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GERMAN DEMOCRATIC REPUBLIC
ENERGY DEMAND DATA

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PREFACE

This paper is part of the Energy Demand Publication Series. The Series reflects the work on this broad subject that forms a major line of activities of the IIASA Energy Project: A first step in the econometric analysis of energy demand was achieved with the Workshop on Energy Demand that was held in May of 1975. The conference and its proceedings were prepared under the careful guidance of Prof. W.D. Nordhaus of Yale University and with the support of the Ford Foundation. The proceedings were published in IIASA CP-76-1. P. Tsvetanov outlined the plan for the econometric studies on the occasion of the Status Report of the Energy Project in October of 1975. Following these publications, a number of Research Memoranda and Reports are in preparation that highlight and serve to complete the presentation of the various aspects of energy demand as it is dealt with at IIASA.

ABSTRACT

The purpose of the paper is to expand the data base for the W.D. Nordhaus study: The Demand for Energy (CP-76-1, pp. 511-587; see also RM 76-18) through the addition of centrally planned economies. The paper gives sources, definitions and shows final energy consumption and prices by type of fuel and sector of the economy and various macro-economic data, covering a span of 20 years. The compilations are based on official GDR statistics, and direct contributions made by GDR participants to workshops on "Energy Demand" and "Regional Energy/Environmental Systems" held by IIASA at Laxenburg in 1975. Re-grouping of the data to conform with the concepts used for the Nordhaus study are the responsibility of the author.

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1. Introduction

The IIASA workshop on Energy Demand, held in May 1975, was attended by fifty five participants from 15 Eastern and Western countries. The documentation for the workshop included an econometric study, prepared by the Chairman, Prof. W.D. Nordhaus, The Demand for Energy: An International Perspective [9]. The time series compiled for the study, covering a span of 20 years, and the sources and definitions used for energy consumption, prices and macro-economic data, pertaining to 7 Western countries (Belgium, F.R.G., France, Italy, Netherlands, U.K., and U.S.A.) were published in a IIASA research memorandum [3]. In an effort to expand the data basis for the econometric study with the addition of centrally planned economies, a start is made with the German Democratic Republic (G.D.R.). For this purpose, use is made of the contributions to the 1975 IIASA workshop on Integrated Management of Regional Energy/Environmental Systems by the Leipzig Institute for Energy Technology, the statistics published by the G.D.R. and the United Nations Economic Commission for Europe (UN ECE). Regrouping of the data to conform with the concepts used for the Nordhaus study, and extrapolations for various years, are the responsibility of the author, and not that of IIASA.

2. Energy Consumption Data

2.1 Sources

An overview of the energy economy of the G.D.R. is provided by the Energy Sector Indexes [7] and the Energy Flow Chart [6] submitted by the Leipzig Institute for Energy Technology. Inland availabilities of solid gaseous and liquid fuels and electricity can be compiled from the G.D.R. Statistische Jahrbuch [1]; [2]. For a breakdown of final consumption by the energy, industry, transportation and household sectors, along the lines of the Energy Demand study, additional information was used from the publications of the UN ECE [11]; [12]; [13]. These publications reflect official government statistics, as indicated in the explanatory notes to the Annual Bulletin of General Energy Statistics [13], p. 4.

2.2 Definition of Final Consumption

The concept used by Prof. Nordhaus in the Demand for Energy [9] is the "net energy consumption" in each sector of the economy. This corresponds to the OECD "final consumption". "The term 'final' implies that quantities converted into electricity or into other fuels are not included. In other words, internal final consumption of an energy source is that amount used directly for producing energy within the country or area concerned. If the internal consumption figures for all energy sources or any country or area are reduced to a common unit and then added together, the total obtained contains no duplication because the quantities converted into electricity or into other fuels have been excluded", [10]. By this definition, final

consumption data are different from the coverage of most national sources of statistics, i.e. Statistical Yearbooks, of both Eastern and Western countries. The difference is particularly noticeable in the solid fuels consumption statistics, for energy and industry sectors, where national data include the consumption of coal to generate thermal electricity, as well as coal input for coke production, gas works, and briquetting plants.

3. Solid Fuels Consumption

3.1 Composition of Supplies

Lignite is the principal coal mined and consumed in the G.D.R. Foreign trade in lignite is small, and lignite production can be equated with inland availabilities. Hard coal is used to a small extent, and nearly all of it is imported. Raw lignite and lignite briquette production and hard coal imports 1936 and 1950 to 1973 are given in the Statistisch Jahrbuch [2]. These data check with those of the UN ECE [11] and [13]. The two latter sources were used for the compilation of final consumption by sectors.

3.2 Final Consumption in 1973

The solid fuels final consumption (lignite coke and hard coal) by sectors, for the year 1973 is summarized in Tables 1 and 2. The data are first given in natural units (Table 1) and then in TCE (Table 2). From Tables 1 and 2 it is apparent that for purposes of the Energy Demand Study, it is useful to compile only the data for lignite briquettes and hard coal.

3.3 Time Series

Lignite briquettes; the estimated final consumption of lignite briquettes, 1950 to date can be based on the lignite briquette production data shown in the G.D.R. Statistische Jahrbuch [2] with two assumptions to be made: (1) that the total final consumption of lignite briquettes is a constant 48% of total lignite briquette production (1973 status) and (2) that the 1973 percentage structure of the final consumption of lignite briquettes by sectors applies to all preceding years. (See Table 1.)

Hard coal; the estimated final consumption of hard coal, 1950 to date, can be based on the hard coal import data shown in the G.D.R. Statistische Jahrbuch [2]. It may then be assumed that the 1973 structure of final consumption remained constant. If and when additional data become available, i.e. for 1960, and 1965, the series can be corrected.

4. Gaseous Fuels Consumption

4.1 Composition of Supplies

In recent years, the supplies of gaseous fuels are marked by increasing amounts of natural gas, domestic production and imports. While the output of city gas increased from 14 732 TCAL in 1970 to 16 854 TCAL in 1973, and 17 346 TCAL in 1974 the production of natural gas rose form 4 880 TCAL in 1970 to 21 878 TCAL in 1973 and 24 124 TCAL in 1974. During the two latter years, natural gas imports jumped from 6 352 TCAL in 1973 to 24 194 TCAL in 1974 [12], p. 20-21.

4.2 Final Consumption by Sectors

The final consumption of gaseous fuels, in TCAL by sectors for the years 1970 to 1974 is shown on Table 3. These data were compiled from the UN ECE [12] p. 20-21. Despite the above mentioned changes in the supply of gaseous fuels, the structure of final consumption by sectors does not seem to have changed very much from 1970 to 1974.

4.3 Time series

Data on gas consumption by sectors for the years prior to 1970 shown in the Statistisch Jahrbuch [1], [2] relate to city gas only. These data, as well as those on Table 3 show considerable stability in the structure of consumption. It is therefore suggested to extrapolate final consumption by sectors from 1950 to 1970 on the basis of the index of city gas production. This index can be compiled from the Statistische Jahrbuch [1], [2] and earlier issues.

5. Liquid Fuels Consumption

5.1 Composition of Supplies

It is assumed that liquid fuels consumption consist mostly of production minus exports of fuel oils, diesel and gasoline. For the years 1950 to 1973, production statistics in units of 1.000 metric tons are published in the Statistisch Jahrbuch [2], p. 22. Export statistics, though not for all years, for gasoline and diesel tonnages can be compiled also from the Statistische Jahrbuch.

5.2 Final Consumption by Sectors

Final consumption by sectors in 1973 is summarized on Table 4. It was compiled from the above mentioned data on production minus exports. The assumption made for the sectorial distribution are outlined below. In the energy sector, the consumption of liquid fuels to operate refineries is insignificant. This assumption seems to be confirmed by the data shown by the UN ECE [13], p. 46, Table 2, line 9. For the industry sector, it is assumed that liquid fuels consumption consists of 90% of fuel oil availabilities, with 10% going to the domestic

sector. Between 1965 and 1973, the index of fuel oil consumed by industry rose slower than the index of total fuel oil supplies. Therefore we thought that not all fuel oil was used by industry and alloted a share to households. This may have been rather arbitrary--especially so as the Statistische Jahrbuch does not give the breakdown of fuel oils into "heavy" and "light". For the transportation sector, the 1973 consumption is estimated as all gasoline supplies plus 90% of Diesel supplies, with 10% of Diesel going to agriculture. It may be noted that liquid fuels to operate vehicles that are part of industry complexes, are included in the transportation sector, to obtain comparability with the data for the Western countries. For the household or residual sector, we have estimated a liquid fuels consumption consisting of 10% of fuel oil supplies (home heating) and 10% of Diesel supplies (agriculture). No estimates are made for kerosene consumption.

5.3 Time Series

It is assumed that the structure of liquid fuels consumption did not materially change from 1950 to 1973. The time series could be established through extrapolation of the 1973 structure on the basis of supplies for the various types of liquid fuels. Supply data, production minus exports, can be compiled for most of the years under consideration from various issues of the Statistische Jahrbuch.

6. Electricity Consumption

6.1 Electricity Supplies

The G.D.R. domestic supplies consist of production plus imports minus exports. Detailed consumption data for the years 1960 and 1970-1973 can be compiled from the 1974 Statistische Jahrbuch [2] p.142. [Data for 1962 in the 1963 Statistische Jahrbuch p.174 are not comparable.]

6.2 Final Consumption by Sectors

The final consumption of electricity by sectors for the years 1960 and 1970 to 1973 is shown on Table 5. It was compiled from the above mentioned source by making the regroupings indicated below. For the energy sector, we have added "losses in transmission" to "own consumption", in order to obtain comparability with the data for the Western countries. In the industry sector, we have deducted the energy sector's own consumption--which in the G.D.R. was ranged with industry and moved the amounts to the energy sector. The transportation sector includes postal services--we made no adjustment for this. The household sector consumption was compiled as total final consumption minus energy, industry and transportation sectors. It may be noted though, that separate data are available for electricity consumption by agriculture, households and artisans.

6.3 Time Series

The index numbers shown in the Statistische Jahrbuch for electricity production and electricity consumption are quite similar. Therefore, it may be appropriate to extrapolate the data for the years 1950 to 1959 and 1960 to 1961 on the basis of the index of electricity production, given in the Statistische Jahrbuch [2], p.22.

7. Fuel and Electricity Prices

7.1 Price Policy

The policy and guidelines for the establishment of energy supply prices are detailed in a paper submitted by the Leipzig Institute of Energy Technology to the Workshop on Integrated Management of Regional Energy Environmental Systems [8]. Accordingly, the price policy pursued following World War II and since the establishment of the G.D.R. in 1949 was to maintain the frozen prices of the 1944 price stop order. While exceptions were made in certain individual cases, none were made in the energy supply industry. At the end of the fifties and the early sixties, the gap between expenditures and prices had become so wide that the prices obtained for primary industry products did in many cases not even cover cost-prices. This experience at last led to the preparation and step-by-step execution of an industrial price reform (IPR). The first stage of the IPR which included the energy supply industry, started on 1 April 1964. It resulted in a rise of energy supplier prices by 60 to 80 percent [8] p.2/3. Consumer goods prices, paid by the population remained constant.

7.2 Industry and Consumer Prices, 1970 and 1976 by Sectors

Prices paid by industry are identified in the Statistische Jahrbuch as "Industrieabgabepreise", relating to the shipments between enterprises and bearing no relation to retail sales prices. Retail sales prices paid by the household sector may differ according to the type of purchase. The price per metric ton of lignite briquettes is 34 G.D.R. Mark on coal cards, and 70 G.D.R. Marks for additional, free sales. Gas rates are 0.08 G.D.R. Mark per m^3 for bulk consumption (i.e. house heating) and 0.16 G.D.R. Mark per m^3 for smaller consumption. Electricity household costs are 0.08 G.D.R. Mark per kWh day rate and 0.04 G.D.R. Mark per kWh night rate [Speicher]. The industry, transport and household sector prices for fuel and electricity in 1973 and 1976 are shown on Table 6. Data were provided by the Leipzig Institute for Energy Technology. (See Table 6)

7.3 Time Series

The fuel and electricity prices for 1973 and 1976 can be extrapolated to 1950 in the light of the energy price policy indicated under 7.1 above. Moreover, use can be made of the index numbers for industry prices of fuels and energy, and the actual prices paid by consumers, shown in the Statistische Jahrbuch. The data shown on Appendix Table 2 were compiled as follows: a) Conversion from natural units to BTU; b) 1950-1973 prices.

a) Conversion of 1973 prices from natural units to BTU

Lignite briquettes 1973 price = GDR Mark 43.81 per metric ton
1kg = 4700 kcal; 1kcal = 3.97 BTU

$$\frac{43.81}{3.97 \cdot 4\ 700\ 000} = \text{GDR Mark 2.36 per } 10^6\text{BTU}$$

City gas 1973 price = GDR Mark 0.18 per m^3
$1m^3$ = 3 400 kcal; 1 kcal = 3.97 BTU

$$\frac{180\ 000}{13.498} = \text{GDR Mark 13.34 per } 10^6\text{BTU}$$

Gasoline 1973 price = GDR Mark 0.70 per liter (average)
1 liter = 0.74 kg; 1 kg = 10 400 kcal

$$\frac{\frac{0.70}{0.74}}{3.97 \cdot 10\ 400} = \text{GDR Mark 22.91 per } 10^6\text{BTU}$$

Diesel 1973 price = GDR Mark 0.70 per liter
1 liter = 0.87 kg; 1 kg = 9 900 kcal

$$\frac{\frac{0.70}{0.87}}{3.97 \cdot 9\ 900} = \text{GDR Mark 20.47 per } 10^6\text{BTU}$$

b) 1950-1973 Prices

Industry and Transport

Lignite briquettes: Precise data 1950 to 1972 are not given in the standard price tables of the GDR Statistische Jahrbuch.

City Gas: The industry prices, index numbers with 1963=100, are given in the GDR Statistische Jahrbuch 1974, p.319.

Index Numbers, Industry Prices, City Gas

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1963=100	100.0	124.8	134.5	134.5	134.5	134.5	137.6	138.2	147.2	146.3	146.3
1973=100	68.4	85.3	91.9	91.9	91.9	91.9	94.1	94.5	100.6	100.0	100.0

It is assumed that prices did not change between 1950 and 1962.

Diesel and Gasoline. Precise data, 1950 to 1972 are not given in the standard price tables of the GDR Statistische Jahrbuch.

Electricity. The industry prices for "electro-energy", index numbers with 1963=100, are given in the GDR Statistische Jahrbuch 1974, p.319.

Index Numbers,Industry Prices, Electro-Energy

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1963=100	100.0	129.1	145.2	145.2	139.6*	140.4*	140.4*	138.9	153.6	171.0	180.2
1973=100	55.5	71.6	80.6	77.5	77.9	77.9	77.9	77.1	85.2	94.9	100.0

*Changes in the structure of deliveries.

It is assumed that prices did not change between 1950 and 1962.

Household

Lignite briquettes: Retail prices per 50kg of lignite briquettes for controlled and free sales, 1950 to 1973 are shown in the GDR Statistische Jahrbuch 1974, p.327. Accordingly, there was no change between 1950 and 1973 in the brown coal briquette price for controlled sales. The free sales price changed as follows:

Brown coal briquette prices, free sales, 1950-1973

	1950	1955	1960	1965	1970	1972	1973
Price per 50kg in GDR Mark:	9.20	6.70	3.66	3.66	3.51	3.51	3.51
Index Numbers; 1973=100	262.1	190.9	104.3	104.3	100.0	100.0	100.0

City Gas and Electricity: According to the tariffs applying to household consumption, published in the GDR Statistische Jahrbuch 1974, p.328, there was no change in the prices between 1950 and 1973.

8. Macro-Economic Data

8.1 Net Material Product

The concept for the compilation of the Net Material Product (NMP) [Produziertes Nationaleinkommen] is indicated in the Statistische Jahrbuch 1963 [1] p.9-10. Accordingly, the NMP, compiled by value of output method, excludes those activities that are considered as "non-producing activities". The most notable exceptions from NMP calculations are: banking and insurance; government; and foreign trade. For this reason, the NMP is by definition lower than Gross Domestic Product, compiled under the Western Countries System of National Accounts (SNA).[1] The Energy Demand Study is not concerned with absolute amounts of GNP or NMP; for this reason it does not seem necessary to make adjustments.

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[1]For a comparison of what NMP might amount to if it were to include the non-productive services, see Herbert Wilkens Sozialproduktrechnung in Ost und West. The investigation showed that "net domestic product of the Federal Republic--at 1967 prices--was about 21 percent higher than national income (net material product, Eastern definition);" [14], p.269-280.

8.2 Net Material Product Deflators

Data for net material product in "comparable prices" (meaning constant prices) and "effective prices" (meaning actual, current) are given in the Statistische Jahrbuch 1968 [15] for the years 1950; 1955; 1960; 1962-1967. The data suggest that the NMP deflator dropped from 107 in 1950 to 99 in 1955, and that it oscillated around 100 between 1955 and 1967. Except for some index numbers on NMP in effective prices up to 1968 which were published in the 1969 Statistische Jahrbuch, the tables on NMP in current prices were discontinued.

8.3 Capital Goods Deflator

The deflator could be estimated on the basis of the price index numbers for 6 industry groups and 32 products shown in the Statistische Jahrbuch 1974 [2], p. 319. We selected the price index numbers for "machinery and vehicles" as representative for capital goods [2], p. 319.

8.4 Consumer Price Index (CPI)

The index (1960=100) of retail prices, as it applies to the total population, based on a consumer basket of 1968 is given in the GDR Statistische Jahrbuch [2] p. 328. The index of the purchasing power of the GDR Mark for retail sales including rents and utility rates are also shown in the GDR Statistische Jahrbuch [2] p. 329.

8.5 Wage Rates

The average monthly incomes of workers and salary earners in industry are given in the Statistische Jahrbuch [2] p. 19.

8.6 Population Statistics

Population Statistics relating to the mid-year population estimates can be compiled from the Statistische Jahrbuch [2], p. 3 and the UN Demographic Yearbook, 1970, p.130. [The UN statistics cover East Germany and East Berlin.]

8.7 Climate Statistics

Climate Statistics are given in the Statistische Jahrbuch, 1974, p. 505. They show the average temperature at Potsdam, 1901-1950 (as normal) and temperatures recorded 1901 to 1973 for yearly averages and months.

TABLES

Table 1. G.D.R. Lignite Balance and Final Consumption by Sectors, 1973.

	Lignite	Lignite Briquettes	Lignite Coke
	10^6 metric tons		
1. Domestic Production	246.2	50.1	5.7
2. Inland Availabilities	251.0	47.6	5.6
3. Fuel for Transformation:			
Briquetting	99.4	-	-
Coke Ovens	-	6.4	-
Gas works	1.5	10.1	1.3
Electricity	147.0	7.1	2.4
Total Fuel for Transformation	247.9	23.6	3.7
4. Final Consumption			
Energy Sector	1.0[E]	.	.
Industry Sector	2.1	4.3	.7
Transport Sector	-	0.3	-
Household, other small consumers	-	19.4	1.2
Total Final Consumption	3.1	24.0	1.9

Source: compiled from UN ECE Annual Bulletin of Coal Statistics for Europe, 1974, Table 1, Section C, p.47.

E = Estimated.

Table 2. G.D.R. Solid Fuels Coal Balance and Final Consumption by Sectors, 1973

	Lignite (briquettes and coke)	Hard coal	Total Coal
	in 10^6 TCE		
1. Domestic Production	114.2	.7	114.9
2. Inland Availabilities	113.8	6.8	120.6
3. Fuel for Transformation:	93.6	3.8	97.4
4. Final Consumption			
Energy Sector	.7	-	.7
Industry Sector	4.4	1.1	5.5
Transport Sector	.2	1.5	1.7
Household, other small consumers	14.8	.5	15.3
Total	20.1	3.1	23.2

Source: Compiled from UN ECE Annual Bulletin of General Energy Statistics for Europe, 1973, Table 2, p.46

Table 3. G.D.R. Gaseous Fuels, Final Consumption by Sectors, 1970-1974

	Net Calorific Values				
	1970	1971	1972	1973	1974
	TCAL				
Energy	9 198	8 314	8 795	9 415	11 242
Industry	19 779	17 982	19 788	21 939	25 268
Transport	-	26	25	25	21
Households, etc.	8 401	8 540	8 595	8 432	8 983
Total	37 378	34 862	37 203	39 811	45 514
	In Percent				
Energy	25	24	24	24	25
Industry	53	52	53	55	55
Transport	-	-	-	-	-
Households, etc.	22	24	23	21	20
Total	100	100	100	100	100

Source: Compiled from UN ECE, see table 3.
Annual Bulletin of Gas Statistics for Europe, 1974, Table 1, p.20-21.

Table 4. G.D.R. Liquid Fuels Consumption by Sectors, 1973

10^3 metric tons

Sector:	
Industry:	Fuel Oil = 5 996
Transport:	Diesel Oil = 2 661
	Gasoline = 2 020
Household:	Fuel Oil = 627
	Diesel Oil = 665

Source: Compiled from production and export statistics, in the G.D.R. Statistische Jahrbuch [1].

Table 5.

G.D.R. Electricity Consumption by Sectors, 1960 and 1970-1973.

	1960	1970	1971	1972	1973
	in G W H				
Energy Sector (incl.Transmission Losses)	8,724	15,379	16,539	18,213	19,648
Industry	23,182	36,592	36,969	38,722	40,563
Transport	772	1,464	1,491	1,520	1,654
Household	7 249	14 535	14 881	15 372	16 314
Total Consumption (incl. Transmission Losses)	39 927	67 970	69 880	73 827	78 179
	in percent				
Electricity Sector (incl. Transmission Losses)	22	23	24	25	25
Industry	58	54	53	52	52
Transport	2	2	2	2	2
Household	18	21	21	21	21
Total Consumption (incl. Transmission Losses)	100	100	100	100	100

Source: Compiled from G.D.R. 1974 Statistisches Jahrbuch, p.22 and p. 142.

Table 6. G.D.R. Fuel and Electricity Prices, by Sectors, 1973 and 1976

Data are in GDR Mark for natural units.

Type of Fuel	1973 Industry Transport	1973 Household	1976 Industry Transport	1976 Household
Lignite, per tonne	9.93	-	15.80	-
Lignite Briquette, per tonne	43.81	34.-[a]/70.70[b]	66.20	34.-[a]/70.70[b]
City gas, per m^3	0.18	[c] 0.08/0.16	0.18	[c] 0.08/0.16
Diesel, per liter	0.70	-	1.40	-
Gasoline, per liter (average)	0.70	1.45	0.70	1.45
Electricity, per kWh	0.078	0.08/0.04[d]	0.13	0.08/0.04

Heating values

1 kg lignite briquette	4700 kcal
1 m^3 city gas	3400 kcal
1 kg Diesel	9900 kcal
1 kg Gasoline	10400 kcal

a) = Coal cards, controlled sales

b) = Free sales

c) = Large Scale Consumption

d) = Night Rate

Source: Institut für Energetik Leipzig/Zentralstelle für rationelle Energieanwendung, February 1976.

Table 7. German Democratic Republic: Final Energy Consumption (Estimated) 1950-1974

Year	Solid Fuels						Gaseous Fuels				
	Energy	Industry	Transport	Domestic	Total Final		Energy	Industry	Transport	Domestic	Total Final
		Lignite Briquettes	Hard Coal	Lignite Briquettes	Lignite Briqu.	Hard Coal					
	10^3 metric tons						Net Calorific Values TCAL				
1950	235	3 239	.	14 621	18 095	.	3 271	6 933	-	2 878	13 082
1951	258	3 558	.	16 063	19 879	.	3 551	7 528	-	3 125	14 204
1952	272	3 746	.	16 910	20 928	.	3 925	8 320	-	3 454	15 699
1953	285	3 923	.	17 708	21 916	.	4 205	8 915	-	3 700	16 820
1954	293	4 028	.	18 184	22 505	.	4 859	10 302	-	4 276	19 437
1955	318	4 379	.	19 767	24 464	.	5 420	11 490	-	4 769	21 659
1956	322	4 436	.	20 026	24 784	.	5 887	12 480	-	5 181	23 548
1957	333	4 585	.	20 698	25 616	.	6 354	13 471	-	5 592	25 417
1958	337	4 640	.	20 947	25 924	.	6 728	14 263	-	5 921	26 912
1959	337	4 644	.	20 963	25 944	.	6 728	14 263	-	5 921	26 912
1960	350	4 816	8 135	21 737	26 903	8 135	6 635	14 065	-	5 838	26 538
1961	362	4 980	.	22 482	27 824	.	7 289	15 452	-	6 714	29 155
1962	373	5 132	.	23 164	28 669	.	7 569	16 046	-	6 661	30 276
1963	376	5 177	.	23 370	28 923	.	7 850	16 641	-	6 907	31 398
1964	384	5 284	.	23 854	29 522	.	7 009	14 858	-	6 167	28 034
1965	377	5 188	9 464	23 417	28 982	9 464	7 476	15 848	-	6 578	29 902
1966	371	5 106	.	23 047	28 524	.	7 569	16 046	-	6 661	30 276
1967	350	4 819	.	21 753	26 922	.	7 756	16 443	-	6 825	31 024
1968	352	4 845	.	21 870	27 067	.	8 504	18 027	-	7 483	34 014
1969	355	4 886	6 750	22 056	27 297	6 750	8 877	18 820	-	7 812	35 509
1970	356	4 904	8 192	22 137	27 397	8 192	9 198	19 779	-	8 401	37 378
1971	346	4 763	7 973	21 502	26 611	7 973	8 314	17 982	26	8 540	34 862
1972	317	4 365	7 601	19 702	24 384	7 601	8 795	19 788	25	8 595	37 203
1973	313	4 309	8 341	19 452	24 074	8 341	9 415	21 939	25	8 432	39 811
1974	.	.	.	.	.	.	11 242	25 268	21	8 983	45 514

Table 7 continued. German Democratic Republic: Final Energy Consumption (estimated)

Year	Liquid Fuels								Electricity				
	Industry	Transport		Domestic		Total Final			Energy	Industry	Transport	Household	Total Final
	Fuel Oil	Gasoline	Diesel	Fuel Oil	Diesel	Fuel Oil	Gasoline	Diesel					
	10^3 metric tons								G W H				
1950	46	389	155	5	17	51	389	172	4 216	11 116	383	3 450	19 165
1951	51	432	261	6	29	57	432	290	4 655	12 273	423	3 810	21 161
1952	66	558	278	7	31	73	558	309	5 095	13 432	463	4 168	23 158
1953	77	639	373	9	41	86	639	414	5 270	13 894	479	4 313	23 956
1954	66	679	395	7	44	73	679	439	5 710	15 053	519	4 671	25 953
1955	97	716	445	11	50	108	716	495	4 697	12 382	427	3 842	21 348
1956	143	752	545	16	60	159	752	605	6 764	17 832	615	5 533	30744
1957	184	754	618	20	70	204	754	688	7 115	18 758	647	5 821	32 341
1958	221	770	713	24	80	245	770	793	7 642	20 147	695	6 252	34 736
1959	180	797	677	20	80	200	797	757	8 081	21 305	735	6 612	36 733
1960	286	824	775	32	136	318	824	911	8 784	23 158	799	7 186	39 927
1961	383	875	911	43	161	426	875	1 072	9 223	24 315	838	7 547	41 923
1962	449	951	1 012	50	179	499	951	1 191	9 838	25 936	894	8 050	44 718
1963	604	1 022	1 114	67	197	671	1 022	1 311	10 365	27 326	942	8 445	47 114
1964	950	1 097	1 290	105	228	1 055	1 097	1 518	11 156	29 410	1 014	9 127	50 707
1965	1 314	1 203	1 345	146	237	1 460	1 203	1 582	11 683	30 800	1 062	9 558	53 103
1966	1 742	1 332	1 738	194	307	1 936	1 332	2 045	12 385	32 652	1 126	10 134	56 297
1967	1 889	1 389	1 831	210	323	2 099	1 389	2 154	13 000	34 273	1 182	10 637	59 092
1968	2 278	1 370	2 037	253	360	2 531	1 370	4 568	13 791	36 357	1 254	11 283	62 685
1969	2 824	1 424	2 342	314	413	3 138	1 424	2 755	14 230	37 516	1 294	11 642	64 682
1970	4 108	1 772	2 504	456	626	4 564	1 772	3 130	14 953	39 423	1 359	12 235	67 970
1971	4 333	1 915	2 701	482	675	4 815	1 915	3 376	15 374	40 530	1 398	12 578	69 880
1972	5 002	1 901	2 341	556	585	5 558	1 901	2 926	16 242	42 820	1 477	13 288	73 827
1973	5 996	2 020	2 661	627	665	6 623	2 020	3 326	17 199	45 344	1 564	14 072	78 179
1974	.	.	.	.	.	.	.	.	.	.	.	.	.

Table 8. German Democratic Republic: Energy Prices in G.D.R.Mark, 1950-1976

Year	Industry, Transport					Households						
	Lignite briquette	City Gas	Diesel	Gasoline average price	Electricity	Lignite Briquette a) controlled	Lignite Briquette b) free sales	City Gas bulk sales	City Gas other	Gasoline average price	Electricity Day	Electricity Night
	Per 10^6 B T U				Per kWh	Per 10^6 B T U					Per kWh	
1950	.	9.12	.	.	.	1.83	9.96	5.93	11.85	.	0.08	0.04
1951	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1952	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1953	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1954	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1955	.	9.12	.	.	.	1.83	7.25	5.93	11.85	.	0.08	0.04
1956	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1957	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1958	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1959	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1960	.	9.12	.	.	.	1.83	3.96	5.93	11.85	.	0.08	0.04
1961	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1962	.	9.12	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1963	.	9.12	.	.	0.043	1.83		5.93	11.85	.	0.08	0.04
1964	.	11.38	.	.	0.055	1.83		5.93	11.85	.	0.08	0.04
1965	.	12.14	.	.	0.063	1.83	3.96	5.93	11.85	.	0.08	0.04
1966	.	12.14	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1967	.	12.14	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1968	.	12.14	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1969	.	12.55	.	.	.	1.83		5.93	11.85	.	0.08	0.04
1970	.	12.61	.	.	.	1.83	3.80	5.93	11.85	.	0.08	0.04
1971	.	13.42	.	.	0.066	1.83	3.80	5.93	11.85	.	0.08	0.04
1972	.	13.34	.	.	0.074	1.83	3.80	5.93	11.85	.	0.08	0.04
1973	2.36	13.34	20.47	22.91	0.078	1.83	3.80	5.93	11.85	47.47	0.08	0.04
1974	.	.	.	.	.	.	.	.	.	.	.	.
1975	.	.	.	.	.	.	.	.	.	.	.	.
1976	3.56	13.34	40.94	47.47	0.130	1.83	3.80	5.93	11.85	47.47	0.08	0.04

Table 9. German Democratic Republic: Macro-Economic Data, 1950-1973

Year	Net Material Product		Machinery and Vehicles Industry Price Index	Consumer Price Index	Population	Wage Rate [monthly incomes of workers and salary earners]	Weather Temperature Deviations	
	comparable, constant prices of 1967	effective (current prices)					Year	First Quarter
	Million GDR Mark		1963=100	1960 = 100	10^6	GDR Mark	C^o	C^o
1950	27 177	29 109	.	189.8	18.4	311	+0.5	-1.0
1951	.	.	.	.	18.4	334	+0.8	+0.1
1952	.	.	.	.	18.3	352	-0.4	-0.5
1953	.	.	.	.	18.2	378	+1.2	+0.5
1954	.	.	.	.	18.1	408	-0.6	-3.4
1955	50 347	50 037	.	110.4	17.9	432	-0.7	-2.9
1956	.	.	.	109.0	17.7	444	-1.4	-3.6
1957	.	.	.	108.1	17.5	460	+0.5	+1.9
1958	.	.	.	103.2	17.3	494	-0.1	-0.7
1959	.	.	.	101.1	17.3	531	+0.9	+0.6
1960	71 045	70 520	.	100.0	17.2	555	+0.1	-0.5
1961	72 212	.	.	100.1	17.1	578	+0.7	+1.8
1962	74 132	74 448	.	100.4	17.1	583	-1.0	-0.3
1963	76 692	76 749	100	100.3	17.2	593	-0.8	-5.2
1964	80 487	80 447	142.9	100.4	17.0	610	-0.1	-2.6
1965	84 175	82 802	158.1	100.1	17.0	633	-0.6	-0.7
1966	88 294	87 106	158.1	100.1	17.1	646	+0.3	-1.0
1967	93 043	92 210	158.1	100.0	17.1	662	+1.0	+1.8
1968	97 830	.	158.1	100.2	17.1	693	+0.2	0
1969	102 947	.	169.6	100.0	17.1	722	-0.6	-2.9
1970	108 720	.	171.6	99.9	17.1	755	-0.6	-3.3
1971	113 562	.	170.1	100.2	17.1	785	+0.6	-1.9
1972	120 090	.	170.6	99.9	17.0	814	-0.2	-0.2
1973	126 670	.	170.6	99.5	16.9	835	+0.2	+1.0

References

[1] Statistisches Jahrbuch 1963, Deutsche Demokratische Republik, Staatsverlag, Berlin, 1963.

[2] Statistisches Jahrbuch 1974, Deutsche Demokratische Republik, Staatsverlag, Berlin, 1974.

[3] Doblin, C., Data Provided for W.D. Nordhaus: The Demand for Energy, RM-76-18, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1976.

[4] Proceedings of the Workshop on Energy Demand, W.D. Nordhaus, ed., CP-76-1, International Institute for Applied System Analysis, Laxenburg, Austria, 1976.

[5] Häfele, W., et al., Second Status Report of the IIASA Project on Energy Systems, 1975, RR-76-1, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1976.

[6] Energy Flow Chart (Energieflussbild Bilanz), in Management of Energy/Environment Systems: Concepts, Methodologies and Case Studies, Proceedings of a workshop held November 10-14, 1975, International Institute for Applied Systems Analysis, Laxenburg, Austria, forthcoming.

[7] Energy Sector Indexes (Energiewirtschaftliche Kennziffern der DDR), in Management of Energy/Environment Systems: Concepts, Methodologies and Case Studies, Proceedings of a workshop held November 10-14, 1975, International Institute for Applied Systems Analysis, Laxenburg, Austria, forthcoming.

[8] Principles Applied to Price Policy and Price Fixing Concerning Energy Suppliers in the G.D.R., in Management of Energy/Environment Systems: Concepts, Methodologies and Case Studies, Proceedings of a workshop held November 10-14, 1975, International Institute for Applied Systems Analysis, forthcoming.

[9] Nordhaus, W.D., The Demand for Energy: An International Perspective, in Proceedings of the Workshop on Energy Demand, CP-76-1, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1976, pp. 511-589.

[10] Statistics of Energy 1959-1973, O.E.C.D., Paris, 1974.

[11] Annual Bulletin of Coal Statistics 1974, United Nations Economic Commission for Europe, Geneva, 1975.

[12] Annual Bulletin of Gas Statistics 1974, United Nations Economic Commission for Europe, Geneva, 1975.

[13] General Energy Statistics for Europe 1973, United Nations Economic Commission for Europe, Geneva, 1974.

[14] Wilkens, H., Sozialproduktrechnung in Ost und West, Deutsches Institut für Wirtschaftsforschung Vierteljahrshefte, No. 4, 1973.

[15] Statistisches Jahrbuch 1968, Deutsche Demokratische Republik, Staatsverlag, Berlin, 1968.