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PROVISIONAL INTELLIGENCE REPORT

SOLID FUELS AND COAL GAS  
IN THE SOVIET ZONE OF AUSTRIA

CIA/RR PR-67

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SOLID FUELS AND COAL GAS IN THE SOVIET ZONE OF AUSTRIA\*

Summary

Solid fuels are only a minor source of primary energy in the Soviet Zone of Austria. The zone is dependent, however, on the importation of "hard" coal, primarily because of the lack of domestically produced coal suitable for coking at the municipal gas plant in Vienna (Vienna Gasworks).

Total production of coal in 1953 in the Soviet Zone of Austria was about 560,000 tons,\*\*\* of which 160,000 tons were bituminous and about 400,000 tons were brown coal. The substitution of liquid fuels and natural gas for solid fuels has resulted in a decrease in the production of solid fuels, excluding fuelwood, since 1951. During the same period, imports of all solid fuels, excluding fuelwood, declined about 14 percent. In 1953, imports of solid fuels were five times as great as indigenous production of both "hard" coal and brown coal.

Reserves of coal in the Soviet Zone of Austria are limited both qualitatively and quantitatively. Bituminous coal reserves are estimated at 1.8 million tons and brown coal reserves at 137 million tons. Both bituminous coal and brown coal are low in quality when compared to US coals, and the brown coal has an additional deficiency in that it is difficult to stockpile.

The generally small size of the individual coal deposits and their geological conditions have caused a low level of technology. There is no use of modern machines such as units that combine extraction and loading of coal. In 1952 the total labor force engaged in the coal mining industry was about 2,600, with about 2,450 engaged in actual mining operations. Productivity in deep mines and in strip mines is very low, less than one-third of the deep-mining rate in the UK and West Germany and little more than one-fifth of the strip-mining rate in the US.

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

\*\* For the purposes of this report, the term "hard" coal means anthracite or bituminous coal.

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

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Fuel briquettes are of minor importance and are made from imported solid fuels. There is no known production of brown coal briquettes, although there is a large demand for imported brown coal briquettes for household uses. When coal supplies were low in the immediate postwar period, the timber stands were overcut beyond the rate of annual growth, and additional fuelwood was imported from the US Zone of Austria. Recent data indicate that overcutting is still prevalent. Fuelwood is a greater source of primary energy than coal at this time.

No metallurgical coke plants exist in the Soviet Zone of Austria, and the coke that is produced is a byproduct from the manufacture of gas, mainly from the Vienna municipal gas plant. Zonal demands for metallurgical coke are small and are satisfied by imports and by the relatively small part of the indigenous coke that meets metallurgical or foundry standards. The bulk of the coke is used for domestic heating. Imported hard coal is necessary for making coke and coal gas because indigenous coals are not suitable.

The bulk of the coal gas produced in the Soviet Zone of Austria is made at the municipal gas plant in Vienna; in 1952 this plant produced more than 288.5 million cubic meters, about 97 percent of all coal gas made in the Soviet Zone. Production of coal gas has declined in recent years because of the increased use of natural gas, which is blended with coal gas. There are limitations, however, on the replacement of coal gas by natural gas.

Present equipment using gas has probably reached the limit of maximum utilization of natural gas in a blended gas mixture. Complete cessation of coal gas production would require a minor but expensive change in the equipment now in use. Consequently, it is believed that the present output of coal gas will continue, as no intention to convert or change present equipment is indicated, and it is not known whether the Soviet authorities will continue to make the natural gas available. Most of the coal gas is and will continue to be used for domestic purposes.

Two of the larger brown coal mines are nationalized, and almost all of the zonal production of bituminous coal, fuel oil, and natural gas is controlled by the USSR.



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Expansion of the coal industry is improbable, because of the abundance of fuel oil and natural gas. On the other hand, consumers are reluctant to convert to oil and gas exclusively, as such a move would put their fuel supply at the mercy of the Soviet authorities. Therefore it is believed that the coal industry will continue at about its 1953 rate. Bituminous production may decline even more, but brown coal mining probably will increase to compensate for the decrease in bituminous coal production. Fuelwood production will probably decline in order to permit forests to recuperate from overcutting. Other solid fuels are being replaced by fuel oil and natural gas, but additional replacement beyond the present level is not believed probable.

The chief vulnerability of the Soviet Zone of Austria is the necessity for importing bituminous coal, particularly for the gas plant in Vienna. Interruptions or stoppages of this flow of imported coal would vitally affect the Vienna area. Other users, such as railroads and industry, are less dependent on imported coal. Self-sufficiency in solid fuels could be achieved by further conversion to fuel oils and natural gas, but such a process would only exchange the present vulnerability of dependence on imported coal for one of dependence on Soviet-controlled fuel oil and natural gas.

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I. Introduction.

The importance of solid fuels as a source of primary energy within the Soviet Zone of Austria was relatively small in 1948 and has declined since. The increased use of oil and natural gas, the development of hydroelectric power in the Western Zone, and the increased electrification of the railroads have all contributed to less dependence on solid fuels.\* In the primary energy balance, coal has declined 50 percent in its share of the zonal total from 1950 to 1953 (10.8 percent in 1950 and 5.4 percent in 1953). Details of the primary energy balance are given in Appendix A, Table 23. It is estimated that in 1953 bituminous coal production declined about 13.5 percent and brown coal about 11 percent compared with 1952. Since 1951 the amount of coal imported has declined, although the Soviet Zone is still a net

\* See Figure 1, following p. 4 ; and Figure 2, following p. 8.

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importer of coal. Both imports and production have decreased because of the displacement of coal by oil and natural gas. These facts present a bleak future for coal as long as the USSR continues to release indigenous oil and gas at the present rates. Other solid fuels such as coke and fuel briquettes are of secondary importance. Coke production is a byproduct of coal gas, and, if the municipal gas plant at Vienna should change completely to natural gas, coke production would virtually cease. Fuelwood supplies more energy than indigenous coal, and its production increased slightly in 1953 over that of 1952.

This report is limited to solid fuels\* and gas manufactured from coal. Any discussion of economic trends, however, will inevitably cause some mention of nonsolid fuels such as oil and natural gas. Discussion is confined as much as possible to the years since World War II, although prewar data are occasionally included for comparative purposes.

II. Coal.

A. General.

The region near Gruenbach am Schneeberge\*\* in the Soviet Zone of Austria historically has produced most of the bituminous coal mined in Austria up to the present time. Its production plus that from a few other small mines in the Soviet Zone has comprised about 95 percent of total Austrian output of bituminous coal since the end of World War II. Brown coal also is mined, but the output of the Soviet Zone has accounted for only about 10 percent of the national total in recent years. A better variety of brown coal called Glanz, roughly equivalent to US subbituminous, occurs in Austria, but its production is insignificant in the Soviet Zone. As far as is known, neither anthracite nor bituminous coking coal occurs in Austria. Despite its resemblance to US medium-volatile bituminous coal, the Gruenbach coal is specifically shown as noncoking in all sources that refer to its coking properties. In this respect the coal at Gruenbach apparently resembles the Ruhr Halbfettkohle or Esskohle coals, the latter definitely being noncoking and noncaking. 1/\*\*

\* Peat, oil shale, and charcoal are excluded from this report owing to the lack of information on them.

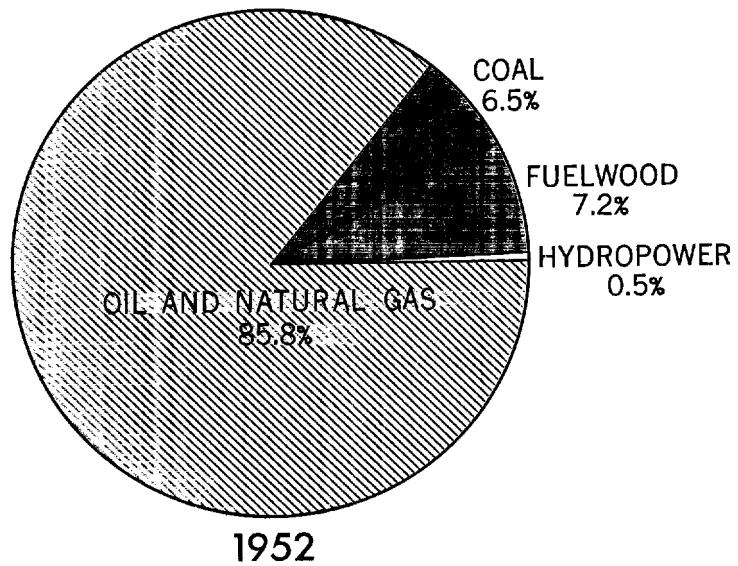
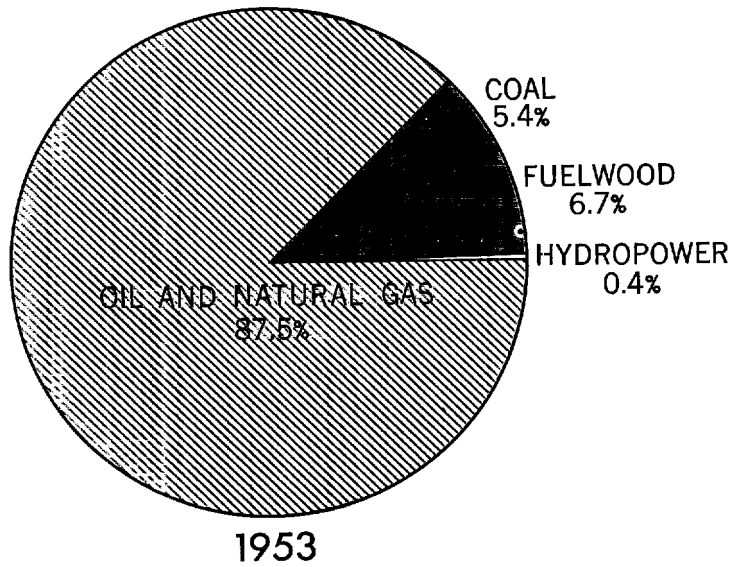
\*\* See the map, Austria: Soviet Zone, Coal Mines, inside back cover.

\*\*\* Footnote references in arabic numerals are to sources listed in Appendix D.

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Figure 1

**GROSS PRODUCTION OF PRIMARY ENERGY  
IN THE SOVIET ZONE OF AUSTRIA\***



*\*Percentages on a calorific basis*

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In addition to the deposit at Gruenbach, scattered deposits of bituminous coal occur in Lower Austria and are mined intermittently on a very small scale. Brown coal is mined in both of the provinces of Lower Austria and Burgenland, but there is no record of any coal production since World War II in the part of Upper Austria controlled by the USSR north of the Danube. The center of brown coal production in Burgenland is at Tauchen near Oberworth, about 120 kilometers south of Vienna. In Lower Austria the larger brown coal mines are at Neusiedl near Berndorf, at Statzendorf west of Vienna, and at Langau which is near Geras and east of Raabs, close to the Czechoslovak border.\*

B. Organization.

Before World War II, most of the Austrian coal industry was privately controlled, although subject to the usual state safety regulations. Certain industries were reported to control coal mines, and the city of Vienna owned and mined the coal deposits at Zillingdorf, about 30 kilometers south of the city. The Kirchbichl mine in the province of Tyrol, 2/ controlled by the Ministry of Trade, was then the only nationalized mine in Austria. After the Anschluss in 1938, all production and distribution were controlled by a German syndicate. After World War II the USSR seized control of the Gruenbach and Neusiedl mines as German assets, making them USIA (Administration of Soviet Assets in Austria) enterprises. About 90 percent of the Austrian coal mining industry was nationalized in 1946 and was put under the Ministry of Communications and Nationalized Industries. 3/ In the years 1950-52, about 93 percent of the total Austrian coal output came from the nationalized mines. 4/ Similar figures for the Soviet Zone are not available, but apparently the Austrian authorities are excluding from nationalized output the production of the Gruenbach and Neusiedl mines, which are controlled by the USIA. Two nationalized mines are in the Soviet Zone, the Langau mine in Lower Austria and the Neufeld an der Leitha (a.L.) mine in Burgenland. The other mines in the Soviet Zone are privately owned. 5/

\* See Appendix A, Table 19, and map, inside back cover.

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C. Supply.

1. Production.

Gross production\* of coal in the Soviet Zone of Austria reached a post-World War II peak in 1951. In that year, roughly 190,000 tons of bituminous coal and 523,000 tons of brown coal were produced. Slightly more than half of the brown coal output was from Lower Austria and the remainder was from Burgenland, while all the bituminous coal was produced in Lower Austria. 6/ Production for 1937 and for 1946-53 is summarized in Table 1.

Table 1

Soviet Zone of Austria: Gross Production and Availability of Coal  
1937 and 1946-53 a/

	Thousand Metric Tons								
	<u>1937</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Bituminous Coal									
Gross Production	230	100	164	166	170	176	190	185	160
Availability <u>b/</u>	219	95	155	158	161	167	180	175	152
Brown Coal									
Gross Production	335	51	84	116	242	408	523	450	401
Availability <u>b/</u>	301	46	75	105	218	367	471	405	361
Total Gross Production	<u>565</u>	<u>151</u>	<u>248</u>	<u>282</u>	<u>412</u>	<u>584</u>	<u>713</u>	<u>635</u>	<u>561</u>
Total Availability <u>b/</u>	<u>520</u>	<u>141</u>	<u>230</u>	<u>263</u>	<u>379</u>	<u>534</u>	<u>651</u>	<u>580</u>	<u>513</u>
Total HCE Distribution <u>c/</u>	<u>370</u>	<u>118</u>	<u>193</u>	<u>210</u>	<u>270</u>	<u>350</u>	<u>416</u>	<u>378</u>	<u>332</u>

a. From Appendix A, Table 17.

b. Net available after mine use of 5 percent for "hard" coal and 10 percent for brown coal.

c. Hard coal equivalent (HCE) indicates that 1 ton of "hard" coal (anthracite or bituminous) equals 1 ton of coke or 1 ton of fuel briquettes or 2 tons of brown coal or 2 tons of brown coal briquettes.

\* Gross production is total original production without deduction for use at the mines.

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2. Trends.

In the decade preceding World War II, bituminous coal production was relatively stable, averaging more than 200,000 tons a year and reaching a peak of 260,000 tons in 1935. 7/ Initial recovery from the effects of World War II was fairly rapid. By 1947, production was about 70 percent of that of 1937, suggesting that the Gruenbach properties emerged relatively unscathed from World War II -- a fact which accounts for their seizure by the Russians. After 1947, zonal production increased at a much lower rate, reaching a peak of 190,000\* tons in 1951. Output in 1952 decreased slightly, while in 1953 it is estimated as 13.5 percent less than in 1952.\*\* Several factors may account for the decline, the chief one probably being overexploitation and underdevelopment during and following World War II. Other factors are deterioration of plant and equipment, increased availability of indigenous brown coal, and much larger supplies of domestic fuel oil from sources controlled by the USSR. For the future the outlook is not promising; the preceding factors plus the meager reserves and difficult mining conditions at Gruenbach preclude any startling increases of output. On the contrary, if present conditions and trends continue, it will be surprising if bituminous coal output does not decline further.

For brown coal the 1929 production of 690,000 tons 8/ probably is the historic peak for the area which is now the Soviet Zone, as in 1937 it was only 335,000 tons. The exhaustion of deposits and the dislocations of World War II crippled production -- in 1946 it was a scant 51,000 tons. From that level, production increased slowly to a new high of 523,000 tons in 1951, and then ebbed to approximately 400,000 tons in 1953.\*\* The most important factor in the increase of output after World War II was the development of a strippable deposit at Langau in Lower Austria. Commencing with 1,000 tons in 1948, annual outputs at Langau of 55,000, 140,000, and 236,000 tons were reached in 1949, 1950, and 1951, respectively. 9/ The decline in production since 1951 for the Soviet Zone as a whole is attributed to the smaller zonal demand for brown coal resulting from the increased use of oil. In addition, reserves are being worked out in some mines and are exhausted in others. The trend of production is mainly dependent on demand, which will reflect both the general economic trend and the amount of oil and gas released by the USSR to the Austrian domestic market. It is estimated that the future level of production will approximate the 1953 level.

\* Gross production, before use at mines.

\*\* See Appendix A, Table 17.

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3. Imports and Exports.

In order to estimate the amount of coal, coke, and fuel briquettes imported by the Soviet Zone, the total distribution of these fuels in the zone was estimated and the total production subtracted from it. The residual balance is derived total imports of the Soviet Zone on a "hard" coal equivalent (HCE) basis. Table 2 shows the estimated imports of solid fuels that were required.

Table 2

Soviet Zone of Austria: Estimated Total Production, Imports, and Distribution of Coal, Coke, and Fuel Briquettes  
1948-53

	Thousand Metric Tons HCE					
	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>
Production <u>a/</u>						
Bituminous Coal	158	161	167	180	175	152
Brown Coal	52	109	183	235	203	180
Coke	302	357	405	350	322	321
Fuel Briquettes <u>b/</u>	N.A.	27	44	77	32	N.A.
Total Production	<u>512</u>	<u>654</u>	<u>799</u>	<u>842</u>	<u>732</u>	<u>653</u>
Imports <u>c/</u>	<u>2,427</u>	<u>2,429</u>	<u>2,295</u>	<u>2,256</u>	<u>1,906</u>	<u>1,931</u>
Distribution <u>d/</u>	<u>2,939</u>	<u>3,083</u>	<u>3,094</u>	<u>3,098</u>	<u>2,638</u>	<u>2,584</u>

a. Net available after use or stocking at mine or plant, 5 percent for "hard" coal, 10 percent for brown coal. See Appendix A, Table 17.

b. Briquettes only from "hard" (anthracite or bituminous) coal.

c. Coal from which coke and fuel briquettes are produced is included in imports. This semi-inflation does not materially affect the overall conclusions.

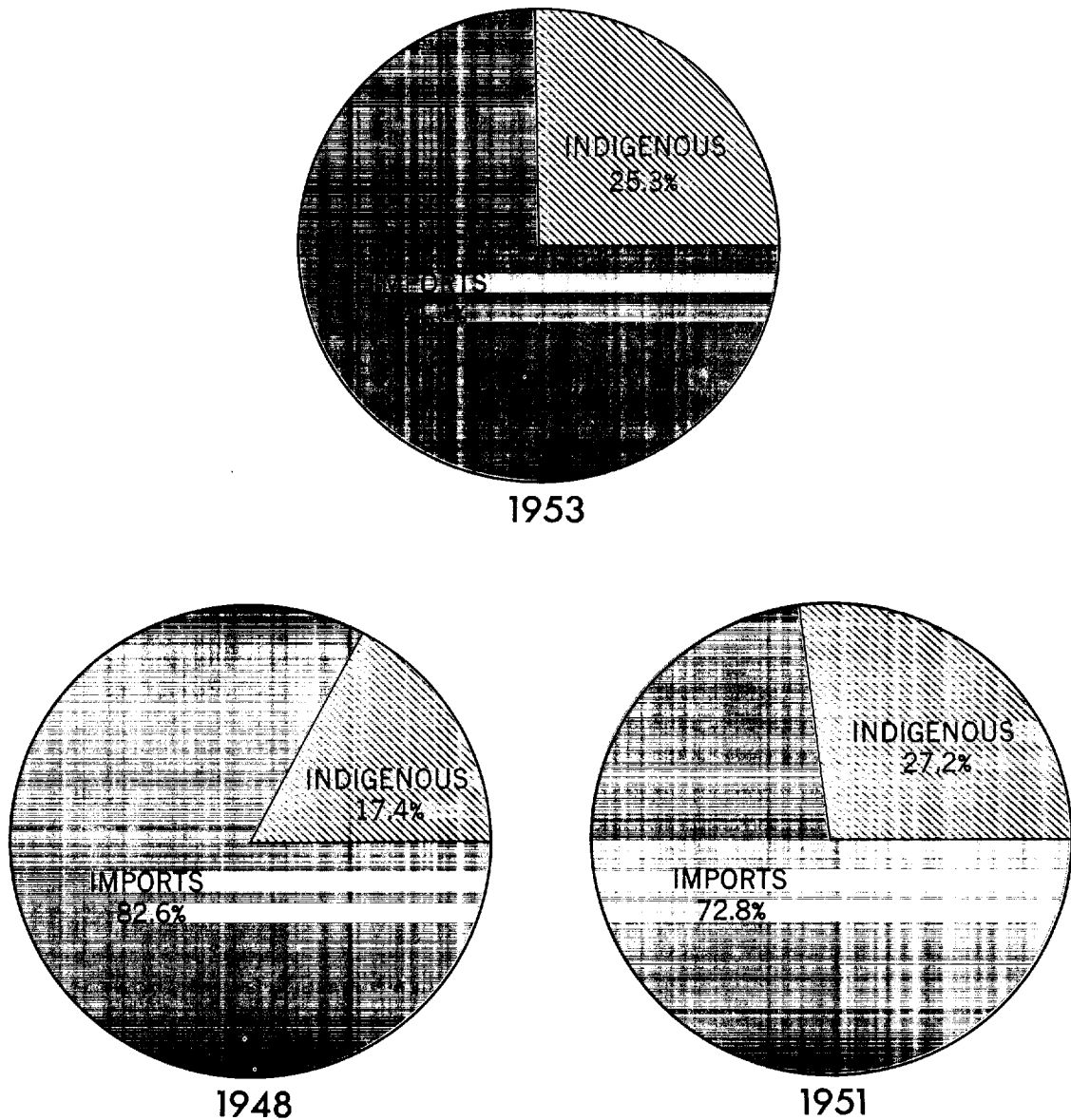
d. See Appendix A, Table 18.

The decrease of about 20 percent in estimated imports from 1948 to 1953 is significant and is the result of the lowering of demand because of Soviet releases of Austrian oil and natural gas, and the increased production of coal.

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Figure 2

**ORIGIN OF COAL, COKE, AND FUEL BRIQUETTES  
DISTRIBUTED IN THE SOVIET ZONE OF AUSTRIA\***



*\*Percentages on hard coal equivalent basis*

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A rough estimate of coal imported into the Soviet Zone in the months April through September 1952 is based on two reports <sup>10/</sup> showing distribution of imported coal by consumer categories for all of Austria. Estimated on the basis of the proportionate share of consumption of the Soviet Zone, imports of "hard" coal to the Soviet Zone were as follows: 175,000 tons from West Germany, 93,000 tons from Czechoslovakia, and 20,000 tons from Poland. In addition, West Germany furnished 160,000 tons of brown coal briquettes and Poland 14,000 tons, while Czechoslovakia supplied 47,000 tons of brown coal. These estimates are made by applying percentage factors from Appendix A, Table 18.

Fluctuations in both the amounts and origins of coal imported since World War II are so great that no estimates can be made other than those above. A general conclusion is that most of the Soviet Zone imports are of non-Austrian "hard" coals and are decreasing with time. The Soviet Zone is more self-sufficient in brown coal, although in 1952 it was reported reliably that some 90,000 tons of brown coal briquettes entered Austria illegally through Soviet channels. <sup>11/</sup> These briquettes are preferred by householders. There is no indigenous production of them. Except for some non-metallurgical coke passing from the Western Zones into the Soviet Zone, traffic between the two zones is minor. No exports from the Soviet Zone are known.

4. Stocks.

Statistical data on stocks in Austria are limited to reports that combine "hard" coal and coke. It is not probable that much indigenous brown coal is stocked, because of such storage problems as spontaneous combustion and deterioration. If stocks in the Soviet Zone by consumer category are proportionate to each category's share of reliably reported national distribution, they can be estimated as shown in Table 3.\* The figures in Table 3 should not be construed as actual tonnage, however, but rather as general indicators. The figures for gas plants may include both charging coal and coke in stock at the plant, whereas railroad, electric power, and industry stock are probably almost entirely coal. Stocks on 31 December 1952 in these four categories of consumers totaled about 40 days' supply at the daily rate of distribution in 1952.

\* Table 3 follows on p. 10.

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Table 3

Soviet Zone of Austria: Stocks of "Hard" Coal and Coke  
by Major Consumer Categories  
1950-52 a/

		Thousand Metric Tons		
<u>Consumer Category</u>	<u>Date</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>
Railroads	31 January	39	20	78
	31 December	22	56	62
Gas Plants	31 January	66	29	96
	31 December	34	101	51
Electric Power	31 January	49	19	32
	31 December	25	32	26
Other Industries	31 January	84	64	53
	31 December	65	50	38
Total	31 January	<u>238</u>	<u>132</u>	<u>259</u>
	31 December	<u>146</u>	<u>239</u>	<u>177</u>

a. Total Austrian stocks from 12/. Calculated by applying factors from Appendix A, Table 18.

D. Consumption and Distribution.

Consumption data as such are not reported in over-all statistics on coal in Austria. Instead, the common practice is to report the distribution of coal to the user. Statistical material is simplified by showing distribution on an HCE basis, thus combining "hard" coal, brown coal, coke, and fuel briquettes in one aggregate. A slight distortion from true consumption figures results from the fact that the same set of over-all data includes deliveries of coal to a gas plant and deliveries of coke produced from that same coal to other users, thus inflating the total deliveries. This inflation is mitigated, however, by the fact that electric power plants and railroads actually use very little coke. Practically all of the coke is distributed to the household and industry categories. The coke used by gas plants does not enter into distribution data, as it is internal plant consumption of the plant's own product. The inflation (distortion) of distribution due to coke inclusion varies from 10 to 15 percent of over-all distribution.

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Distribution data for total indigenous bituminous coal in all Austria can be used for the Soviet Zone, as it is practically the only zone producing bituminous coal. These data, which are shown in Table 4, are not distorted, because of the exclusion of coke.

Table 4

Soviet Zone of Austria: Distribution of Indigenous Bituminous Coal by Consumer Categories 1937 and 1948-53 a/

		Thousand Metric Tons					
Consumer Category	<u>1937</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951 <u>b/</u></u>	<u>1952 <u>b/</u></u>	<u>1953 <u>b/</u></u>
Railroads	Negligible	3	5	8	7	7	6
Electric Power	39	23	27	19	20	20	18
Other Industries	135	126	124	137	150	145	125
Domestic	45	6	5	3	3	3	3
Total	<u>219</u>	<u>158</u>	<u>161</u>	<u>167</u>	<u>180</u>	<u>175</u>	<u>152</u>

a. Calculated percentages from 13/. Applied to "available" coal from Appendix A, Table 17.

b. Extrapolated from preceding annual figures.

Imported "hard" coal is distributed chiefly among railroads, gas plants, and industry, with Czechoslovak coal especially preferred for gas plants. One definite trend is perceptible -- the decreased use of "hard" coal for electric power generation in the Soviet Zone. The demand for brown coal for power generation is apparently more stable. The increasing use of oil and natural gas and the declining use of "hard" coal for electric power in the Soviet Zone are shown in Table 5.\*

Table 5 shows that the proportion of "hard" coal used for electric power generation declined drastically from 1948 to 1951 -- about 90 percent -- while the use of oil and natural gas increased

\* Table 5 follows on p. 12.

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Table 5

Soviet Zone of Austria: Percent of Electric Power  
Produced by Types of Fuel  
1948, 1950, and 1951

Type of Fuel Used	Percent		
	1948 <u>a/</u>	1950 <u>b/</u>	1951 <u>c/</u>
"Hard" Coal	54	20	6
Brown Coal	27	31	26
Oil and Natural Gas	19	49	68
a. <u>14/</u> .			
b. <u>15/</u> .			
c. <u>16/</u> .			

almost 258 percent. Consumption of brown coal remained fairly uniform, however. Other consumer categories were estimated and are shown in Table 6.\*

E. Reserves and Quality.

The Soviet Zone of Austria is deficient both in quality and quantity of coal reserves. The best bituminous coal at Gruenbach is noncoking coal. Although it is the only significant bituminous coal reserve in all Austria, it amounted to only 1.8 million tons of reserves in 1948. 17/ West of Gruenbach the Gresten strata of Jurassic age and the Lunzer strata of Triassic age parallel each other and contain thin seams which thicken locally and permit small mines to operate until each pocket is exhausted. Because of their intermittent nature, no estimate of reserves is known. 18/

Only five of the operating brown coal mines have been reported as possessing reserves, and these are rather scanty. The best in quality, the Statzendorf basin of Miocene age, is about 50 kilometers west of Vienna and had reserves of 10 million tons in 1937. 19/ The Langau mine is a small deposit of 3 million tons near Geras and the Czechoslovak border. 20/ The Grillenberg basin near Berndorf is about 70 kilometers southeast of Vienna and had reserves of 1 million tons in 1937. 21/ The Neusiedl mine in Lower Austria and the Neufeld a.L. mine

\* Table 6 follows on p. 13.

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Table 6

Soviet Zone of Austria: Estimated Distribution of Solid Fuels  
by Major Consumer Categories, HCE Basis  
1948-53 a/

Consumer Category	Thousand Metric Tons HCE					
	1948 <u>b/</u>	1949 <u>b/</u>	1950 <u>b/</u>	1951 <u>c/</u>	1952 <u>d/</u>	1953 <u>e/</u>
Railroads	489	497	498	519	482	425
Gas Plants <u>f/</u>	692	569	576	562	398	504
Electric Power <u>g/</u>	146	207	114	112	111	103
Other Industries	783	919	926	848	621	640
Domestic <u>h/</u>	720	858	903	986	958	880
Occupation Forces	109	33	77	71	68	32
Total	<u>2,939</u>	<u>3,083</u>	<u>3,094</u>	<u>3,098</u>	<u>2,638</u>	<u>2,584</u>

- a. Includes indigenous and imported coal, coke, and fuel briquettes.
- b. Excluding consumer categories with footnotes, estimates are based on 22/ and on CIA estimate, early 1952.
- c. Excluding consumer categories with footnotes, estimates are based on percentage factors from Appendix A, Table 18, applied to detailed coal distribution lists in 23/.
- d. Same factors also applied for 1952 to data in 24/.
- e. Excluding footnoted consumer categories, estimates are based on percentage factors from Appendix A, Table 18, applied to sum of monthly detailed coal distribution lists, January to July and October to December, 25/ plus August 1953 tonnages from 26/. Tonnage totals for 11 months expanded to full year by estimation.
- f. From Appendix A, Table 21.
- g. Fluctuates, depending on varying amounts of hydroelectric power generated outside the Soviet Zone and amounts of oil and gas used in the Soviet Zone. Estimated on the basis of the ratio of electric power generated from coal in the Soviet Zone to total electric power from coal in all Austria. Ratios applied to total coal distributed for power in Austria. Ratios from 27/ used as 100 percent base. 1952 and 1953 extrapolated from 1951.
- h. Includes small industries.

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in Burgenland are both believed to be exploiting this deposit. The Tauchen deposit in Burgenland is in a basin about 120 kilometers south of Vienna. In 1953 it had reported reserves of 7 million tons. 28/

Available data on coal reserves in the Soviet Zone of Austria are summarized in Table 7.

Table 7

Soviet Zone of Austria: Coal Reserves  
1948 a/

Million Metric Tons		
<u>Province and Deposit</u>	<u>Type of Coal</u>	<u>Reserves</u>
Lower Austria		
Gruenbach	Bituminous	1.8
Gresten	Bituminous	Negligible
Lunzer	Bituminous	Negligible
Statzendorf	Brown	10.0
Zillingdorf <u>b/</u>	Brown	116.0
Langau	Brown	3.0
Neusiedl <u>c/</u>	Brown	0.5
Burgenland		
Tauchen	Brown	7.0
Neufeld a.L. <u>c/</u>	Brown	0.5
Total	Bituminous	<u>1.8</u>
	Brown	<u>137.0</u>
	Bituminous and and Brown	<u>138.8</u>

a. Summary of Appendix A, Table 19.

b. Not in operation.

c. Both the Neusiedl deposit and the Neufeld a.L. mines are believed to be operating in the Grillenberg deposit.

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In general, the reserves of bituminous coal at Gruenbach are relatively low in ash (5 percent) and sulfur (0.7 percent), somewhat low in volatile matter (21 percent), relatively high in moisture (8 percent), and have a heat value of 6,000 kilocalories per kilogram (Cals/kg). They are considered by US standards to be less than average grade steam coal.

The quality of the more important brown coal reserves is low and is only slightly better than the general run of the East German brown coals. The available analytical data indicate an ash content between 8 and 19 percent, sulfur between 1.0 and 3.9 percent, moisture about 30 percent, and heat values at 2 general levels of 3,000 or 4,300 kilocalories per kilogram. More specific analytical information is contained in Appendix A, Table 19.

F. Technology.

The small size of deposits, the location, and the physical conditions of occurrence of the coal beds pose difficult problems in mining operations. In general, these factors have prevented the development of a modern mining technology and have held operations at a relatively primitive level, as indicated by the low productivity. Some of the major difficulties and brief descriptions of the technology used to solve partially the problems are pointed out in the following descriptions.

At the Gruenbach mine there are about 12 seams that are severely folded and faulted. Vertical shafts are sunk about 500 meters deep, and crosscuts are driven to the beds. The coal is mined by stoping in steeply pitching seams and by the room-and-pillar system in the flatter beds. Before World War II, the raw coal was processed in a washing and screening plant and some of the fines were made into briquettes. Fines are a problem because of the brecciation of the coal. 29/ Coal cutters were in use in 1948. 30/

At the Statzendorf mine the room-and-pillar system is used with partial backfilling by gobbing a clay parting. Longwall methods have been tried but were found to be impractical because of irregular breaks in the roof. The immediate roof is clay slate, with sand above the clay slate. The sand contains occasional water pockets that are somewhat hazardous. The roof ahead of the working face is drilled about 6 meters to drain the water. About 6 cubic meters of water per ton of coal are pumped out. However, as the average depth is only 65 meters, drainage is not too expensive. 31/

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At the Tauchen brown coal mine in Burgenland the two seams are mined via a slope which is connected by a 5-kilometer cableway to the main railroad line. 32/ In 1953 a new shaft was being sunk to raise production to 200,000 tons a year. 33/ The Neusiedl mine is believed to be operating in the Grillenberg deposit near Berndorf. A shaft in the center of the basin has been reported. The coal is reported 1 to 2.8 meters thick, extends over an area of 500,000 square meters, is almost flat, and is 10 to 20 meters below the surface of the ground. 34/ The Neufeld a.L. mine, in this vicinity, is reported to be a strip mine 35/ and is believed to be working the Grillenberg coal where the cover is shallow.

The Langau mine near the Czechoslovak border is a deposit about 6 to 10 feet thick, 12 to 54 feet below the surface, and has an area of 240 acres. The deposit is worked by stripping, and production began in October 1948. Acquisition and complete equipment cost about 12 million schillings, 11 million of which were ERP-Counterpart funds furnished in 1948 and 1949.\* An electrified cableway carries the coal 2 kilometers to the main railroad line from Retz to Langau. 37/

G. Labor.

As derived from the latest available data in Appendix A, Table 20, there were 2,541 employees in coal mining in 1952. Of these, 150 were classed as office employees and the remainder presumably were employed in actual mining, transporting, cleaning of coal, maintenance of plants, and other necessary tasks.

The generally primitive state of mining operations may be gaged by the low productivity of 0.49 tons per man-shift at the Gruenbach mine in 1951. In the underground brown coal mines productivity is higher, as exemplified by the rate of 0.95 tons per man-shift at Tauchen mine in 1951. As expected, productivity is highest at brown coal strip mines; it attained a maximum for the country of 3.36 tons per man-shift at the Langau mine in 1951. These productivity rates are extremely low compared with similar underground rates of 1.48 tons per man-shift in West Germany, 1.61 tons per man-shift in the UK, 38/ and a strip-mine rate of 15.21 tons in the US. 39/

\* Official rate as of November 1949, 26 schillings = US \$1; black market rate, 30 to 32 schillings = US \$1. 36/



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In 1935, earnings at the Gruenbach mine were reported 40/ as follows: skilled workers, 0.87 schillings per hour; semi-skilled workers, 0.85 schillings per hour; and unskilled workers, 0.72 schillings per hour.\* In October 1949, miners recruited from other sections of Austria were employed at the Langau mine at a wage rate of 40 to 45 schillings per 8-hour shift.

III. Coke.

All coke produced in the Soviet Zone of Austria is a byproduct from the production of coal gas manufactured for municipal and industrial uses. A very small proportion of the total production (about 5 percent 41/) is blast-furnace or metallurgical-grade coke.

Output of coke loosely parallels the production of coal gas in the Soviet Zone. Since 1949, coke production has decreased as larger supplies of natural gas were made available. Postwar production did not attain prewar levels, as shown in Table 8, which is summarized from Appendix A, Table 21.

Table 8

Soviet Zone of Austria: Gross Production  
and Distribution of Coke  
1937 and 1948-53

<u>Year</u>	<u>Thousand Metric Tons</u>	
	<u>Gross Production</u>	<u>Distribution <u>a/</u></u>
1937	549	415
1948	327	302
1949	499	357
1950	495	405
1951	394	350
1952	389	322
1953	384	321

a. Available after use or stocking at plants.

\* Official rate as of 1935, one schilling = US \$0.1885.

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The Vienna Gasworks produces by far the greatest part of the total coke produced in the Soviet Zone. The available plant information on the Vienna Gasworks and the other producing plants is given in Section VI, below.

Since 1948, gas-manufacturing plants themselves have required from 8 to 31 percent of the total coke they produce. This requirement may be correlated with coal supplies. In times of short coal supply to the gasworks, a larger part of the coke production may be used by the gas-manufacturing plants. The small part of the coke that is of metallurgical grade probably is supplied to foundries. The balance of the coke production apparently is distributed for industrial and household use.

There are no blast furnaces in the Soviet Zone of Austria, and consequently there is no major requirement of metallurgical coke. Coke requirements are met chiefly by coke from the Vienna Gasworks. Some domestic coke (too small in size for metallurgical use) is probably imported from the Western zones. It is estimated that in 1952 about 13 percent of the coke imported into Austria went to the Soviet Zone for industrial and household use. The same data indicate that about 86 percent of this non-Austrian coke was imported from West Germany, and most of the balance from Czechoslovakia. 42/

IV. Fuel Briquettes.

Production of fuel briquettes from imported and domestic coal 43/ in Austria has been reported since 1949. It is believed that all briquette production is in the Soviet Zone -- in Vienna at the Vienna Gasworks, and possibly at the Gruenbach mine. 44/ The briquettes apparently are made from "hard" coal fines and possibly also from coke fines. No production of brown coal briquettes has been reported.

The use of "hard" coal fuel briquettes is probably limited to household heating purposes, mainly in the Vienna area. Most of the production is from degradation fines of imported "hard" coal and fluctuates directly with the amount of fines available. Some "hard" coal briquettes are imported occasionally but are grouped with "hard" coal in distribution data. It is believed that there is no appreciable demand specifically for "hard" coal briquettes as such;

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they merely supplement "hard" coal. Imports from non-Austrian sources are insignificant -- practically all of the "hard" coal fuel briquettes distributed in the Soviet Zone are produced locally. Data on production and the distribution of this Soviet Zone production are listed in Table 9.

Table 9

Soviet Zone of Austria: Gross Production and Distribution of Fuel Briquettes 1949-52 a/

	Thousand Metric Tons			
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>
Gross Production	28	46	80	51
Distribution <u>b/</u>	27	44	77	32

a. See Appendix A, Table 17.

b. Available after use or stocking at plants.

V. Fuelwood.

After World War II the annual productive potential of all kinds of wood from Austrian forests was estimated at 7.1 million cubic meters per year, in comparison with the prewar potential of 9,523,000 cubic meters per year. Heavy overcutting and the cessation of reforestation during World War II caused this decrease in potential. The postwar estimate is based on accessible timbered areas and disallows substantial local farm use.

In a similar trend the stands of timber in the Soviet Zone of Austria decreased from 1,086,000 hectares in area in prewar years 45/ to 800,000 hectares after World War II. 46/ The annual growth of fuelwood in the Soviet Zone also decreased from 1.8 million cubic meters to an estimated 1,350,000 cubic meters in the same period. 47/ The situation did not improve after World War II. The coal shortage was so serious in the winter of 1945-46 that large amounts of wood for use as fuelwood were shipped from the US Zone into Vienna. Even industrial wood was used as fuelwood in the winter of 1946-47, while

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in the summer of 1947 an emergency plan was put into effect. Under this plan a semibarter agreement existed between the paper industry and city dwellers. The city people cut wood of industrial quality for use in the paper industry. They were paid for this work in coal imported by the paper industry. In the last months of 1947, however, pulp wood again had to be diverted to fuel uses. <sup>48/</sup> This trend has persisted as total fuelwood cutting exceeded fuelwood growth in 1951 and 1952 (as shown in Table 10).

In comparison with an average annual increment of growth of about 3.0 cubic meters per hectare in the Soviet Zone <sup>49/</sup> the figures in Table 10 indicate an excessive rate of logging in recent years.

Table 10

Soviet Zone of Austria: Logging Per Hectare of Forestland  
1935, 1946-52 Average, and 1951-52 <sup>a/</sup>

Province	Cubic Meters <sup>b/</sup>			
	1935	1946-52 Average	1951	1952
Vienna and Lower Austria	2.8	2.7	2.8	2.6
Burgenland	5.4	2.4	3.3	3.5
Upper Austria	3.3	3.9	4.2	3.7

a. <sup>50/</sup>.

b. Solid wood in the round, excluding bark.

Austrian statistics do not distinguish between the Western and Soviet-controlled parts of the province of Upper Austria; consequently in the data presented below all fuelwood produced in Upper Austria is considered as originating in the Soviet Zone. No data on consumption or distribution by provinces were found. It is believed, however, that the Vienna district still consumes more fuelwood than it produces, thus somewhat offsetting production from that part of Upper Austria that is in the Western zone. Hence production is assumed to equal consumption in Table 11.\*

\* Table 11 follows on p. 21.

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Table 11

Soviet Zone of Austria: Estimated Consumption of Fuelwood  
1948/49, 1949/50, and 1951-53

	Cubic Meters <u>a/</u>				
	<u>1948/49</u> <u>b/</u> <u>c/</u>	<u>1949/50</u> <u>b/</u> <u>d/</u>	<u>1951</u> <u>e/</u>	<u>1952</u> <u>f/</u>	<u>1953</u> <u>g/</u>
Forest Owners' Use	N.A.	N.A.	N.A.	789,636	778,871
Available for Sale	789,589	651,949	717,586	675,407	690,855
Miscellaneous	N.A.	N.A.	N.A.	49,168	55,366
Total	<u>N.A.</u>	<u>N.A.</u>	<u>N.A.</u>	<u>1,514,211</u>	<u>1,525,092</u>

- a. Solid wood in the round, excluding bark.  
 b. By forest-year, 1 April to 31 March.  
 c. 51/.  
 d. 52/.  
 e. 53/.  
 f. 54/.  
 g. 55/.

VI. Coal Gas.

A. General.

Gas is manufactured from imported "hard" coal and some domestic coal in 7 municipal plants and at 6 industrial plants in the Soviet Zone of Austria. A seventh industrial plant is reported as using coal gas, but whether it is produced at the plant is not known. The six industrial plants with gas generators probably use domestic brown coal, but their production is not reported in national statistics, being consumed entirely within the respective plants. Output from the municipal plants in the Soviet Zone constitutes about 90 percent of the entire national output, due to the large size of the Vienna Gasworks. Excluding the Vienna plant, all other Soviet Zone municipal plants are located in towns in the province of Lower Austria.

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The Vienna Gasworks is really 2 separate plants, although it is considered as 1 unit in this report. It has been modernized since World War II. In some of the smaller provincial gas plants the dependence on imported coal has been decreased by replacement of the old chamber-stoves (ovens) with new double-way gas generators that can use indigenous brown coal. 56/ The extent of this modernization of smaller plants is not known, but presumably some renovation of the plants in the Soviet Zone has occurred.

The old shaft generators had an efficiency rate of 60 to 70 percent. The new Schwelgasgenerator (distillation gas generator) was developed in Austria and has a thermal efficiency of 90 percent based on gas and tar. The process is basically a slow gasification at low temperature (500°C) in the upper Schwelretorte (distillation retort) part of the generator before ordinary gasification starts. Temperatures are kept low, permitting separation of anhydrous tar and tar-oil. Although better adapted to bituminous coal, brown coal with 30 percent moisture has been utilized. Average generator gas contains around 1,650 kilocalories/cu m and valuable byproduct tars and oils are recovered. 57/

The Vienna Gasworks uses imported bituminous coal that is coked in high-temperature ovens 58/ and the byproducts recovered. 59/ The ovens were of the high-temperature horizontal-chamber type. 60/ These ovens are still used, as appreciable quantities of byproducts and coke are produced. Most of the coke is used locally, but when coal is in short supply some of it is used to generate water gas, which is mixed with the gas from coke ovens. Since 1944, natural gas from Aderklaa and Neusiedl also is blended with gas from coke ovens and with water gas, and the gas mixture may be further enriched by carburizing (spraying with hot liquid light oils), bringing the calorific content up to the desired 4,100 kilocalories/cu m (460 Btu per cu ft). 61/ The source of heat for the coke ovens is not known; it is possible that there are supplementary gas producers using brown coal or coke.

The remaining municipal plants are all small, and no descriptions of their individual processes are available. Presumably they also include some coke ovens, as they are partially dependent on imported coal. Propane or natural gas is reported in 1952 as being blended with the coal gas manufactured at three of the plants outside Vienna. 62/

S-E-C-R-E-TB. Production and Consumption.

Some of the statistics on gas production are indeterminate in that the figures may include noncoal gases as mentioned above. Furthermore, where gas from coal is reported it includes both gas from coke ovens and water gas. Examples of this situation are shown in Table 12, in the low coke yields and high gas output per ton of coal at Vienna, thus indicating the use of coke to make water gas or the replacement of coke ovens by newer generators with higher rates of gasification.

Table 12

Vienna Gasworks: Input-Output Data  
Selected Years 1937-51

Year	Coal Input (MT)	Gas Produced <u>a/</u> (Cu M)	Coke Sales		Gas Output (Cu M per MT of Coal)
			MT	Percent of Coal	
1937 <u>b/</u>	700,000	322,000,000	410,000	58.6	460
1948 <u>c/</u>	616,000	338,000,000	299,000	49.0	550
1950 <u>b/</u>	600,000	406,000,000	397,000	66.2	675
1951 <u>b/</u>	490,000 <u>d/</u>	353,000,000	352,000 <u>e/</u>	71.8	720

a. Probably both gas from coke ovens and water gas, average heat content of 2,400 kilocalories per kilogram or 268 Btu per cu ft.

b. 63/.

c. 64/.

d. Calculated from available coke.

e. Conflicts with Appendix A, Table 21; difference probably includes sales from stocks at plant.

The only year in which detailed data were available for all municipal gas plants in the Soviet Zone was 1952. In that year, production of gas from coal (presumably all kinds: gas from coke ovens, water gas, and gas from generators) and other gas blended with coal gas is shown in Table 13.\*

\* Table 13 follows on p. 24.

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Table 13

Soviet Zone of Austria: Municipal Gas Production by Towns 65/  
1952

Province and Town	Gas from Coal (Cu M)	Noncoal Gas Blended		Total
		Cu M	Type	
Vienna				
Vienna	288,542,938	57,695,870	Natural	346,238,808
Lower Austria				
Baden	2,036,100	342,110	Propane	2,378,210
Krems an der Donau	1,153,530	6,220	Propane	1,159,750
Mistelbach	16,344	826,820	Natural	843,164
St. Poelten	1,930,602	0		1,930,602
Stockerau	621,530	0		621,530
Wiener-Neustadt	3,016,700	0		3,016,700
Total	<u>297,317,744</u>	<u>58,871,020</u>		<u>356,188,764</u>

Total gas distributed by municipal plants in the Soviet Zone of Austria is shown in Table 14.\* This probably includes both coal and noncoal gas since 1944, and was estimated for the plants outside Vienna by the ratio of their 1952 output to that of other municipal plants in the Western zones.

Gas producers, presumably using brown coal, are reported at the captive industrial gas plants in the Soviet Zone listed below. Production, which is not known, is all used within these plants. The plants, 5 in Lower Austria and 1 in Vienna, are as follows 66/:

Plant	Location
Schoeller-Bleckman	Ternitz, Lower Austria
Stoelze Glasindustrie A.G.	Altnagelburg, Lower Austria
St. Egidyer Eisen-und-Stahl Industrie Ges.	St. Aegydt am Neuwalde, Lower Austria
Fried. v. Neuman	Markt im Traisental, Lower Austria
Staussziegel-Industrie A.G.	St. Poelten, Lower Austria
Wienberger Ziegelfabriks und Bauges	Vienna

\* Table 14 follows on p. 25.



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Table 14

Soviet Zone of Austria: Municipal Gas Distribution a/  
Selected Years 1925-52

Million Cubic Meters			
<u>Year</u>	<u>Vienna Gasworks</u>	<u>Other Plants</u> <u>b/</u>	<u>Totals</u>
1925	253	5	258
1934	263	9	272
1937	322 <u>c/</u>	6	328
1944	387	6	393
1945	80	3	83
1946	244	6	250
1947	265	5	270
1948	368	12	380
1950 <u>c/</u>	406 <u>d/</u>	N.A.	N.A.
1951 <u>c/</u>	353 <u>d/</u>	N.A.	N.A.
1952 <u>e/</u>	346	10	356

- a. 67/.
- b. Estimated, see preceding text.
- c. 68/.
- d. Coal gas only.
- e. 69/.

Few data were available on the consumption or distribution patterns of coal gas, although one source stated that there were about 1,690,000 people using gas in Vienna. Output per year increased from 138 cubic meters per inhabitant in Vienna in 1937 to 194 cubic meters in 1948. 70/ In 1935, roughly 91 percent of the gas produced at municipal plants was sold, 3 percent was used for public lighting, 1 percent was used at the plant, and 5 percent was lost in distribution. 71/ Since that year, electricity may have displaced some of the gas used for public lighting. Captive industrial plants probably consume their entire output.

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VII. Prices.

Some trends in the retail and wholesale prices of solid fuels and gas in Vienna are shown in Tables 15 and 16.\* As shown, the retail price of gas increased less from 1937 to 1953 than the general average of all prices, while the retail prices of fuelwood and coal exceeded it. In the wholesale market, only brown coal prices increased less from 1937 to 1953 than the general average of all wholesale prices; imported "hard" coal, Vienna coke, and fuelwood exceeded the average rise.

Table 15

Soviet Zone of Austria: Vienna, Average Annual Retail Prices of Solid Fuels and Gas, and General Price Index 1937 and 1948-53

	Schillings						
	<u>1937 a/</u>	<u>1948 b/</u>	<u>1949 b/</u>	<u>1950 b/</u>	<u>1951 a/</u>	<u>1952 a/</u>	<u>1953 c/ d/</u>
Gas (per Cubic Meter)	0.22	0.35	0.51	0.56	0.71	0.93	0.93
Fuelwood (per Kilogram)	0.08	0.32	0.32	0.32	0.48	0.56	0.55
Coal (per Kilogram)	0.11	0.30	0.38	0.51	0.81	0.89	0.86
General Price Index	100	355	404	462	589	669	663

- a. 72/.
- b. 73/.
- c. 74/.
- d. January to October only.

In the field of international trade the prices paid for coal imported into Austria and the Soviet Zone are so variable that averages are not very meaningful. This condition is due to the policies of the usual coal suppliers, the over-all supply situation outside Austria, the quality of the coals, existing trade agreements, and politics. Major solid fuel imports for all Austria for 1952 and 1953 are shown in Appendix A, Table 22, by country of origin, with a calculated average value per ton.

\* Table 16 follows on p. 27.

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Table 16

Soviet Zone of Austria: Vienna, Average Annual Wholesale Prices  
of Solid Fuels, and General Price Index  
1937 and 1948-53

	Schillings per 100 Kilograms						
	1937 <u>a/</u>	1948 <u>b/</u>	1949 <u>b/</u>	1950 <u>a/</u>	1951 <u>a/</u>	1952 <u>a/</u>	1953 <u>a/ c/</u>
"Hard" Coal <u>d/</u>	8.56	23.3	31.3	43.5	72.6	78.2	72.6
Brown Coal <u>e/</u>	5.5	13.9	18.8	18.6	29.3	34.6	35.9
Coke <u>f/</u>	8.8	34.2	35.8	41.2	83.2	102.9	103.3
Fuelwood	5.9 <u>b/</u>	25.2	25.2	26.8 <u>b/</u>	43.4 <u>g/</u>	49.6 <u>g/</u>	47.5 <u>g/</u>
General Price Index	100	313	403	553	744	827	780

- a. 75/.
- b. 76/.
- c. January to October only.
- d. Upper Silesian Nut No. 1, f.o.b. loading chute Vienna.
- e. Domestic raw lump.
- f. Vienna coke.
- g. 77/.

VIII. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

It is considered unlikely that the production of bituminous coal in the Soviet Zone of Austria can be increased much beyond 200,000 tons a year. Inherent limitations include lack of reserves, quality deficiencies, and probably the high cost of mining. Production of brown coal also has reached a peak in the Soviet Zone and probably meets the domestic demand. When the strippable deposits are exhausted, it is probable that the Soviet Zone will be supplied from the Western zones. Production of coal gas, coke, and fuelwood likewise will show decreasing capabilities, assuming that oil and natural gas continue to be available as at present. Reserves of oil and gas are considered sufficient to sustain present production for 3 to 4 years; after that, additional or more intensive development may be necessary.

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B. Vulnerabilities.

The main vulnerability of the Soviet Zone of Austria is an over-all deficiency in indigenous production of coal. This vulnerability is lessening with the increasing substitution of oil and natural gas as fuel. From 1948 to 1953, annual imports of solid fuels decreased approximately 496,000 tons HCE, while in the same period indigenous net coal production only rose about 122,000 tons HCE, indicating roughly that oil and natural gas displaced solid fuels to the extent of at least 374,000 tons HCE. Both oil and natural gas are under the control of the USSR. If the present supply of oil and natural gas should be cut off, the inadequacy of the supply of solid fuels would soon be apparent. With respect to coal imports, interruptions in transportation or stoppages at origin could have the most serious consequences.

C. Intentions.

No definite intentions or plans for solid fuels in the Soviet Zone of Austria have been announced, probably because of the separate interests of the Soviet occupation forces and the Austrian government. An additional influence is the low quality and scarcity of reserves of solid fuels in the Soviet Zone. Some general deductions may be made as follows: The USSR is content at present to milk the Austrian economy as much as possible through its USIA enterprises. At times, Soviet policy may happen to benefit Austria and thus coincide with the aims of the Austrian government. Such is the case in the release of natural gas to the Vienna Gasworks, reducing the dependence on imported "hard" coal. No evidence has been found that the USSR is contemplating an expansion of its segment of the coal industry. On the contrary, production from the USIA Gruenbach mine has actually declined, despite reserves which could be exploited to a greater extent with a development plan and new equipment. It is possible that the USSR profits more by releasing oil and natural gas for Austrian use, even if these releases displace coal from USIA mines. The past practices of the USSR seem to indicate that its over-all aim is maximum profit at minimum cost.

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The Austrian government presumably is interested in reducing dependence on imported coal by better utilization of indigenous resources. This is shown by the development of the Langau mine in the Soviet Zone. Self-sufficiency in brown coal is probably the immediate goal; complete control of mining in the Soviet Zone is a goal for the future. The first is attainable, the second improbable for the present. Future intentions for coal gas and its by-product, coke, depend on the availability of natural gas.

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APPENDIX A

TABLES

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Table 17  
Soviet Zone of Austria: Gross Production and Availability of Coal, Coke, and Fuel Briquettes  
1937 and 1946-53

	1937	1946	1947	1948	1949	1950	1951	1952	1953
Bituminous Coal, Gross Production Used at Mines f/	230,220 a/* 11,511	100,351 a/ 5,018	163,670 a/ 8,184	166,208 b/ 8,310	169,797 b/ 8,490	176,051 b/ 8,803	189,650 c/ 9,483	184,648 d/ 9,232	159,598 e/ 7,980
Availability	218,709	95,333	155,486	157,898	161,307	167,248	180,167	175,416	151,618
Brown Coal, Gross Production Used at Mines f/	334,650 a/ 33,465	50,618 a/ 5,062	83,825 a/ 8,383	116,184 b/ 11,618	242,416 b/ 24,242	407,489 b/ 40,749	522,966 c/ 52,297	449,965 d/ 44,997	400,821 e/ 40,082
Availability	301,185	45,256	75,442	104,566	218,174	366,740	470,669	404,968	360,739
Fuel Briquettes, Gross Production Used or Stocked at Plant	N.A. N.A.	N.A. N.A.	N.A. N.A.	N.A. N.A.	28,000 g/ 1,000	46,000 h/ 2,000	79,594 i/ 2,594	50,672 j/ 18,497	2,000 k/ N.A.
Availability	N.A.	N.A.	N.A.	N.A.	27,000 g/ N.A.	44,000 g/ N.A.	77,000 g/ N.A.	32,175 l/ N.A.	N.A.
Gas Coke, Gross Production m/ Used or Stocked at Plant	549,100 133,700	N.A. N.A.	N.A. N.A.	327,100 25,500	499,000 141,700	494,500 89,400	393,500 43,800	389,000 66,700	383,500 62,100
Availability m/	415,400	N.A.	N.A.	301,600	357,300	405,100	349,700	322,300	321,400

\*Footnotes for Table 17 follow on p. 33.



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Table 17

Soviet Zone of Austria: Gross Production and Availability of Coal, Coke, and Fuel Briquettes  
1937 and 1946-53  
(Continued)

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.
- i.
- j.
- k.
- l.
- m.

Estimated at 5 percent for bituminous coal and 10 percent for brown coal, based on national averages.

From Appendix A, Table 21.

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Table 18

Soviet Zone of Austria: Estimated Average Distribution of Solid Fuels  
as Percent of Total Austrian Distribution  
by Consumer Categories, HCE Basis  
1948-53

Consumer Category	Total Austrian Distribution <u>a/</u>	Percent
Railroads		40
Electric Power	20 to 40	<u>b/</u>
Gas Plants	85	<u>c/</u>
Food Industry	50	
Iron and Steel Industry	6	<u>d/</u>
Mining Industry	2	<u>e/</u>
Chemical Industry	10	
Leather Industry	75	
Stone and Earth Industry	50	
Building Industry	65	
Textile Industry	46	<u>d/</u>
Ceramics and Glass Industry	50	
Paper and Pulp Industry	22	<u>d/</u>
Wood Industry	25	
Domestic <u>f/</u>	60	
Occupation Forces	65	
USIA Enterprises		<u>g/</u>
Over-All Soviet Zone	25 to 40	

a. Excludes negligible requirements, such as metallurgical coke ovens. Estimates based on 89/ and on CIA estimate, early 1952.

b. Estimated for each year separately. See Table 6, p. 13, and accompanying explanation in text, p. 11.

c. Calculated by ratio of coal distributed to gas plants. See Appendix A, Table 21.

d. See 90/, which confirms noted items from 89/, above, as follows:

	Percent	
	<u>89/</u>	<u>90/</u>
Iron and Steel	Negligible	6
Textile	65	46
Paper and Pulp	25	22

e. Excludes coal mines.

f. Includes small industries.

g. 91/. Estimated at 120,000 MT HCE per year, included in industries.

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Table 19

Soviet Zone of Austria: Reserves and Quality of Coal Deposits a/\*\*

Province and Deposit	Type of Coal	Estimated Reserves		Analyses b/ (Percent)						Heat Content (Kilocalories per Kg)	
		Million MT	Year	Volatile Moisture	Volatile Matter	Fixed Carbon	Ash	Sulfur			
Lower Austria											
Gruenbach (25 km West of Wiener Neustadt)	Bituminous	1.8 c/	1948 c/	8	21	66	5	0.7	6,000		
Breusten Strata (West of Gruenbach)	Bituminous	Negligible		2	11	76	11	2.0	7,200 d/		
Brunzer Strata (West of Gruenbach)	Bituminous	Negligible		1	13	80	6	2.0	7,600 d/		
Total Bituminous Coal		1.8									
Statzendorf (50 km West of Vienna)	Brown	10.0	1937	N.A.	N.A.	57	9	3.9	4,300		
Brillenberg (70 km Southwest of Vienna e/)	Brown	1.0	1937	30	20	42	8	1.0	3,000		
Willingdorf (30 km South of Vienna)	Brown	116.0	1937	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
Langau (Near Geras)	Brown	3.0 c/	1948 c/	N.A.	N.A.	N.A.	N.A.	N.A.	3,000 c/		
Mausiedl (Near Berndorf e/)	Brown	(0.5) f/	1937	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		
Burgenland											
Gauchen (120 km South of Vienna)	Brown	7 g/	1953 g/	31	19	35	15	3.7	3,600 g/		
Reufeld a.L. (70 km Southeast of Vienna e/)	Brown	(0.5) c/ f/	1948 c/	N.A.	N.A.	N.A.	N.A.	N.A.	3,000 c/		
Total Brown Coal		137.0									

\* Footnotes for Table 19 follow on p. 36.

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Table 19

Soviet Zone of Austria: Reserves and Quality of Coal Deposits  
(Continued)

- a. 02/ if no other source is given.
- b. probably "as received" basis.
- c. 03/.
- d. May be "moisture-and-ash-free" basis.
- e. Neufeld a.L. is believed to be mining Grillenberg coal; the Neusiedl mine also is believed to be operating in the Grillenberg deposit.
- f. Parentheses indicate inclusion in another reserve.
- g. 04/.

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Table 20

Soviet Zone of Austria: Data on Production of Coal and on Employment, by Individual Mines

Province and Mine a/	Type of Coal g/	Estimated Reserves		Type of Mining b/	Production (MT)		Output per Man-Shift (MT c/)		Labor Force											
		MT	Year		1950 c/	1951 c/	1950	1951	1950 e/ (Fourth Quarter)	1951 c/ (Fourth Quarter)	1952 e/ (Third Quarter)	Office Workers	Miners	Office Workers	Miners					
Lower Austria																				
Gruenbach f/	Bituminous	1,800,000	1948	Deep	218,000	162,078	171,668	0.47	0.49	70	1,156	70	1,132	70	1,191					
Gaming	Bituminous	N.A.		Deep	0	11,939	13,599	0.47	0.53	6	95	7	99	7	100					
Poellenreith	Bituminous	N.A.		Deep	0	2,034	2,711	0.43	0.45	1	17	1	23	1	24					
Seckopf	Bituminous	N.A.		Deep	0	0	1,672	0	0.55	0	0	1	14	1	16					
Hagenau-Neulengbach	Brown	N.A.		Deep	0	0	0	0	0	N.A.	N.A.	0	0	0	5					
Statenandorf	Brown	10,000,000	1937	Deep	94,344	1,147	1,478	0.38	0.32	1	1,000	1	22	1	21					
Neusiedl f/	Brown	500,000	1937	Deep	69,285	28,611	28,280	1.49	1.36	5	72	4	75	4	61					
Leugau i/	Brown	3,000,000	1948	Strip	0	139,085	236,534	1.96	3.36	18	255	21	269	22	264					
Stinkenbrunn																				
Gemeinde	Brown	N.A.		Deep	0	12,468	19,701	1.75	1.72	2	28	2	48	2	25					
Haldenkehle	Brown	N.A.		Deep	0	11,860	11,457	1.53	1.78	1	29	2	22	1	32					
Burgenland																				
Tauchen	Brown	7,000,000	1953	Deep	97,215	98,881	104,077	0.92	0.95	16	393	19	407	21	401					
Neufeld a.l. j/	Brown	500,000	1937	Strip	0	92,241	90,089	1.46	1.46	19	235	16	203	15	171					
Poetsching	Brown	N.A.		Deep	0	19,437	30,782	0.64	1.20	5	133	3	77	2	47					
Ritzing	Brown	N.A.		Deep	0	1,759	495	0.39	1.64	1	8	1	20	2	29					
Bubendorf	Brown	N.A.		Deep	0	0	73	0	0.08	0	0	1	9	0	4					

a. 95/.

b. All deep mining, unless otherwise noted.

c. 96/.

d. 97/.

e. 98/.

f. USIA enterprise.

g. 99/.

h. 100/.

i. Nationalized mines.

j. 101/.

k. Only 500,000 strip reserve. 102/.

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Table 21

Soviet Zone of Austria: Estimated Production of Coke  
1937 and 1948-53

	1937	1948	1949	1950	1951	1952	1953
Metric Tons							
Part I							
All Austria: All Gasworks							
Coal Distributed	766,692 a/*	729,324 a/	673,068 a/	666,444 a/	649,344 a/	490,788 a/	600,000 b/
Gross Coke Produced	600,000 c/	348,200 d/	564,000 e/	556,000 e/	457,000 e/	454,346 f/	450,000 g/
Available Coke After Use or Stocking at Plant	442,600 h/	315,100 i/	399,100 j/	445,300 j/	388,982 j/	363,909 j/	363,000 k/
Part II							
All Austria: Gasworks Outside Vienna							
Coal Distributed	79,000 l/	45,000 m/	125,000 l/	108,000 l/	105,000 l/	112,000 l/	115,000 g/
Gross Coke Produced	61,000 m/	25,000 n/	78,000 l/	74,000 l/	76,000 l/	78,000 l/	80,000 g/
Available Coke After Use or Stocking at Plant	32,600 m/	16,000 m/	50,000 l/	48,000 l/	47,000 l/	50,000 l/	50,000 g/
Part III							
Soviet Zone: Vienna Gasworks							
Coal Distributed	688,000 n/	684,000 p/	548,000 n/	558,000 n/	544,000 n/	379,000 n/	485,000 n/
Gross Coke Produced	539,000 l/	323,000 p/	486,000 n/	482,000 n/	381,000 n/	376,000 n/	370,000 n/
Available Coke After Use or Stocking at Plant	410,000 o/	299,000 p/	349,000 n/	397,000 o/	342,000 n/	314,000 n/	313,000 n/

\*Footnotes for Table 21 follow on p. 39.

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Table 21

Soviet Zone of Austria: Estimated Production of Coke  
1937 and 1948-53  
(Continued)

	1937	1948	1949	1950	1951	1952	1953
	Metric Tons						
Part IV							
Soviet Zone: Gasworks Outside Vienna							
Coal Distributed	13,100 q/ 10,100 q/ 5,400 q/	7,500 q/ 4,100 q/ 2,600 r/	20,800 q/ 13,000 q/ 8,300 r/	18,000 q/ 12,500 q/ 8,100 r/	17,500 q/ 12,500 q/ 7,700 r/	18,700 q/ 13,000 q/ 8,300 r/	19,100 q/ 13,500 q/ 8,400 r/
Gross Coke Produced							
Available Coke After Use or Stocking at Plant							
Part V							
Soviet Zone: All Gasworks s/							
Coal Distributed	701,100	691,500	568,800	576,000	561,500	397,700	504,100
Gross Coke Produced	549,100	327,100	499,000	494,500	393,500	389,000	383,500
Available Coke After Use or Stocking at Plant	415,400	301,600	357,300	405,100	349,700	322,300	321,400

103/. Estimate based on material for January to August, 104/; for October and November, 105/.

106/.  
107/.  
108/.  
109/.  
By extrapolation.  
110/.  
111/.  
112/.

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Table 21

Soviet Zone of Austria: Estimated Production of Coke  
1937 and 1948-53  
(Continued)

Estimated on basis of 272,316 tons, January to September, 113.

114. By subtraction of Vienna tonnages from all-Austria totals.

115. By subtraction of non-Vienna tonnages from all-Austria totals.

116. Estimated at one-sixth of appropriate tonnages of plants outside Vienna, based on non-Vienna Soviet Zone plants, 117.

Estimated at same ratio of "available" to "gross" production as all non-Vienna plants for that year.

Sum of appropriate tonnages from Parts III and IV.

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Table 22

Austria: Major Imports of Solid Fuels  
1952-53

Type of Coal	Exporting Country	1952 a/			1953 b/ c/		
		Quantity (Thousand MT)	Total Value (Thousand Schillings)	Value per MT (Thousand Schillings)	Quantity (Thousand MT)	Total Value (Thousand Schillings)	Value per MT (Thousand Schillings)
Bituminous	Czechoslovakia	174	89,259	0.513	109	57,938	0.532
	Poland	940	437,413	0.465	721	330,958	0.459
Bituminous	West Germany	1,674	714,430	0.427	1,297	627,853	0.484
	US	859	474,219	0.552	71	37,535	0.528
Brown Coal	Czechoslovakia	310	77,115	0.249	131	32,012	0.244
	West Germany	456	134,170	0.294	242	77,217	0.319
Briquettes	East Germany	167	56,744	0.340	163	53,043	0.325
	West Germany	200	98,645	0.493	178	99,282	0.558
Coke	Czechoslovakia	38	20,102	0.529	8 f/	1,813	0.227
	Poland	0	0	0.000	3 f/	856	0.285

118/.

119/.

January to October only.

In October 1952, current prices per ton for specific imported coals were reported as follows 120/:

- (1) Poland, f.o.b. Austrian border, including US \$1.40 Czechoslovak freight: Fine coal, US \$15.90; nut coal, US \$20.40; and lump coal, US \$21.15.
- (2) Czechoslovakia, f.o.b. Austrian border: Gas coal, US \$22.90; coke, US \$31.50; and brown coal, US \$15.00.

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Austria: Major Imports of Solid Fuels  
1952-53  
(Continued)

(3) West Germany, f.o.b. Austrian border, including US \$8.00 freight: Coke, US \$23.70; brown coal briquettes, US \$14.10; and coking fines, US \$22.80 (also delivered Linz by water).  
(4) East Germany, f.o.b. Austrian border, including US \$1.40 freight: Brown coal briquettes, US \$14.00.  
(5) US, coking coal, US \$9.70 US port, plus ocean freight US \$5.00, plus German overland freight US \$8.40, total f.o.b. Linz US \$23.10.

In September 1953, average second quarter import prices per ton, f.o.b. Austrian border or Trieste, are reported for specific coals as follows 121/:

	Average Price (US \$)
Bituminous Coal	
Czechoslovakia	20.90
West Germany	20.30
Poland	19.00
US	19.90
Brown Coal	
Czechoslovakia	
(large percentage of fines)	10.40
Coke	
Czechoslovakia	
(inferior grade fines)	10.00
West Germany	23.20
Brown Coal Briquettes	
West Germany	13.10
East Germany	14.00

Probably brown coal coke.

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Table 23

Soviet Zone of Austria: Indigenous Production of Primary Energy  
1948, 1950, and 1952-53

Source of Energy	1948			1950			1952			1953		
	Production	Billion Cals $\bar{a}$ /	Percent of Total	Production	Billion Cals $\bar{a}$ /	Percent of Total	Production	Billion Cals $\bar{a}$ /	Percent of Total	Production	Billion Cals $\bar{a}$ /	Percent of Total
Bituminous Coal, Gross Production $\bar{b}$ /	166,208 MT	997	8.4	176,051 MT	1,056	5.0	184,648 MT	1,108	2.9	159,598 MT	968	2.4
Brown Coal, Gross Production $\bar{b}$ /	116,184 MT	349	2.9	407,489 MT	1,222	5.8	449,965 MT	1,350	3.6	400,821 MT	1,202	3.0
Oil, Estimated Production $\bar{c}$ /	945,000 MT	8,978	75.2	1,700,000 MT $\bar{d}$ /	16,150	77.2	3,200,000 MT $\bar{d}$ /	30,400	80.1	3,500,000 MT $\bar{d}$ /	33,250	81.6
Natural Gas, Supply to Austrian Economy $\bar{e}$ /	N.A.	N.A.	N.A.	132,000,000 m <sup>3</sup>	1,148	5.5	250,000,000 m <sup>3</sup>	2,175	5.7	275,000,000 m <sup>3</sup> $\bar{f}$ /	2,393	5.9
Hydroelectric Power, Generated $\bar{g}$ /	215,498,000 KWH $\bar{f}$ /	185	1.6	217,490,000 KWH $\bar{g}$ /	187	0.9	221,720,000 KWH $\bar{h}$ /	191	0.5	208,890,000 KWH $\bar{h}$ /	180	0.4
Hydrowood $\bar{j}$ /	789,589 m <sup>3</sup> $\bar{k}$ /	1,421	11.9	651,949 m <sup>3</sup> $\bar{l}$ /	1,174	5.6	1,514,211 m <sup>3</sup>	2,745	7.2	1,265,092 m <sup>3</sup>	2,745	6.7
Total		11,930	100.0		20,937	100.0		37,950	100.0		40,728	100.0

a. Conversions: Bituminous coal at 6,000 Cals/kg, see Appendix A, Table 19; brown coal at 3,000 Cals/kg, see Appendix A, Table 19; oil at 9,500 Cals/kg,  $\bar{122}$ ; natural gas at 8,700 Cals/m<sup>3</sup>,  $\bar{123}$ ; hydroelectric power at 860 Cals/kwh (standard definition); fuelwood at 1.5 million Cals/m<sup>3</sup>,  $\bar{124}$ .

b. See Appendix A, Table 17.  
 c.  $\bar{125}$ .  
 d.  $\bar{126}$ .  
 e.  $\bar{127}$ .  
 f.  $\bar{128}$ .  
 g.  $\bar{129}$ .  
 h.  $\bar{130}$ .  
 i.  $\bar{131}$ .  
 j. See Table 11, p. 21, above.  
 k. Available for sale only.

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APPENDIX B

METHODOLOGY

The general method of this report has been that of assembling widely scattered data, reconciling minor differences in statistics, compiling totals, and making deductions from fragmentary information. Wherever possible, recourse was had to official or recognized Austrian statistical sources. In some instances these yielded information directly applicable to the Soviet Zone; in others such information could be deduced readily. Details of the methodology are shown either in the text or in Appendix A.

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APPENDIX C

GAPS IN INTELLIGENCE

The most important gap in intelligence is the lack of distribution data for coal and coke, by consumer category. The next gap in order of importance is the lack of price and transportation data on coal imports, by consumer category. There is a lack of data on cost and inputs in coal production and also on stocks.

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APPENDIX D

SOURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

In general, the Austrian statistics were considered authoritative. Where they differed from other data, such as State Department despatches, the differences were usually minor and were considered insignificant. The evaluation shown is strictly limited to the topic discussed and should not be considered as an evaluation of all the subject matter in the source listed.

2. Sources.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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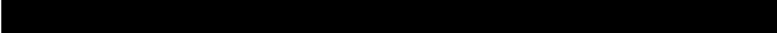
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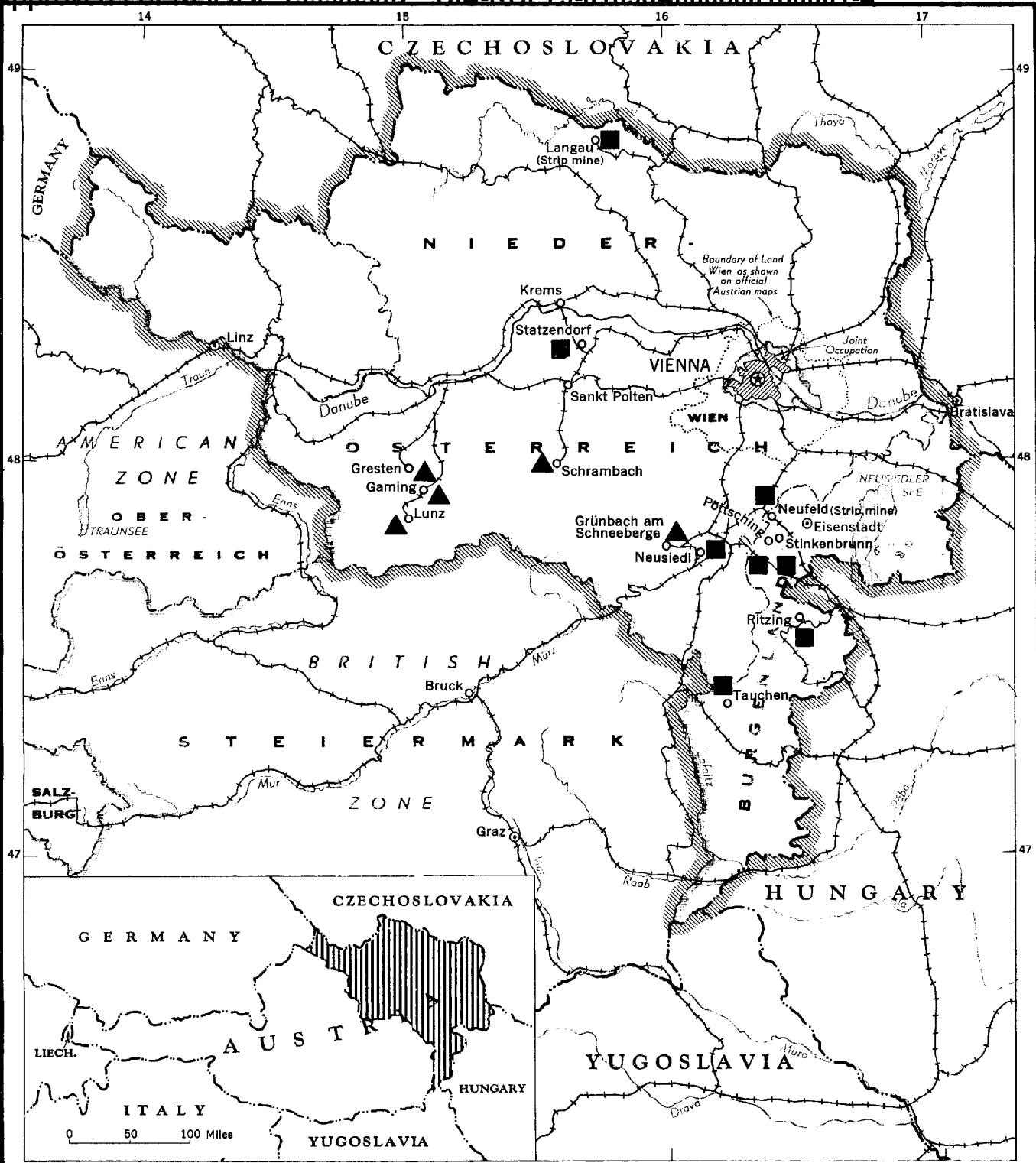
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# AUSTRIA: SOVIET ZONE COAL MINES

▲ BITUMINOUS COAL    ■ BROWN COAL

— · — International boundary  
- - - - - Land boundary

0 10 20 30 40 50 Miles

0 10 20 30 40 50 Kilometers

⊙ National capital  
+ + + Railroad (selected)

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