/</u>
1953 Plan	49,350 <u>209/</u>
1953	49,633 <u>a/</u>
1954 Plan	53,010 <u>211/</u>
1955 Plan	56,000 <u>212/</u>

a. Estimate based on 105 percent of 1952 production. 210/

The product of these factories, fine-grain briquettes, will have a water content of only 10 percent, compared with a water content of not less than 12 percent 213/ and usually from 14.4 to 18 percent 214/ in the product of unconverted plants. It is believed that the conversion and reconstruction will involve the introduction of better drying apparatus and grinding or pulverizing machines. The briquettes produced by the converted plants should be more efficient as fuel. Because of uniformity of size of the coal particles prior to manufacture, they will have a lower moisture content and reduced friability. Substitution of the new briquettes in locomotives alone was expected to result in a 15.5-percent saving in fuel, 265,000 tons in 1952 and 530,000 tons in 1953. 215/ Another purpose in the production of these briquettes is to obtain a fuel suitable for the production of brown-coal metallurgical coke at Lauchhammer.

S-E-C-R-E-TC. Consumption.1. Internal.

The consumption pattern of brown-coal briquettes in East Germany was radically changed during the postwar years. Before World War II, 60 percent of total production was consumed in household use 216/; in 1949, only 8 percent was so used. A distribution pattern for 1949 was reported as follows: 23 percent, railroads; 22 percent, production of synthetic fuel; 20 percent, thermal power stations; and 8 percent, domestic use. The remaining 27 percent was used for export and by the occupation powers. 217/

Table 12* shows the estimated consumption pattern of brown-coal briquettes in East Germany for 1947-53. Specific information on the consumption pattern of the solid fuel industries is scarce, and with a few modifications and exceptions, the allocations to the five main consumer groups have been made on the basis of reported 1949 percentages and requirements of consuming industries. The railroad consumption figure for 1948 is an actual and official figure which was presented simultaneously with the quantity planned for 1949. 218/ Railroad consumption for 1950, 1951, and 1952 is based on daily average consumption rates for those years. Conversion of railroad locomotives from brown-coal briquettes to hard coal late in 1953 may have released appreciable quantities of briquettes for domestic heating during the winter months, heretofore a period of short fuel supply.

The input of brown-coal briquettes into the synthetic fuel industry has been calculated on the basis of 22 percent of the total production as given for 1949. Provision has been made for an increase in production in this industry (of 73 percent for the Boehlen Combine alone) since the outbreak of the Korean war by increasing the input percentage to 23 percent in 1950, to 25 percent in 1951, and to 32 percent in 1952. 219/ The final figure of 13,280,000 tons is considered sufficient to produce the increase in synthetic fuel production of 1.8 million tons claimed for 1952 over 1949.

The estimates of consumption of brown-coal briquettes by the thermal power stations of East Germany for 1949-52 are based upon zonal plant operating reports for 1949 prorated over the balance

* Table 12 follows on p. 39.

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Table 12

Estimated Consumption of Brown-Coal Briquettes in East Germany, by Major Consumers
1947-53

Consumer	Thousand Metric Tons						
	1947	1948	1949	1950	1951	1952	1953
Railroads	6,000 <u>a/</u>	6,097 <u>a/ 220/</u>	6,820 <u>a/</u>	6,022 <u>a/</u>	6,113 <u>a/</u>	6,205 <u>a/</u>	5,165 <u>b/</u>
Synthetic Fuels	5,902 <u>c/</u>	6,676 <u>c/</u>	7,633 <u>c/ 221/</u>	9,237 <u>c/</u>	11,715 <u>c/</u>	14,181 <u>c/</u>	15,230 <u>d/</u>
Thermal Power Stations	3,000 <u>e/</u>	3,000 <u>e/</u>	3,452 <u>e/</u>	3,893 <u>e/</u>	4,382 <u>e/</u>	4,835 <u>e/</u>	5,568 <u>e/</u>
Domestic <u>222/</u>	2,146 <u>f/</u>	2,427 <u>f/</u>	2,776 <u>f/</u>	2,694 <u>f/</u>	3,103 <u>f/</u>	4,300 <u>f/</u>	5,022 <u>223/</u>
Other Uses	7,834 <u>g/</u>	10,403 <u>g/</u>	11,491 <u>g/</u>	13,039 <u>g/</u>	13,921 <u>g/</u>	15,058 <u>g/</u>	16,528
Total	<u>24,882</u>	<u>28,603</u>	<u>32,172</u>	<u>34,614</u>	<u>39,234</u>	<u>44,579</u>	<u>47,513</u>

a. Estimate based on daily consumption by the Reichsbahn of 16,500 tons per day in 1950; 16,750 tons per day in 1951; 17,000 tons per day in 1952; and 365 operational days per year.

b. Estimate based on an increase in hard-coal consumption by the railroads thus releasing brown-coal briquettes in the approximate ratio of 3 tons of briquettes to 1 ton of hard coal.

c. Estimate based on the consumption of 22 percent of total production of brown-coal briquette production by the synthetic fuel industry in 1949, increasing to 30 percent in 1952.

d. Estimate based on a 7.4 percent increase in production of synthetic fuel in 1953 over 1952 and the application of the same percent to the consumption of brown-coal briquettes by the industry.

e. Tonnages for thermal power plants include brown-coal briquette chips. These estimates were made on the following premises:

1. Thermal power production as follows: 1947, 13.0 billion kilowatt-hours; 1948, 14.7 billion kilowatt-hours; 1949, 16.3 billion kilowatt-hours; 1950, 18.4 billion kilowatt-hours; 1951, 20.7 billion kilowatt-hours; 1952, 22.8 billion kilowatt-hours.

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Table 12

Estimated Consumption of Brown-Coal Briquettes in East Germany, by Major Consumers
1947-53
(Continued)

2. Brown-coal briquettes and briquette chips account for approximately 17.2 percent of all thermal power produced.

3. One kilowatt-hour equals 1.295 kilograms of brown-coal briquettes, or 1.79 kilograms of brown-coal briquette chips.

f. Estimate based on household consumption of 8 percent of total production of brown-coal briquettes, decreasing to 7 percent in 1952.

g. A residual figure.

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of the industry and projected beyond 1947 on the basis of kilowatt-hour production estimates. In Table 14, the difference between the given quantities and 20 percent of total production has been included with that attributed to other industries. It is believed that the difference may be explained by the fact that a number of power stations are in operation solely for the benefit of certain plants and do not contribute to the electric grid. [REDACTED]

50X1
50X1

In 1949, only 8 percent of the total production of brown-coal briquettes was used in domestic consumption. According to a report dated 1951, as the production of synthetic fuel has risen, the domestic consumption of brown-coal briquettes has declined. For 1950-52, therefore, it is estimated that domestic consumption used 7 percent of total production. Information dated January 1953 indicated that the fuel distribution system had collapsed and, according to the journal Neues Deutschland, had become "alarming and menacing." The allocation of 5 hundredweight of brown-coal briquettes per person, made earlier in the winter of 1952, had been completely exhausted by January 1953, 225/ and free shops (as distinct from State Trade Organization stores) had been forbidden to sell coal for household use.* Information dated August 1953 revealed the allocation of approximately 1 million more tons of brown-coal briquettes for household use in 1953 than in 1952. The exact amount received, however, is not known and would depend largely on the amounts made available through conversion of brown-coal locomotives to hard-coal use. 226/

Recent experiments have undertaken to prove the feasibility of using brown-coal briquettes as a raw material for the manufacture of metallurgical coke. The apparently successful experimental work at VEB Gaswerk Delitzsch, Bitterfeld, resulted in plans to remodel the two briquette plants at Lauchhammer according to the proven specifications. It was planned that these 2 plants would have a capacity of 4,700 tons of brown-coal briquettes per day. Of this production, 4,200 tons were to be used to produce 2,000 tons of metallurgical coke per day. The coke was to be used for low-shaft blast furnaces in the iron and steel industries and in the chemical industries. The planned date of completion was 1 January 1953. 227/

* [REDACTED] domestic consumption in 1953 increased to 10 percent of total production.

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S-E-C-R-E-T2. Exports.

Table 13* shows the estimated quantity and the destination of East German exports of brown-coal briquettes for 1946-53. In the majority of cases, figures for 1946-50 are data supplied by importing countries. Quantities exported to the USSR are estimated from the knowledge that 65,000 tons in July and 61,000 tons in August 1948 were shipped through Rostok and that, in addition, a considerable quantity probably was shipped by rail. In 1952 the major importers of East German brown-coal briquettes were West Germany (including West Berlin), Sweden, Poland, and the Netherlands.

The planned total export figure for 1951 was 2.4 million tons. Reported totals for other years are not available, and the data by countries of destination are fragmentary.

50X1

Indications of which briquette plants supply the export quotas for which country are not conclusive or complete.

50X1

IV. Coke.A. General.

Production of coke in East Germany may be divided into three categories: metallurgical coke derived from hard coal at the August Bebel and Karl Marx cokeries in the Zwickau and Lugan-Oelsnitz coal basins; gas coke derived from hard coal at municipal gas plants; and brown-coal coke or char produced at low-temperature carbonization plants. In the latter two categories, the gases, oils, and tars are the products of primary importance, and the coke produced may be considered a byproduct. Estimated production of coke in East Germany, 1947-55, is given in Table 14.**

B. Supply.1. Production.

According to the Five Year Plan, metallurgical coke is of primary importance to the expansion of the East German economy.

* Table 13 follows on p. 43.

** Table 14 follows on p. 44.

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Table 13

Estimated East German Exports of Brown-Coal Briquettes, by Countries of Destination
1947-53

Country	Thousand Metric Tons						
	1947	1948	1949	1950	1951	1952	1953
Austria <u>228/</u>	0 <u>a/</u>	0	0	4.7	321.0	187.0	20.0
Belgium <u>229/</u>	0	0	0	0	7.0	1.0	N.A.
Czechoslovakia <u>230/</u>	0.1	0	0.1	137.5 <u>b/</u>	N.A.	300.0 <u>c/</u>	300.0 <u>d/</u>
Denmark <u>233/</u>	248.0	0	199.0	259.0	103.0	211.0	N.A.
Finland <u>234/</u>	0	0	0	0	11.0	45.0	50.0 <u>e/</u>
France <u>235/</u>	0	0	0	0	102.0	52.0	N.A.
Italy <u>236/</u>	0	0	0	0	0	0	N.A.
Netherlands <u>237/</u>	0	0	0	0	0	0	N.A.
Norway <u>238/</u>	12.0 <u>f/</u>	25.0	10.0	0	27.0	41.0	N.A.
Poland <u>239/</u>	0	8.0	600.0	106.0	N.A.	0	N.A.
Sweden <u>240/</u>	688.0	175.0	3.0	5.0	537.0	494.0	100.0 <u>g/</u>
USSR <u>241/</u>	300.0	1,200.0	1,508.0	2,120.0	0	N.A.	N.A.
West Germany <u>242/</u>	N.A.	123.0	6.0	604.0	329.0	813.0	650.0 <u>g/</u>
West Berlin <u>243/</u>	200.0	211.0	200.0	640.0	405.0	546.4 <u>h/</u>	1,000.0 <u>g/</u>
Total	<u>1,948.1</u>	<u>1,742.0</u>	<u>2,526.1</u>	<u>3,876.2</u>	<u>2,142.0</u>	<u>2,690.4</u>	<u>2,120.0</u>

a. Assumed none.

b. East Germany failed to deliver 162,504 tons of contracted agreement. It is believed that planned exports were to be approximately 300,000 tons. 231/

c. Estimate based on 1951 deliveries.

d. According to reports, 6,640 carloads (136 trains) of brown-coal briquettes passed through Bad Schandau to Czechoslovakia between 1 March and 31 May 1953, and 1,920 carloads (42 trains) passed through the same station between 21 September and 10 October 1953. Reports for intervening periods show no shipments of brown-coal briquettes, although some may have been included in trains composed of mixed cargoes. Assuming that each car averaged 22 tons, reported shipments amounted to more than 200,000 tons. In view of 1951 and 1952 performance, total annual shipments of 300,000 tons are estimated. 232/

e. Estimate based on 6 months' reported deliveries.

f. Believed to be reparations to the USSR from East Germany, then exported to Norway.

g. Plan.

h. As of 21 December 1952, 546,380 tons of the agreed amount of 700,000 tons specified for delivery between 1 August and 31 December 1952 had been delivered. There were no deliveries between 21 and 31 December 1952. 244/S-E-C-R-E-T

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Table 14

Estimated Production of Coke in East Germany
1947-55

Thousand Metric Tons

Year	Metallurgical Coke	Gas Coke	Low-Temperature Carbonization Coke			All Coke Total
			VVB	SAG	Total	
1947 <u>245/</u>	224	600	244	2,756 <u>a/</u>	3,000	3,824
1948 <u>246/</u>	227	970 <u>b/</u>	287	3,213 <u>c/</u>	3,500	4,697
1949 <u>247/</u>	241	1,112	332	4,415 <u>c/</u>	4,748	6,100
1950 <u>248/</u>	254	1,365	335	4,715 <u>c/</u>	5,050 <u>d/</u>	6,669
1951 <u>249/</u>	262	1,440	357 <u>e/</u>	5,000 <u>f/</u>	5,357 <u>f/</u>	7,059
1952 <u>250/</u>	264	1,660	420 <u>e/</u>	5,354 <u>b/</u>	5,774 <u>g/</u>	7,698
1953 <u>251/</u>	296 <u>h/</u>	1,910 <u>i/</u>	3,734 <u>j/</u>	2,220 <u>k/</u>	5,954	8,160
1954	N.A.	2,080 <u>b/</u>	N.A.	N.A.	N.A.	
1955	N.A.	2,260 <u>b/</u>	N.A.	N.A.	N.A.	

a. Estimate based on given figure for total production of low-temperature carbonization coke and VVB production.

b. Estimate.

c. Estimate based on given figures for total and VVB production of low-temperature carbonization coke.

d. Estimate based on 6 months' actual production of 2,529,924 tons of low-temperature carbonization coke.

e. Plan.

f. Estimate.

g. Estimate based on 6 months' production and a planned annual production of 5,487,000 tons.

h. Estimate based on twice 6 months' production of 148,000 tons.

i. Estimate based on twice 6 months' production of 955,300 tons.

j. Estimate based on twice 6 months' production of 1,867,000 tons.

k. Estimate based on twice 6 months' production of 1,110,000 tons.

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Its domestic manufacture, however, is severely limited by the supply of coking coal. East Germany has never been able to fill its own needs for coking coal. In 1937, 3.7 million tons of coking coal were imported, and in 1938, 7.9 million tons were imported. 252/ Since the war, production has increased slowly, and every effort has been made to increase imports. Since East Germany has been isolated from any Western source by the blockade, Czechoslovakia and Poland have become the principal sources of imports of coke and coking coal.

It has been estimated that in 1952 metallurgical coke produced in East Germany represented a 76-percent yield from the input of coal. This is a 0.5-percent increase over the yield of 75.5 percent in 1949 and a 1-percent increase over the yield in 1946. This increase in yield could have been attained either by an improvement in the quality of the coal used or by an improvement in operating methods and coking cycles as the coking capacity was increased. The gain in coking capacity would have resulted from the repairs to war-damaged plants, estimated to have had 30 percent of total prewar capacity. 253/

Gas coke is produced from hard coal in East Germany in approximately 205 gasworks. 254/ Before World War II, there were approximately 228 such plants, but because of war damages and hard coal shortages, the number of plants in operation was reduced to about 177 in 1949. 255/ Imports of coal from Poland and Czechoslovakia facilitated the return to operation of the most important plants, particularly those in Brandenburg and Mecklenburg. Of these plants, 26 are under Zonal administration. 256/ The yield of gas coke from the coal input has been estimated at 67 percent for the years 1947 and 1948 and at 69.5 percent thereafter until 1955, when, it is expected, a yield of 69.7 percent will result from the improved facilities.

Brown-coal coke, or char, is obtained in the low-temperature carbonization process by which the gases and tars are produced for use in the production of synthetic fuels and chemicals. There are at least 11 plants in East Germany: Boehlen, Deuben, Deutzen, Edderitz (Bitterfeld), Espenhain, Groitzschen (Meuselwitz), Hirschfelde (Welzow), Kulkwitz (1953), Nachterstedt, Profen, and Rositz. It has been reported that approximately a 50-percent yield of coke, or char, is obtained for every ton of dry or briquetted brown coal charged. Of this char, only that which is in excess of the consuming capacity of the plants is made available for outside consumption. 257/

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Perhaps the most ambitious undertaking in the Five Year Plan has been the construction of the Lauchhammer brown-coal metallurgical-coke plant. It is believed that this plant has been constructed according to specifications drawn up by Professors Rammler and Bilkenroth of the Freiburg Mining Academy. 258/ The proposed plant was to consist of 20 batteries of coke furnaces, each having 24 chambers. The daily capacity was to be 2,000 tons of coke, an annual capacity of 650,000 tons. The plant is located adjacent to the Lauchhammer briquette plant, VEB Senftenberg.

The primary requirement of the process is a special type of brown-coal briquette known as a fine-grain briquette, which must be low in tar, sulfur, and ash content. 259/ Briquettes of fine-grain texture are needed to obtain a fuel charge with evenly distributed moisture content, which prevents disintegration of the briquettes during coking. After the coking process, the charge is cooled slowly for 16 hours. The techniques involved were perfected at the Delitzsch experimental plant.

The original date of initiation for the Lauchhammer brown-coal metallurgical-coke plant was to have been 1 March 1952, 260/ but because of material shortages, it was delayed until June 1952. 261/ At that time, one oven unit consisting of 4 ovens of 6 coke chambers each was put into operation. In February 1953, another oven unit was completed, and in March a fourth oven was brought into production. During 1953, there were continuous complaints of the inadequacy of the coke thus produced for use in blast furnaces. The primary problem has been insufficient structural hardness of the coke. The result is that the coke crushes and settles under the weight of the iron ore and limestone charge in the blast furnace and thus inhibits the passage of hot air up through the charge. 262/ Another defect of the brown-coal hard coking process has been the failure to obtain an adequate amount of coke of the proper size (over 30 mm) per input of brown-coal briquettes. Experimental use of the Rammler-Bilkenroth method showed a yield of 60 to 85 percent of coke of 30 mm and larger. 263/ Actual practice at Lauchhammer has produced only a 30 percent yield of these sizes, and even that is usable only in conjunction with hard-coal metallurgical coke. 264/

In view of these defects in the method, it is not difficult to understand why there have been rumours of the imminent closing down of the plant. 265/ It is believed, however, that this will

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not actually occur, for the byproduct yield is good, and there have been plans for further development of the tar, oil, and coal-gas potential of the plant. Even though inadequate as metallurgical coke, the brown-coal coke obtained is superior to ordinary brown-coal coke as a fuel. 266/

Before the failure of the process had become apparent, optimistic production plans had been drawn up. Annual production was to range from an initial 300,000 tons in 1952, to 1,200,000 tons in 1955. 267/ Planned production in 1953 was 375,000 tons. By the end of September, however, total deliveries to metallurgical plants had reached only 63,500 tons, and last-quarter deliveries of only 21,000 tons were predicted. 268/

2. Imports.

Metallurgical coke is, apparently, the only grade of coke imported by East Germany. Poland, Czechoslovakia, and the USSR have been the primary external sources of metallurgical coke for East Germany since 1948, and imports have increased since that time. The coke is required to fulfill the plans for the expansion of the East German ferrous metals industry. The plans propose to raise the 1950 production level by 253.6 percent by 1955. 269/ The year of peak imports since World War II was 1950, when 1.7 million tons were obtained from the other Satellites. Polish exports to East Germany showed a decline from 1,074,000 tons in 1950 to 836,000 tons in 1951, probably because of increased Polish domestic requirements. Planned Polish exports to East Germany in 1952 were 800,000 tons. 270/ This decrease in Polish coke did not pass unnoticed by the Germans. Premier Grotewohl wrote to Polish Premier Cyrankiewicz in November 1951 in an effort to speed up delivery and improve the quality of the coke delivered. 271/ Toward the end of 1951, neither the grades nor the quantities of coke delivered had been those specified in the contract. Instead of 90,000 tons from Dolny Slask, only 19,184 were delivered; and instead of 100,000 tons from Gorny Slask, only 62,144 tons were delivered. In addition, the deliveries were so inadequately sorted and the coke was of such poor quality that there was danger of explosions in the blast furnaces.

During the years 1950, 1951, and 1952, East German imports of coke from Czechoslovakia have increased from 348,000 tons in 1951 to a planned amount of 670,000 tons in 1952. 272/ Imports from the USSR have been more or less constant in the past 3 years at about 250,000 tons.

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Planned East German imports of metallurgical coke for 1953 have been reported variously as 1,750,000 tons 273/ and 2,350,000 tons. 274/ In view of actual imports in previous years, it is believed that the smaller figure is the more plausible one. This quantity has been broken down by countries of origin as follows:

	<u>Metric Tons</u>	
Poland	900,000)	
Poland (for USSR)	250,000)	1,150,000
Czechoslovakia	600,000	
Total	<u>1,750,000</u>	

The possibilities of these coke imports actually materializing, however, are somewhat remote. Table 15* gives estimated East German imports of metallurgical coke, by countries of origin, 1947-53. Those estimates are based on a study of day-to-day freight-station traffic over a period of from 6 to 8 months. They indicate a deficit in imports from Poland of 610,000 tons and an overage in imports from Czechoslovakia of 25,000 tons. There are no specific indications as to what part of the Polish coke thus far delivered is on Soviet account, but an estimate of the total deficit, based on available statistics, approaches 600,000 tons.

C. Consumption.

Table 16** gives estimates of the consumption of metallurgical and gas coke as an input requirement for the ferrous metals and calcium carbide industries in East Germany.

The State Planning Commission of the German Democratic Republic publishes an annual plan of production, import, availability, and distribution of all raw materials and sources of energy, including coke. Unfortunately, these plans are broken down by administrative rather than industrial recipients. In the plans, plants of the same industry, but controlled by several administrative units, appear under different allocations. This is particularly true of the production of calcium carbide, of which from 85 to 90 percent is believed to have been a SAG product. The coke requirement

* Table 15 follows on p. 49.

** Table 16 follows on p. 50.

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Table 15

Estimated East German Imports of Metallurgical Coke by Countries of Origin
1947-53

Country	Thousand Metric Tons						
	1947	1948	1949	1950	1951	1952	1953
Czechoslovakia <u>275/</u>	a/	79 b/	404	348	417	670 c/	625 d/
Poland <u>277/</u>	145 e/	297	725	1,074	836	785 f/	540 g/
USSR <u>280/</u>	N.A.	N.A.	102	233	252 h/	207 i/	N.A.
West Germany <u>281/</u>	317 j/	0	0	46	N.A.	0	N.A.
	<u>462</u>	<u>376</u>	<u>1,231</u>	<u>1,701</u>	<u>1,505</u>	<u>1,662</u>	<u>1,165</u>

a. Negligible.

b. Czechoslovak exports to "all Germany" but believed to be to East Germany only.

c. Planned and contracted for delivery; 6-month figure shows no backlog.

d. Estimate based on a known import of 16,950 carloads of coke during the period 1 March to 30 September 1953 through the freight station at Bad Schandau (or 339,000 tons at 20 tons per carload) and an estimated average import of 3,000 carloads during January, February, October, November, and December 1953. 276/

e. Polish exports to "all Germany" but believed to be to East Germany only.

f. Estimate based on delivery of 73.5 percent (588,000 tons) of agreed total of 800,000 tons by 30 September 1953, making an average monthly delivery of 65,000 tons. 278/

g. Estimate based on total deliveries from 1 January to 30 September 1953 of 413,336 tons and an average monthly delivery of 41,666 tons for October, November, and December 1953. The monthly average for the last quarter is considerably lower than those for the first and second quarters: first quarter, 53,776 tons; second quarter, 43,667 tons. It is, however, approximately equal to the third quarter monthly average of 40,335 tons. The monthly import figures show a steady decline from January through September. 279/

h. Plan.

i. Total deliveries through 30 September 1953 were 7,000 tons in excess of plan. It is not believed likely that any further deliveries would have been made, although it is possible there were.

j. Estimate based on total West German exports of coal and coke of 1,577,600 tons broken down on an assumed ratio of 80 percent coal to 20 percent coke. 282/

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Table 16

Estimated Consumption of Coke by the Metallurgical and
Carbide Industries in East Germany a/
1948-51

	Thousand Metric Tons			
	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>
Ferrous Metallurgy				
Pig Iron	b/	(299.0)	(398.0)	(415.0)
Iron Casting	(65.4)	(101.6)	(128.6)	(148.0)
Subtotal	<u>N.A.</u>	<u>400.6</u>	<u>526.6</u>	<u>563.0</u>
Calcium Carbide	247.4	317.4	380.8	407.0
Other Uses	1,260.2 c/	1,867.0 c/	2,336.6 c/	2,237.0 c/
Total Availability	<u>1,573.0</u>	<u>2,585.0</u>	<u>3,244.0</u>	<u>3,207.0</u>

a. These consumption figures are based on the tonnage produced by each industry. The conversion factor for pig iron production is 1.2; for iron castings, 0.2; for calcium carbide, 0.6.

b. Included in "Other Uses."

c. Residual figure.

for the production of calcium carbide in SAG plants would necessarily be included with that of total SAG requirements and would not be included with that of the State Secretariat for Chemicals. Table 17* shows the planned availability of metallurgical, gas, and low-temperature carbonization coke in East Germany for the year 1952, according to official plan. Table 18** shows planned and actual consumption of metallurgical, gas, and low-temperature carbonization coke in East Germany for the first 6 months of 1953.

* Table 17 follows on p. 51.

** Table 18 follows on p. 52.

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Table 17

Planned Availability of Metallurgical, Gas, and Low-Temperature
Carbonization Coke in East Germany 283/
1952

Recipient	Thousand Metric Tons					
	Metallurgical Coke		Gas Coke		Low-Temperature Carbonization Coke	
		Percent of Total		Percent of Total		Percent of Total
State Secretariat for Coal and Energy	19.2	1	288.3	18	515.6	9.0
Ministry for Metallurgy	1,220.0	60	85.2	5	6.9	0.1
State Secretariat for Chemicals	108.6	5	107.5	6	437.6	7.5
SAG's	570.5	27	604.5	37	4,127.0	71.0
Provinces	50.2	2	357.0	22	143.4	2.4
Other	106.6	5	190.3	12	579.0	10.0
Planned Availability	<u>2,075.1</u>	<u>100</u>	<u>1,632.8</u>	<u>100</u>	<u>5,809.5</u>	<u>100.0</u>

V. Coal Gas.A. General.

Before World War II the area which is now East Germany produced a relatively small share of the total coal gas produced in Germany. Of approximately 15 billion cubic meters produced in 1940, only about 1.2 billion were produced in the area now constituting East Germany. There were two basic reasons for this: (1), the concentration of German heavy industry, the largest consumer of coal gas, in the western regions of Germany near sources of coal; and (2), the scarcity in the eastern regions of Germany of coals suitable for the production of gas. In 1948, approximately four-fifths of the distributed gas in West Germany was consumed by trade

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Table 18

Planned and Actual Consumption of Metallurgical, Gas, and
Low-Temperature Carbonization Coke in East Germany 284/
First Six Months of 1953

Recipient	Thousand Metric Tons					
	Metallurgical Coke		Gas Coke		Low-Temperature Carbonization Coke	
	Planned	Actual	Planned	Actual	Planned	Actual
State Secretariat for Coal and Energy	0	0	145	172	341	320
State Secretariat for Metallurgy	715	861	42	114		
State Secretariat for Chemicals	)	41	65	29	934	930
Ministry for Reconstruction	) 60	10	8	25		
Ministry for Light Machine Building	)	10	8	25		
Ministry for Industry	70	49	44	40	24	24
VEB's (former SAG's)	0	0	14	31	143	148
Local Industry	288	123	311	389	1,416	1,440
Trade	25.8	23	185	128	55	51
Other Users	0	0	0	0	21	31
Export	53.2	15	103	28	12	16
	0	0	0	0	14	25
Total	<u>1,212.0</u>	<u>1,123</u>	<u>917</u>	<u>156</u>	<u>2,960</u>	<u>2,985</u>

and industry, whereas in 1947 only an estimated one-third of total gas produced in East Germany was so consumed and the remaining two-thirds went to domestic and governmental users. 285/ By 1950, however, industrial consumption exceeded domestic consumption in East Germany.

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As a result of this large domestic consumption, the pattern of the pre-World War II gas industry in East Germany was one of a great number of small gas plants located close to areas of consumption in the many towns. The size of each gas plant was determined by the size of the town. Until 1947, most of these plants were operated by public authorities as communal undertakings. When the German Democratic Republic was established in 1947, all gasworks were nationalized, except the Grossgaswerk at Boehlen, near Leipzig, which became part of the Soviet SAG Boehlen. Operation of the gasworks has always been controlled by the Main Administrator for Energy of the Ministry for Heavy Industry and by its successors. Gas supply and investment planning have been handled by the State Planning Commission. By 1950, however, the gas plants had not been consolidated in VVB's, as had the plants in other industries, but had been placed under the administration of the pertinent provincial bodies. The only exceptions were the gas plants in the neighborhood of Leipzig, which were joined in the Long-distance Gas Union (Ferngasverband). 286/

Future plans for the coal-gas industry include the establishment of large production installations suitable for the recovery of all byproducts. The long-distance distribution of the gas is to be effected by means of an efficient net paralleling the electric-power grid. These projects are both to be completed by the end of the Five Year Plan in 1955. Because of the extreme shortage of materials such as pipes, sheets (steel plate), machines, appliances, and apparatuses, plan fulfillment is believed improbable. 287/

B. Supply.1. Production.

There are three types of gasworks in East Germany. The most important, in both number and volume of output, are those which use hard coal. In 1947, as in pre-World War II years, there were 228 of these plants in existence, but because of the extremely tight coal supply both in West Germany and in East Germany, only 171 of them were in operation. 288/ War damage and Soviet dismantling were also factors contributing to the shutdown of certain plants. By 1950, in spite of the Western blockade of coal supplies, increased imports from Poland and Czechoslovakia had permitted the reopening of additional gasworks, bringing the total of hard-coal gasworks up to 205. During the war the largest of all of these plants, the

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Grossgaserei Magdeburg-Rothenberg, lost about 50 percent of total installation by bombing and 25 percent through dismantling. By the beginning of 1951, 75 percent of its original capacity was again functioning, and complete restoration and modernization are planned for 1955. 289/ It is not known whether or not it is planned to reconstruct and repair the remaining plants.

In 1950, in addition to the hard-coal gasworks, there were only 4 other installations producing gas in East Germany. Two of these were based on brown coal and 2 were coal cokeries, the August Bebel and Karl Marx works, which produced manufactured gas as a byproduct. 290/ The largest brown-coal gasworks is that at Boehlen, part of SAG Boehlen, which was built according to experience gained in the construction of another and smaller one at Hirschfelde. In 1950 the Boehlen plant produced 169 million cubic meters of gas from pre-dried brown coal. 291/

The production of coal gas in 1949 showed considerable gains over that of 1947. Original planned production for 1950 was 1 billion cubic meters, which was to rise to 1.43 billion cubic meters in 1955. 292/ Production in 1949 actually exceeded plans for 1950 by 51.3 million cubic meters, 293/ and 1950 production surpassed the plan by 397 million cubic meters. 294/ Planned production for 1951, 1952, 1953, 1954, and 1955 indicates an annual increase averaging about 200 million cubic meters. 295/ Actual production in 1951, 1.7 billion cubic meters, 296/ exceeded planned quantities by 161 million cubic meters, but actual production in 1952, the same approximate amount, fell short of plan by 126 million cubic meters. Table 19* shows estimated production of coal gas in East Germany, 1947-55.

2. Imports.

An unknown quantity of coal gas is imported into East Germany at Neustadt from Poland and at Goslar from West Germany.

In 1949 there existed between Czechoslovakia and East Germany a gas-exchange contract whereby equal amounts of gas were to be exported to Czechoslovakia from Markneukirchen (East Germany) and imported from Czechoslovakia at Ebersbach (East Germany). 297/ It is believed that imports are roughly equivalent to exports; hence, production is the same as available supply.

* Table 19 follows on p. 55.

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Table 19

Estimated Production of Coal Gas in East Germany
1947-55.

<u>Year</u>	<u>Million Cubic Meters</u>
	<u>Amount</u>
1947	604.088 <u>298/</u>
1948	808.741 <u>a/</u>
1949	1,051.363 <u>299/</u>
1950 Plan	1,000.000 <u>300/</u>
1950	1,397.400 <u>301/</u>
1951 Plan	1,552.000 <u>302/</u>
1951	1,713.900
1952 Plan	1,896.500
1952	1,770.000
1953 Plan	2,167.500
1953	1,930.400 <u>b/</u>
1954 Plan	2,783.000
1955 Plan	3,009.000

a. Estimate based on one-half of increase between 1947 and 1949.

b. Estimate based on first 6 months' production of 965.2 million cubic meters. 303/

C. Consumption.

Approximately two-thirds of the total available coal gas was consumed by the civilian population of East Germany in 1947. 304/ In 1950, consumption by industry had increased and exceeded domestic use by approximately 10 million cubic meters. 305/ If plans to expand over-all industrial activity in 1955 to 385 percent of 1950 activity are successful, the industrial consumption of coal gas will be double the consumption for household use and will represent two-thirds of the total output. 306/ Since World War II, rationing of household gas has been in effect almost continuously, except for the summer of 1950. Constant difficulties in obtaining adequate supplies of hard coal, coupled with increased industrial consumption, have brought about extreme shortages in the gas supply to the domestic

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consumer. Whenever a shortage threatens, restrictions upon the domestic consumer are inevitable in order that industry may carry on. It is believed that no relaxation of the gas-rationing system was contemplated for the near future. This assumption is supported by the neglect suffered by the gas appliance industry. In 1950, East Germany was far behind the progress of the rest of the world in the production of modern room-heating and refrigeration appliances. 307/ Currently, the gas supply to domestic consumers has been curtailed, and it is even possible that industries not engaged in reparations or vital production are being affected. 308/

VI. Fuelwood.A. General.

The current trend in the administration and organization of fuelwood procurement is toward the Soviet pattern, according to which the timber industry will be state-controlled and self-sufficient. Production of fuelwood (other than that gathered by local producers, peasant farmers, and so forth, for their own use) is a subordinate function of the Forestry Division of the Ministry for Agriculture and Forestry.

The Forestry Service of East Germany was reorganized in 1952. In the new organization, the Ministries for Agriculture and Forestry of the various states control newly created people-owned forestry enterprises (formed from the old District Forestry Offices). Through District Forestry Offices, the forestry enterprises control state and town forests, which are broken up into Forest Control Districts which, in turn, are divided into forest sections and privately owned forests.

The Ministry for Agriculture and Forestry gives the planned fuelwood production quotas to the forestry enterprises. The quotas are then assigned to the District Forestry Offices and to the various forest sections.

All roundwood* produced, including that from privately owned forests, is bought by DHZ-H (Deutsche Handeszentrale-Holz -- German Trade Center-Lumber), and this organization passes it on to consumers. 309/

* The term roundwood includes both fuelwood and lumber logs.

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S-E-C-R-E-TB. Supply.

Fuelwood constitutes approximately one-third of the total East German annual production of roundwood of between 11 and 12 million cubic meters. It is believed, however, that this proportion will decrease in relation to industrial wood production as the total production of roundwood decreases.

War damage and postwar overcutting have depleted timber reserves to such an extent that the East Germans have been forced to restrict timber felling to preserve the forests. ^{310/} Available reports indicate an even greater decrease in fuelwood production with less waste being left in the forests after logging operations and with wood once used for fuel being diverted to other uses.

A continued decline in the production and consumption of fuelwood is believed to have occurred during 1953. Conditions during 1953 may be attributed to the same causes of previous annual post-World War II decreases: more wood to cellulose and wood chemical industries, more lumber obtained from each log (therefore less wastage for fuelwood purposes only), and less wood for household consumption. The provisions of the "New Course" to make added brown-coal briquettes available for space heating in the home imply that there will be no attempt to make greater quantities of fuelwood available.

Table 20* gives the estimated production of fuelwood in East Germany, prewar average and 1946-55.

VII. Capabilities, Vulnerabilities, and Intentions.A. Capabilities.

Annual production of brown coal in East Germany in 1949-52 consistently exceeded planned annual production. During 1949 it became quite obvious that actual production of brown coal would surpass planned production. Accordingly, the original goals for the Two Year Plan, 1949-50, were raised. Even these goals were surpassed by 1.5 and 9.3 million tons. From 1949 through 1952, production of brown coal rose constantly in increasing percentages, and plans were consequently adjusted upward in order to be constantly in advance of production. The effect of the labor unrest in April,

* Table 20 follows on p. 58.

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Table 20

Production of Fuelwood in East Germany
Prewar Average and 1946-55

Million Cubic Meters	
<u>Year</u>	<u>Production</u>
Prewar Average	5.50 <u>311/</u>
1946	9.60
1947	9.20
1948	5.70
1949	4.50 <u>a/</u>
1950	4.00 <u>a/</u>
1951	4.00 <u>a/</u>
1952	3.50 <u>a/</u>
1953	3.25 <u>a/</u>
1954	2.75-3.00 <u>b/</u>
1955	2.50-2.75 <u>b/</u>

a. Estimate.

b. Preliminary estimate.

May, and June of 1953, and the resultant "New Course," cannot easily be assessed. Production of brown coal in 1953 already had started to decline by the end of the first quarter, and possible underfulfillment in that industry during the remainder of the year cannot be attributed directly to any political or high-level economic change in the country. On the contrary, the decline indicates that the capability to increase production up to or beyond the goals set for 1955 is ebbing. The saturation point has been reached in the process of substituting increased labor for increasing equipment needs.

Plans for production of hard coal show a slight annual decrease to 3.1 million tons by 1955. This probably indicates exhaustion of deposits. In 1952 the loss of 400,000 tons of planned production was caused by the removal of one mine from production because of a mine disaster, but it is believed that this mine will return to production in the near future. For this reason, the annual decline in tonnage as planned is considered neither optimistic nor excessively pessimistic.

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The production of brown-coal metallurgical coke is still a problematical achievement. In spite of ambitious plans for the completion of the initial installation at Lauchhammer by June 1952 and a planned production of 565,000 tons of coke by the end of 1952, no actual production has been reported. Structural defects in both the subsurface foundations and the oven batteries have stopped construction to permit correction of faulty plans. It is believed that East German plans for the successful operation of this plant are far too optimistic. It is evident that, in expanding the plans from pilot-plant stage to large-scale-production stage, considerable difficulties have been encountered.

Increased production of briquettes depends entirely upon the ability of East German industry to replace old briquette presses and to add new ones. As stated above, the brown-coal supply will be adequate. Production of briquettes during 1950 and 1951 showed a small but steady annual increase. Production in 1949 and 1950 even exceeded plan. In 1951 and 1952, the rate of increase in the production of briquettes decreased, and, if the lag in annual production continues, there is little chance that the 1955 goals will be attained. It is believed that the failure to meet planned production in 1952 resulted partly from the gradual deterioration of briquette machinery, most of which is of prewar vintage and of West German manufacture. The establishment of an industry producing briquette presses cannot be determined, but without new presses the production plans cannot be fulfilled.

The attainment of all goals in the production of coal gas is foreseen. It is believed that, because of the shortage of such structural materials as pipes and steel plate, the plans for the construction of new gas works will encounter difficulties.

Production of fuelwood will probably decrease as planned, but if the winter of 1953-54 is any indication of future conditions, the civilian population will attempt to continue the private and "illegal" gathering of fuelwood whenever the distribution of other solid fuels fails.

B. Vulnerabilities.

The basic weakness of the East German economy is its almost 100-percent dependence on an inferior and inefficient grade of coal. The ramifications of this dependence extend into the liquid-fuel supply, of which 75 to 80 percent is obtained by synthesis from this

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very coal. The railroad industry is likewise dependent in that almost 100 percent of all freight moved is hauled by coal-fired engines. Furthermore, according to the East German Premier, Otto Grotewohl, "the chemical industry is dependent on lignite (brown coal)." 312/

A serious disadvantage to the East German metallurgical industry is the lack of both domestically produced and imported metallurgical coke. The only plants producing it are of pre-World War II origin and are of limited capacity. The result is an almost complete dependence upon imported coke, which comes largely from Poland and Czechoslovakia. Since these countries, in common with the rest of the European Satellites, are hard pressed to meet their own needs, East Germany's requirements constitute an additional strain on an already tight Bloc-supply position.

Planned expansion in the production of solid fuels and coal gas is a vulnerability in that it can be accomplished only with adequate supplies of a variety of machinery, large and small, and of sufficient spare parts, and with the manufacture of steel plate, nuts, and bolts.

The production of coal can be seriously curtailed by any means which cause a stoppage of electric power, a persistent interruption of rail movement, or a distraction of the labor force. These means may include sabotage or psychological warfare.

C. Intentions.

The objectives of the First Five Year Plan for East Germany are to increase the production of brown coal to 225 million tons by 1955, 63.6 percent above 1950 production, and to increase the production of brown-coal briquettes to 56.0 million tons, 45 percent above 1950 production. These increments are to be achieved by development of additional installations, some of which were to be completed by 1952. The remainder were to be constructed throughout the duration of the Five Year Plan and through 1957. Included in the planned development is the enlargement of 22 already existing mines, the reconstruction of 8 installations (presumably destroyed during the war), the opening of 13 new brown-coal mines, and new construction, repair, and enlargement involving 34 briquette plants.

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Production of hard coal shows a planned gradual decrease from 1952. Because of the approaching exhaustion of the hard-coal seams, expansion of the hard-coal industry apparently is not possible. Plans have been made to hold production as high as possible by sinking two new shafts by 1952 (unconfined) and by installing urgently needed safety equipment and improving operating procedures. Because of the gradual exhaustion of indigenous hard-coal supplies, no significant expansion is planned in the hard-coal coking plants.

Great expansion is planned in the manufacture of brown-coal coke, both of the metallurgical and low-temperature types. The production of the former is predicated upon the growing requirements of the metallurgical industry and the increasing difficulty in obtaining hard-coal coke, both by import and by domestic production. The expansion of the low-temperature carbonization industry will make available increased quantities of products such as tars and gases, which are vitally important to all industry -- particularly to the chemical industry.

A gradual increase in the production of coal gas by about 100 million cubic meters a year was included in the Five Year Plan. Continuous rationing of household gas implies that although the goals have been surpassed annually during the past 2 years, the installed capacity of the plants is not adequate. It is planned to construct new and larger installations, but details are not known.

The production of fuelwood is expected to decrease primarily in the percentage of total wood felled it represents. Methods used in obtaining this goal are to consist mainly of better logging practices. Probably the greatest cause for the reduction is the seriously depleted condition of the German forests, which were damaged by war and postwar overcutting.

Planned increases in the production of coals, gas, and other solid fuels, although not directly indicative of warlike intentions, are absolute prerequisites, nevertheless, for the achievement of industrial expansion, a possible indicator of such intentions.

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APPENDIX A

COAL DEPOSITS IN EAST GERMANYI. Hard Coal. 313/

The hard-coal deposits of East Germany are located in the Erzgebirge region of the Sachsen Basin. In order of importance and quantity of reserves, the principal areas are the Zwickau, the Lugau-Oelsnitz, and the Freital Basins.

The Zwickau Basin is located about 60 miles west-southwest of Dresden and underlies an area of about 20 square kilometers. The coal-bearing strata are about 400 meters thick and contain about 11 coal beds, which average 2 or more meters in thickness. The principal bed ranges from 6 to 15 meters in thickness. The economical mining of this deposit is limited by an extreme condition of faulting. The coal mined in Zwickau is known as Gasflammkohle, a high-volatile bituminous coal, some of which is good coking coal.

The Lugau-Oelsnitz Basin is 40 miles west-southwest of Dresden and underlies an area of about 20 square kilometers. There are 8 coal seams of an average thickness of 12 meters in an over-all formation 150 meters thick. The seams are intermixed and are quite irregular in thickness. The productive area is limited by frequent geological faults. The type of coal mined in this area is a Gasflammkohle which is similar to that found in Zwickau but yields a smaller proportion of coking coal. In 1951 the reserves of this basin were officially estimated to be 10,384,000 tons, 314/ and it is believed that this deposit also will be exhausted by 1960.

The Freital Basin, about 4 miles southwest of Dresden, is a productive area of not more than 25 square kilometers. The coal seam being exploited at present averages from 2 to 4 meters in thickness, occasionally becoming as thick as 9 meters. Below this seam, there are believed to be 3 to 6 other beds, regarded as unworkable. The faulting in this basin is not as frequent as in the Zwickau and Lugau-Oelsnitz Basins; there is but one major fault. The quality of Freital coal is superior to that of the coal of other basins and is almost all good coking coal. In 1951, reserves in this basin were estimated at only 173,000 tons, 315/ and it is believed that the areas presently under exploitation are nearing exhaustion. A new shaft is presently being sunk in the vicinity at Gittersee, where reserves were estimated in 1951 at 330,000 tons. 316/

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A new coal deposit is currently being developed northeast of the lower Saxony hard-coal basin, in the vicinity of Doberlug-Kirchhain, in the province of Brandenburg. As yet, there have been few reports on the nature of this coal. A report obtained in 1949 gives what is considered a rather optimistic view of conditions and claims the following: reserves of 65 million tons composed of coal strata from 60 centimeters to 2 meters in thickness and from 7.5 to 8 kilometers in length. 317/ Another report claims that only poor-quality coal was discovered, and that the high extraction cost (118 DME per ton) would make mining impracticable. Additional problems are caused by the necessity of freezing the 160-meter overburden because of its high water content, in order to sink a shaft. 318/

II. Brown Coal. 319/

The three brown-coal producing areas in East Germany, in order of importance of reserves, are the Lausitz Field, the Thuringen-Sachsen Field, and the Braunschweig-Magdeburg Field.

The Lausitz Field is composed of the Senftenberg, Forst, and Goerlitz Districts. The Senftenberg District, most important of the three, has 2 coal seams, an upper and a lower, which lie from 30 to 60 meters apart. The upper bed is from 5 to 45 meters below the surface. The lower seam averages 12 meters in thickness and the upper seam, about 22 meters. In the Forst District there are also 2 seams, of which only the upper bed (13 meters thick) is worked. The overburden on this seam consists of 23 meters of sand and clay. The Goerlitz District has a main seam of from 40 to 50 meters in thickness below an overburden of 25 meters.

The qualities of the coals in the Lausitz Field range from those with a moisture content of 46 percent and a heat value of 2,500 kilocalories per kilogram to those with a moisture content of 58 percent and a heat value of 1,800 kilocalories per kilogram. Almost all coal from the Senftenberg and Goerlitz Districts is made into briquettes in order to lower the moisture content. The self-binding bitumen content of the coal facilitates this process by eliminating the necessity for any additional binding material. Coal from the Forst District is very soft and friable, is very low in bitumens, and is used largely in its raw state.

In 1947 the Lausitz Field contained approximately half the brown-coal reserves of East Germany.

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The Braunschweig-Magdeburg Field is part of the central German brown-coal region. Overburden in this region ranges from 40 to 80 meters in depth. The coal has a moisture content of from 45 to 47 percent and a heating value of from 2,800 to 2,850 kilocalories per kilogram. It is used chiefly in the manufacture of briquettes. The region includes several isolated producing districts, of which the most important are the Oschersleben, the Egelstassfurt, and the Nachterstedt-Aschersleben. These districts lie in a southeast-northwest line and are roughly 25 kilometers from Magdeburg at their southern tips. The Oschersleben District is 7 kilometers wide and consists of 2 upper beds. To the west of the fault the upper bed is 15 to 26 meters thick, and the lower is 10 to 15 meters thick; to the east the upper is 3 to 6 meters thick, and the lower is 12 to 20 meters thick. The structure of the Egelstassfurt District is similar to, and a continuation of, the Oschersleben District. It has one group of coal beds, of which only the uppermost, which is from 6 to 20 meters thick, is workable. The Nachterstedt-Aschersleben District is located about 15 kilometers southwest of, and roughly parallel to, the Oschersleben and Egelstassfurt Districts. It has coal beds which are as great as 53 meters in thickness in the northern sections and are divided by shale and clay in the southern sections.

The Thuringen-Sachsen Field is located around the cities of Halle and Leipzig and consists of 7 districts, the most important of which are the Weissenfels-Zeitz, the Meuselwitz-Rositz, and the Northwest Sachsen Districts. The Weissenfels-Zeitz District is located about 20 kilometers southwest of Leipzig and consists of the southwest section of the entire Thuringen-Sachsen Field. There is only 1 seam, which is 1 to 20 meters thick and has an average thickness of about 12 meters. The Meuselwitz-Rositz District is about 20 kilometers directly south of Leipzig in the vicinity of Altenburg. The only workable seam is from 10 to 20 meters in thickness, and the overburden ranges from 3 to 80 meters in depth. The Northwest Sachsen District is directly north of and contiguous to the Meuselwitz-Rositz District. The production center is Borna, a city about 20 kilometers south of Leipzig. There are 2 main seams of which the lower is the more important. At the center of the district, it has a thickness of 12 to 14 meters. The seam slopes downward in a northerly direction from Borna, where the overburden is 15 to 19 meters thick, to Leipzig, where it is 83 meters thick. The important characteristic of the coal from these areas is the resinous* component, which makes

* Given in source as "pyropisite," an Americanization of Pyropissit, meaning Wachskohle (wax coal).

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the coal particularly suitable for the production of liquid fuels and waxes by means of the low-temperature carbonization process. Moisture content of these coals is about 54 percent, and heat values range from 2,475 to 2,700 kilocalories per kilogram.

The other four districts of the Thuringen-Sachsen Field are known as the Koethen, Geiseltal, Halle-Leipzig, and Bitterfeld Districts. They are located to the north and to the west of Leipzig. The Bitterfeld District is believed to be a continuation of the East German coal basin. The remaining districts range in size from the unknown size of the Bitterfeld District to the size of the Geiseltal District, which is only 4 by 12 kilometers. There are many seams in these districts, some from 20 to 100 meters thick, as at Geiseltal, and others from 6 to 15 meters thick, as at Bitterfeld. The moisture content of these coals ranges from as low as 46 percent in the Koethen coal to 53.5 percent in the Geiseltal coal, which have values of 3,000 and 2,266 kilocalories per kilogram, respectively. Coal from the Halle-Leipzig District, particularly from the Oberroeblingen area, is very rich in bitumen (11 to 23 percent) and is used in the synthetic fuel industry.

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APPENDIX B

TECHNOLOGY 320/I. Underground Mining.

All hard coal mined in the Sachsen coal fields is obtained by underground mining methods. As in the West German coal fields, the longwall mining technique is used. Because of the faulted and broken conditions of the coal veins, heavy timbering of the entries and rooms and extensive use of backfill are required.

The most recent estimates of the type and quantity of equipment used in the Sachsen coal basin are dated 1938. At that time, 14.6 percent of production was obtained by the use of cutting machines, 75.2 percent by pneumatic hammers, 3.4 percent by manual pick axes, and 6.8 percent by blasting. In all, 2,941 pieces of mining equipment were in use, only 23 of which were electrically powered. In 1938, 28,884 meters of conveying facilities were installed, including shaker, rubber belt, steel link, and scraper types.

During and after World War II, very little additional equipment was installed in these mines, and operating conditions have steadily deteriorated. According to the annual report of the hard-coal industry in 1950, there were, in addition to the shortage of labor, five main causes of production failure. The first is inherent in the faulted and disturbed nature of the strata, which promotes floor upheaval and roof collapse. All other deterrents to production are in some way connected with aging equipment: for example, 5 instances of power stoppage; 5 instances of conveyor breakdown; 3 accidents, of which 2 were fires; and 11 instances of failure resulting from the deterioration of equipment, particularly hauling ropes and cables. Although the supply of materials was better in 1950 than in 1949, there were still serious shortages. Hoisting cable was in short supply because the rope wire of which it is made had always been obtained from West Germany. Pneumatic stowing pipes for the placement of backfill were scarce. Particularly serious was the shortage of electric cable, especially heavily insulated trench cable, the lack of which had already led to several accidents. Pneumatic hammers and pick hammer tips, which formerly came from West Germany and which were shipped in surplus to the Wismut uranium

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installation, were difficult to obtain. 321/ Explosives are about the only item in which there has been no curtailment of supply, and the excessive use of these, following Polish techniques introduced by Soviet experts, has had adverse effects. 322/

Underground mining of brown coal is much the same as that of hard coal. The major difference is the comparative safety of mining brown coal. In the brown coal mines there is little coal dust and few gases. In 1940 it was estimated that 7 percent of all brown coal in all Germany was obtained from shaft installations. In 1951 it was estimated that only 5 percent of East German brown coal was produced by underground mining methods.

II. Strip Mining.

The production of brown coal by strip mining has been increasing since 1924. The biggest increase came in 1937, when the 1936 production total was surpassed by 16 million tons. In 1951 it was estimated that 95 percent of the brown coal produced in East Germany was obtained by strip mining. The principal determining factor in the selection of this method instead of shaft mining has been the ratio of coal to overburden. Generally it has not been considered economical to remove more than 2.5 feet of overburden for every foot of coal thickness. In some cases, however, the ratio has been increased to as much as 5 to 1.

The equipment used in open-pit mining is extremely large and includes traveling rigs, conveyor bridges spanning distances of 300 meters, bucket and shovel dredges, and excavators capable of moving up to 2,600 cubic meters of overburden or coal per hour. Some equipment is designed to operate from the surface and drag the coal to the top for loading, and some is designed to work in the pit and scrape the coal to the bottom. In order to allow the exposed coal to dry before excavation, it is necessary to keep the resulting pit free of water, and in some areas considerable pumping equipment is required.

Before World War II, brown-coal operations in the present East German Zone were well mechanized, but immediately following the war a great deal of the most important production equipment was dismantled or destroyed. An estimate based on available reports indicates that the excavating equipment, reportedly all modern, at a total of 21 different mines was totally dismantled or destroyed. Ten of these

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mines were in the Senftenberg District of the Lausitz Coal Field and all but one of the remainder were in the Thuringen-Sachsen Coal Field. 323/ The exact condition of the remaining equipment is not known.

III. Mining Equipment and Machinery.

Little is known about the domestic manufacture of mining equipment and machinery in East Germany, but it is known that equipment and machinery has been imported from the West and from the USSR since World War II. The administrative division of the State Secretariat for Coal and Energy, which is in charge of mining machinery, is known as VVB GESKO (the Federation of People-Owned Enterprises for the Construction of Equipment and Shaft Installations for the Coal Industry). The following plants are controlled by this organization (VVB GESKO):

Lauchhammer Excavator Plant 234/
 Goerlitz Machine Plant 325/
 Dresden Electrical Plant
 Grossenhain Steam Hammer Plant
 Boesdorf Chilled Castings Plant
 Ruhland Iron Works
 Nordhausen Mining Equipment Plant 326/
 Senftenberg Iron Works
 Wetterzeube Steel Plant
 Zerbst Screw Plant
 Niederwuerschnitz Iron Foundry and Machine Plant
 Ballenstedt/Harz Rubber and Cable Plant.

Other plants which produce equipment for the coal industry but are segments of the **Heavy** Machine Industry are 327/:

VEB Koethen

VEB ABUS (Ausruestung von Bergbau und Schwerindustrie --
 Mining and Heavy Industrial Machinery) -- Wildau
 Heavy Machine Plant

VEB ABUS - Leipzig Steel Construction Plant

SAG AMO - Zemag, Zeitz; Brown Coal Mine and Briquette plant
 equipment for SAG installations only.

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Other mining machinery equipment plants scheduled for activation in order to meet Five Year Plan goals were listed in 1951 at Eberswald (crane plant), Gotha (car plant), Leipzig (steel plant), Magdeburg, Wolf-Buckau (machine plant), SAG Krupp-Gruson (machine plant), SAG Mackensen (machine plant), and SAG Zeitz (iron foundry and machine plant). 328/ In the first quarter of 1950, GESKO did not meet its targets, because of lack of steel plate for repairs and steel for casting. 329/ The Five Year Plan requires the 14 subsidiary mining machinery plants 330/ to produce 36 bucket-conveyor excavators, 67 shovel and bucket dredgers, 15 separators, and 5 conveying bridges.

An urgent need also exists for mine cars. 331/ It appears that the shortage of raw materials will seriously limit production of them. 332/ Recent reports indicate the manufacture of 1 excavator, reportedly the largest in the world, now being assembled in the Bitterfeld lignite field 333/ and 4 cutter-loaders for Zwickau. 334/ SAG Blankenburg and VEB (Volkseigener Betrieb -- People-Owned Enterprise) Ballenstedt were reported to have started production of rubber conveyor belts early in 1952. 335/

Numerous attempts have been made to acquire mining equipment from Czechoslovakia, the USSR, and Poland, as well as from West Germany. Up to the present time, imports from the USSR have consisted of 3 digger-loaders, 1 of which was displayed at the Leipzig Fair in 1951, 336/ and 5 scraper-conveyors. 337/ All but the digger-loader displayed at the Fair were reported as part of a third shipment to East Germany from the USSR. The contents of the first and second shipment are not known. In December 1952, drilling and urgently needed ventilating equipment was received at Zwickau from the USSR. 338/

Imports from West Germany have not been extensive. During 1949 or 1950, 300 pneumatic coal hammers of the type Korfman, Friko 80K were obtained from the West, 339/ and 82.3 percent of all hard coal was produced by these implements in 1950. 340/ Since then deliveries have stopped, except for what is obtained through illegal channels. During 1950 there was established a reserve fund for the purchase of Western equipment. This fund consisted of the sale value of 20,000 tons of brown-coal briquettes -- 560,000 to 580,000 DM(W) -- plus 1,015,000 DM(W).

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S-E-C-R-E-TIV. Fuel Briquettes.

The manufacture of fuel briquettes originated in Germany in 1861. In the beginning the process was applied solely to bituminous-coal dust which was mixed with coal-tar pitch and then pressed into briquettes. The finished briquettes were of 2 sizes, 1 weighing about 50 grams and the other about 500 grams. The briquetting of brown coal was introduced in Germany at a somewhat later date.

In modern practice, there are four steps involved in the manufacture of bituminous-coal briquettes, and they are usually accomplished by the same unit driven by the same motor. The coal fines and the coal-tar pitch, in cold crushed form, are mixed intimately and kneaded for not less than 6 minutes at a temperature between 20 to 25 degrees centigrade. The mixture, now the consistency of paste, is then cooled in a conditioner at a temperature of 5 to 6 degrees centigrade and distributed to the presses for molding. The 2 German types of presses are the roll press and the hydraulic press. The latter has an hourly capacity of 4 to 20 tons of briquettes. The roll press may be either the single-mold or double-mold roll type with capacities of 10 to 40 and 20 to 80 tons per hour, respectively. The duration of compression is about 0.1 second in a double-mold roll press and 0.4 second in a hydraulic press.

The first press for the manufacture of brown-coal briquettes was of a ram type and was known as the "Exter," after its inventor. Some 20 years ago the Krupp and Lurgi firm developed a new type, known as the ring-roll press.

The procedure in the manufacture of brown-coal briquettes differs in three ways from that of bituminous coal briquettes: the raw brown coal must be crushed to a uniform size, the crushed high-moisture-content coal must be carefully and quickly dried before entering the briquette presses, and no binding material is required in the production of brown-coal briquettes. At an early date in the technological development of the briquetting process, it was realized that the uniformity of the size of the brown-coal particles which entered the presses was the factor which ultimately determined the firmness of the briquette. If there is a combination of particles of various sizes in the briquette mixture, the drying process is not uniform and the bigger pieces retain moisture, which later promotes the crumbling of the briquettes. The smaller the grain of coal the more exactly the drying process can be controlled.

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Until recent years the acceptable size for coal grains was from 4 to 6 millimeters. In the past 2 years, East German coal research groups have developed a briquette called Feinkornbrikette (fine-grain briquette), which is made from coal ground to 1-millimeter particles. This is claimed to be a more efficient fuel and to have a harder structure than the previously developed types. Because of this last characteristic, the East German mining engineer, Professor Bilkenroth, believes it to be a suitable raw material for the production of a brown-coal metallurgical coke.

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APPENDIX C

LABOR

Statistics of the employment and productivity of the mining industry in East Germany are not based on a uniform method of collection and, therefore, present a problem in any attempt to prepare a rational statement. Table 21* gives the apparent growth in size of the labor force in both the brown-coal and hard-coal industries and their affiliated installations.

In the VVB coal industry, which includes all hard-coal mining and about 70 percent of the brown-coal mining (based on 1951 production figures for VVB and SAG groups, 342/ there has been a constant effort to increase the mining personnel. In the hard-coal mines there was a particularly serious shortage of skilled and technical workers in 1950, 343/ and the general tightness of the labor supply was the greatest limiting factor in the hard-coal mines in that year. During 1950 a labor turnover of about 25 percent, also limited the over-all productivity in the mines. Maintaining an adequate labor force in the brown-coal mines has not been as much of a problem, because the working conditions are less hazardous, and women may be employed in this work.

Currently, the hard-coal mines are operating on 3 shifts of 8 hours each a day, on a 6-day week basis. 344/ Overtime is demanded constantly, and in 1949, 24 out of 52 Sundays were worked. 345/ Productivity on this basis is reportedly 0.5 tons, presumably per man-day, including all employees. 346/ Similar information concerning the brown-coal industry is not available.

Efforts to increase the number of employees in all types of mining have taken various forms: wage increases, youth recruitment, employment of women, establishment of prizes, honorary titles, premiums, wage collectives, and admission of convict labor. Even before World War II the hard-coal industry had the lowest wage scale in Germany, and, until the Miners' Decree of 10 August 1950, the situation was unremedied.

* Table 21 follows on p. 74.

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Table 21

Number of Employees in the East German Coal Industry
1937, 1949, 1950

<u>Industry</u>	<u>1937 347/</u>	<u>1949 348/</u>	<u>1950 349/</u>
Hard Coal			
Laborers	10,950 a/	N.A.	19,631
Others	4,050 b/	N.A.	1,421
Total	<u>15,000</u>	<u>20,761</u>	<u>21,052</u>
Brown Coal			
VVB c/			
Laborers	c/	N.A.	73,646 351/
Technicians	c/	N.A.	3,875
Administrative	c/	N.A.	3,578
Total		<u>77,201</u>	<u>81,099</u>
SAG c/			
	c/	40,000 d/	40,000 d/
Total	<u>64,466</u>	<u>117,201</u>	<u>121,099</u>

a. In 1935, underground workers constituted 73 percent of the total hard-coal labor force. 350/

b. Residual figure.

c. Before World War II, there was no division of the brown-coal industry into VVB and SAG components; likewise no breakdown of the labor force is available for this year.

d. It is estimated that 40,000 persons were employed in SAG enterprises in 1950 and the same figure is believed valid for 1949. 352/

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Before the increases in hourly wage rates stipulated in the Miners' Decree, wages for mine laborers were, on the average, 30 percent lower than the average in the metallurgical industry. The highest paid worker in the mining industry, a hewer, made a salary 12 percent lower than the highest paid worker in metallurgy. 353/ At that time, the hourly wage of all six wage groups, both technical and administrative, in both brown-coal and hard-coal mining industries, was 2.50 DM(E). 354/ After the change the average hourly wage had increased to 2.80 DM(E). It is difficult to come to any estimate of the actual average daily wage in the East German coal industry because it is not known how many laborers constitute each wage group. 355/ In any case, it is apparent that the wage increases were not sufficient, for new increases, planned for 1953, were expected to reach a total of 7.4 percent above wages in 1952. 356/

Payment in the future will be increasingly determined by work norms on a piecework basis. The meaning of piecework in this context is somewhat different from that usually given; it applies to the part of the norm achieved by the worker. Work norms are to be set up for every aspect of the mining process. Each miner will receive the established wage when the norm is achieved. If he fails, he will be paid proportionately less; if he surpasses the norm, presumably, he will be eligible for a bonus, a premium, and so forth. 357/ During the first half of 1953, norms suddenly assumed increased importance because of the serious underfulfillment of planned production in the first quarter. In brown-coal enterprises this amounted to an underproduction of 6 million tons, about 1/6 of the planned quantity. The result of this underproduction was a decree raising production norms by 6 percent in the hard-coal industry and by 5 percent in the brown-coal industry. 358/ In response to the June strikes and general unrest, these norm increases were immediately rescinded. 359/ A six months' production fulfillment drive, however, was waged during the last half of the year.

Attempts to increase the labor force have also involved the enlistment of women and youths. For many years women have been employed in the surface installations of the German mines, specifically in the capacity of coal washers and sorters. Recent developments have indicated that women are to be employed underground, at the face. Within the Five Year Plan, the employment of women is to be increased 32 percent, and the training of women apprentices is to be doubled. 360/ The Miners' Decree stated that 2,000 new miners were to be employed by the end of 1950 and an

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additional 2,000 during 1951. 361/ It is believed that drafting and impressing were the only ways in which these goals could be met.

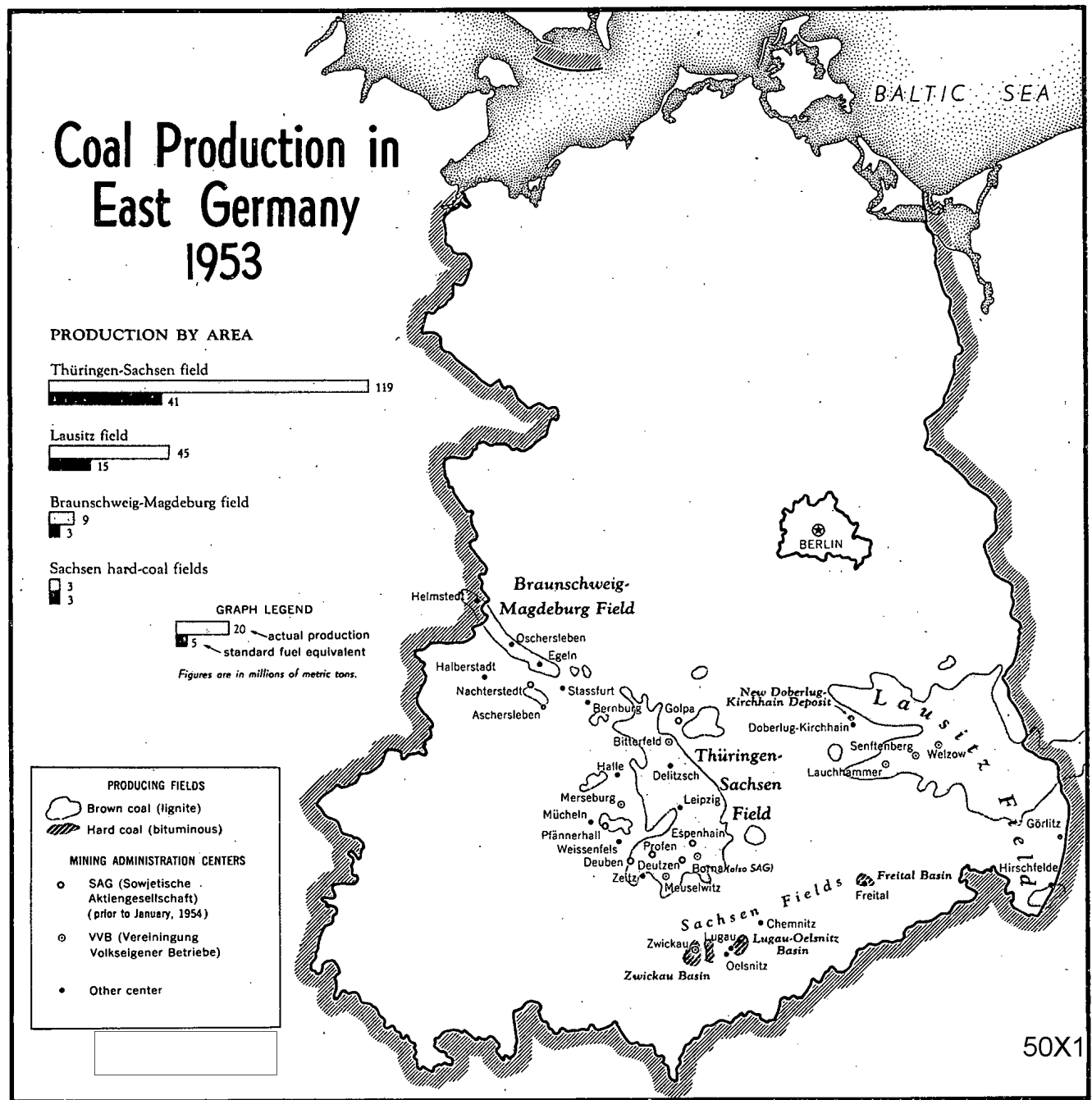
Another aspect of the drive to increase the employment in the mining industry was the establishment of bonuses, premiums, and honorary titles and badges, to be awarded on the basis of seniority, continuity of service, and productivity. Bonuses and premiums were to be awarded not on the basis of individual achievement, but -- after the establishment of collective wage groups -- on the basis of the collective achievements of the group. The mutual supervision and criticism thus encouraged is believed to increase the will to produce. Titles such as Outstanding Miner and Master Hewer have also been introduced, the first bringing a tax exemption of 10,000 DM(W) and the second of 1,000 DM(W) per year. 362/

A tacit admission that all efforts to swell the labor force in the mining industry have failed may be found in the Decree issued by the Ministry of the Interior and Justice in September 1952, which permits the use of convict labor in "health-impairing" industries, including hard-coal mining. 363/

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