



FEDERATIVE REPUBLIC OF BRAZIL
MINISTRY OF MINES AND ENERGY

**BRAZILIAN
ENERGY
BALANCE
1999**

1983 TO 1998 PERIOD

REPÚBLICA FEDERATIVA DO BRASIL

PRESIDENTE DA REPÚBLICA

Fernando Henrique Cardoso

MINISTRO DE MINAS E ENERGIA

Rodolpho Tourinho Neto

SECRETÁRIO DE ENERGIA

Benedito Aparecido Carraro

**DEPARTAMENTO NACIONAL DE POLÍTICA ENERGÉTICA
COORDENAÇÃO-GERAL DE INFORMAÇÕES ENERGÉTICAS**

João Antonio Moreira Patusco

ISS 0101-6636

BRASIL, MINISTRY OF MINES AND ENERGY
BRASILIAN ENERGY BALANCE, BRASÍLIA, 1999

P. 151 ILLUSTRATED

29,7 cm

1. BRAZIL: ENERGY
2. BRAZIL: MINERAL RESOURCES
I. TITLE
UDC 620.9:553.04(81)

BRAZILIAN ENERGY BALANCE

1999

- The Brazilian Energy Balance, BEB 1999, based on 1998 data, has been prepared by the **National Department For Energy Policies** of the Secretariat for Energy of the Ministry of Mines & Energy - DNPE/SEN/MME.
- This Publication will be revised each year in the interest of its progressive improvement and the periodic analysis of the Brazilian Energy Sector.
- **NEWS**
This document incorporates subject on electricity conversion criteria for toe - see pages 17 and 114.

See the new approach of international data on page 106.

White page

INTRODUCTION

Like in previous years, the **Brazilian Energy Balance 1999 - BEB 99** - shows the energy flows of different primary and secondary sources, from the production to the final consumption in every sector of the Brazilian economy, for the period 1983 to 1998.

The balance sheet can be more readily understood if certain basic concepts are explained.

Primary energy: sources provided by nature in its direct form, such as petroleum, natural gas, mineral coal, hydraulic energy, firewood, etc.

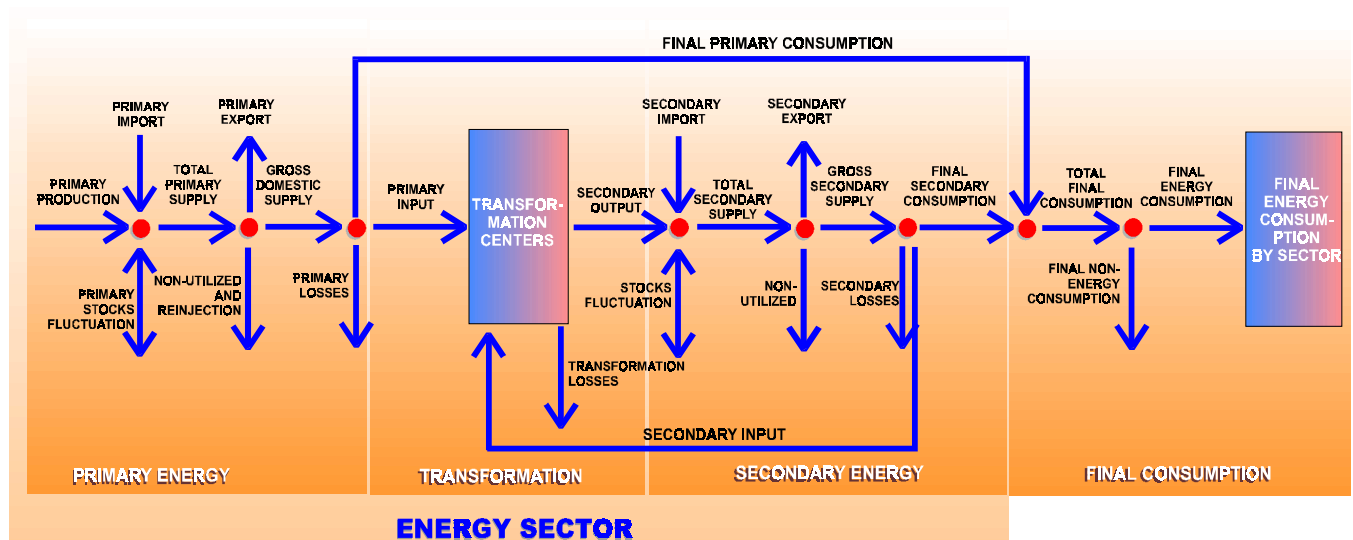
The bulk of primary energy is consumed (transformed) in the **Transformation Centers** (petroleum refineries, natural gas plants, coking ovens, hydroelectric power plants, etc.), where it is converted into sources of **secondary energy** (diesel oil, gasoline, coke, electricity, etc.) with their respective losses in transformation.

The remaining primary energy is consumed directly in various sectors of the economy and this consumption is designated **final consumption**. Examples: the consumption of firewood for cooking meals, the consumption of steam coal in boilers, etc.

The same occurs with secondary energy, with the greater part going directly into final consumption in the various sectors of the economy while the remainder is converted into other forms of secondary energy. Examples: fuel oil into electricity; sugar cane bagasse into electricity; naphtha into town gas, etc.

The **total consumption** of each source of primary and secondary energy is thus represented by the sum of the energy transformed plus the energy that flows to final consumption.

It should also be pointed out that the final consumption of primary and secondary sources can be broken down into energy and non-energy applications, with final energy consumption covering a number of sectors of the economy, such as: the energy sector itself, the residential, commercial, public, agricultural, transportation and industrial sectors. The transportation sector consists of highway, railroad, airway and waterway transportation; and the industrial sector of cement, pig-iron and steel, ferro-alloys, mining/pelletization, non-ferrous metals, chemical, food and beverage, textiles, paper and pulp, ceramics and other industries.



This Balance is divided into nine chapters, as follows:

1. SUMMARY - 1983/98

- ◆ Consolidated data of production, consumption and external dependence on energy, and also the sectorial composition of the consumption of the different groups of energy sources.

2. ENERGY SUPPLY AND CONSUMPTION BY SOURCE - 1983/98

- ◆ Production, import, export, variation in inventories, losses, adjustments and total consumption for every primary and secondary sources.

3. ENERGY CONSUMPTION BY SECTOR - 1983/98

- ◆ Final consumption of energy broken down into primary and/or secondary sources, by sector.

4. ENERGY IMPORT AND EXPORT - 1983/98

- ◆ External dependence on energy, defined as the difference between domestic demand and production of energy.

5. TRANSFORMATION CENTERS BALANCES - 1983/98

- ◆ Balances of transformation centers, characterizing the energy processed, the energy produced, and the respective losses in transformation.

6. ENERGY RESOURCES AND RESERVES - 1972 /98

- ◆ Energy resources and reserves of primary sources, with respective methodologies for estimating them.

7. ENERGY AND SOCIO-ECONOMICS - 1983/98

- ◆ Parameters with the production and consumption of energy/GDP and population, and foreign exchange expenses with the importation of petroleum.

- ◆ Average prices of the energy sources, as also specific consumption of energy in selected sectors.

8. ENERGY DATA RELATING TO BRAZILIAN STATES - 1983/98

- ◆ Partial information about regional energy balances and population.

9. APPENDICES

A. Installed Capacity

- ◆ Installed capacity of electrical generation and that of refining.

B. World Data

- ◆ Main energy data of world regions and countries.

C. General Structure of the Balance

- ◆ Methodology of the energy balance.

D. Treatment of Information

- ◆ Sources of data. Particular aspects of sources of energy and those explanations necessary to understand different concepts from Balances for previous years.

E. Conversion Units

- ◆ Densities, heat values and conversion factors of primary and secondary energy sources.

F. Consolidated Energy Balance

- ◆ Annual matrices where all the energy flows of the different primary and secondary sources are consolidated.

CONTENTS

Characteristics of the Brazilian Energy Development - 1970/98 period	07
---	----

1. SUMMARY - 1983/98

Synopsis - 1998	13
1.1 Primary energy production	15
1.2 Domestic energy supply (case A)	16
1.3 Domestic energy supply (case B)	17
1.4a Final energy consumption by source (tep)	18
1.4b Final energy consumption by source (%)	19
1.5 Final energy consumption by sector	20
1.6 Final consumption by source for energy use.....	21
1.7 Final non-energy consumption by source	21
1.8 External dependence on energy	22
1.9 Oil products consumption by sector	23
1.10 Electricity consumption by sector	23
1.11 Steam coal consumption by sector	24
1.12 Biomass consumption by sector	24
1.13 Domestic energy supply 1940/98	25
Usable Energy Balance	27

2. ENERGY SUPPLY AND CONSUMPTION BY SOURCE - 1983/98

2.1 Total primary energy	31
2.2 Petroleum	32
2.3 Natural gas	32
2.4 Steam coal	33
2.5 Metallurgical coal	33
2.6 Hydraulic energy	33
2.7 Uranium U ₃ O ₈	33
2.8 Cane juice	34
2.9 Firewood	34
2.10 Molasses	35
2.11 Sugar cane bagasse	35
2.12 Black liquor	35
2.13 Other wastes	35
2.14 Total of secondary sources	36
2.15 Petroleum and natural gas derivatives	37
2.16 Diesel oil	38
2.17 Fuel oil	39
2.18 Gasoline	40
2.19 LPG	40
2.20 Naphtha	41
2.21 Coal coke	41
2.22 Kerosene	41
2.23 Gasworks gas	42
2.24 Gas coke	42
2.25 Electricity	43
2.26 Charcoal	44
2.27 Ethyl alcohol	44

2.28 Anhydrous alcohol	45
2.29 Hydrated alcohol	45
2.30 Other petroleum secondaries	46
2.31 Coal bitumen	46
2.32 Non-energy products of petroleum	46

3. ENERGY CONSUMPTION BY SECTOR - 1983/98

3.1 Energy sector	49
3.2 Commercial sector	50
3.3 Public sector	50
3.4 Residential sector	51
3.5 Agricultural sector	52
3.6 Transportation sector	53
3.6.1 Highways	54
3.6.2 Railroads	54
3.6.3 Airways	54
3.6.4 Waterways	54
3.7 Industrial sector	55
3.7.1 Cement	56
3.7.2 Pig-iron and steel	57
3.7.3 Ferro alloys	58
3.7.4 Mining/pelletization	58
3.7.5 Chemical	59
3.7.6 Non ferrous and other metals	60
3.7.7 Textiles	60
3.7.8 Food and beverage	61
3.7.9 Paper and pulp	61
3.7.10 Ceramics	62
3.7.11 Other industries	62

4. ENERGY IMPORT AND EXPORT - 1983/98

4.1 External dependence on energy	65
4.2 External dependence on petroleum	66
4.3 Imports of energy	67
4.4 Exports of energy	67
4.5 Net exports and/or imports	68

5. TRANSFORMATION CENTERS BALANCES - 1983/98

5.1 Petroleum refineries	71
5.2 Gasification plants	71
5.3 Public utility power plants	71
5.4 Auto-Generation	72
5.5 Coking plants	72
5.6 Distilleries	72

6. ENERGY RESOURCES AND RESERVES - 1972/1998

6.1	Brazilian energy resources and reserves	75
6.2	Petroleum and natural gas reserves	77
6.3	Hydraulic resources	77
6.4	Coal and peat reserves	78
6.5	Uranium reserves	78

7. ENERGY AND SOCIO-ECONOMICS - 1983/1998

7.1	Domestic energy supply /GDP/Population	81
7.2	Energy supply by source per GDP	81
7.3	Final energy consumption	82
7.4	Gross national product	82
7.5	Final energy consumption per Added Value of the sector	83
7.6	Residential sector - Energy/population	84
7.7	Transportation sector - Energy/Added Value	84
7.8	Specific consumption of energy in selected sectors	85
7.9	Constant average prices of energy sources - national currency	86
7.10	Constant average prices of energy sources - US\$	87
7.11	Relations of prices between the energy sources	87
7.12	Foreign trade - US\$	88

8. ENERGY DATA RELATING TO BRAZILIAN STATES - 1983/98

8.1	Primary energy production	91
8.2	Final energy consumption	92
8.3	Final consumption of energy by industry	93
8.4	Final consumption of energy by transport	94
8.5	Final consumption of energy by residence	95
8.6	Final consumption of electricity by residence	96
8.7	Final consumption of LPG by residence	97
8.8	Final consumption of gasoline and alcohol	98
8.9	Final consumption of petroleum derivatives	99
8.10	Final consumption of electricity	100
8.11	Production and consumption of energy per capita	101

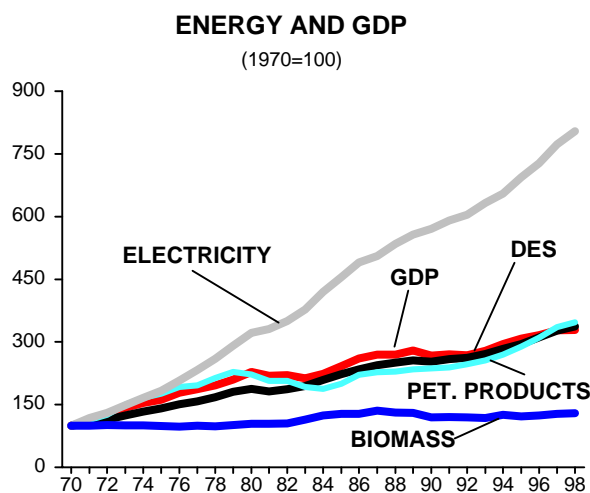
9. APPENDICES

A.	INSTALLED CAPACITY	105
A.1	Installed capacity of electrical generation	105
A.2	Installed capacity of refining	105
B.	WORLDDATA	106
C.	GENERAL STRUCTURE OF THE BALANCE	109
D.	TREATMENT OF INFORMATION	113
E.	CONVERSION UNITS	117
F.	CONSOLIDATED ENERGY BALANCE	121
F.1	- for 1970	123
F.2	- for 1971	124
F.3	- for 1972	125
F.4	- for 1973	126
F.5	- for 1974	127
F.6	- for 1975	128
F.7	- for 1976	129
F.8	- for 1977	130
F.9	- for 1978	131
F.10	- for 1979	132
F.11	- for 1980	133
F.12	- for 1981	134
F.13	- for 1982	135
F.14	- for 1983	136
F.15	- for 1984	137
F.16	- for 1985	138
F.17	- for 1986	139
F.18	- for 1987	140
F.19	- for 1988	141
F.20	- for 1989	142
F.21	- for 1990	143
F.22	- for 1991	144
F.23	- for 1992	145
F.24	- for 1993	146
F.25	- for 1994	147
F.26	- for 1995	148
F.27	- for 1996	149
F.28	- for 1997	150
F.29	- for 1998	151

CHARACTERISTICS OF THE BRAZILIAN ENERGY DEVELOPMENT - 1970/98 PERIOD

During the 1970/98 period, the Brazilian economy grew at an average rate of 4.3% while showing distinctive behaviors for each decade, (8.6% during the seventies, 1.6% during the eighties and 2.6% during the nineties). During the same period, the Domestic Energy Supply-DES demonstrated an equal performance - 4.4%, resulting in an income elasticity of 1.02. The energy demand levels of electricity, petroleum products and biomass, showed very distinct behaviors with income elasticities of 1.78, 1.05 and 0.21 respectively. Figure (a) shows the growth indices of these variables, using 1970 as the base year.

Figure (a)



INCOME ELASTICITY - AVERAGE BY PERIOD

SPECIFICATION	73/70	80/73	85/80	92/85	98/92	98/70
DOM. ENERGY SUPPLY / GDP	0.61	0.85	3.15	1.57	1.25	1.02
TOTAL ELECT./ GDP	1.14	1.65	6.40	2.83	1.42	1.78
CONS. PET. PRODUCTS /GDP	1.17	0.81	-1.84	2.11	1.68	1.05
BIOMASS CONSUM. /GDP	0.01	0.07	3.76	-0.69	0.39	0.21
IND. ENERGY CONS./ IND. AV.	0.74	1.26	2.63	3.00	0.92	1.42
IND. ELECTRICITY / IND.AV.	1.01	1.86	5.59	4.33	0.68	2.00
COM. & PUB. ELECT. / COM. AV.	0.99	1.27	3.58	1.85	2.21	1.56

After a severe contraction in 1990 (-4.5%) and stagnation in 1991 (1.3%) and 1992 (-0.9%), the economic activity bounced back during the 1993 to 1997 period showing average rates of 4,0% per year. During the same period, DES showed an average annual growth rate of 4.6% resulting in an income

elasticity of 1.14 - Already in 1998, under the pressure of the Asian financial crisis, the Brazilian economy contracted, with a growth rate of only 0.15%.

As a result of a political decision to reduce the dependence on external energy supplies, starting in 1979 (after a large increase in the international price of petroleum) the net imports of crude oil and petroleum products fell from almost one million equivalent petroleum barrels per day (boe/day) in 1979 - an 85% external dependence - to approximately 420 thousand boe/day in 1985 - a 43% external dependence. In 1986, with a return of petroleum prices to their 1978 levels - 15 to 20 dollars - the net imports grew again, reaching 680 thousand boe/day - a 40,1% external dependence, in 1998. It has been realized that the cost of importing crude oil and petroleum products is no longer a growth limitation for the Brazilian economy.

The share of petroleum products in the final energy consumption was 33% in 1970, increased to 43% in 1979, returned to 31% in 1985 and is currently at 35%.

After the economic stagnation of the 1970's, which showed an average annual petroleum production of 170 thousand bbl/day, the average production began to sharply increase and showed, in 1998, an average daily production of 1001 bbl (including NGL). The proven reserves of petroleum also increased significantly and maintained increased levels for 10 years of production. The production of natural gas equaled that of petroleum - increasing from 1.9 to 9.8 billion m³ during the 1979/98 period.

The current refining capacity was about 1.84 million bbl/day on 12/31/98. Despite the significant modifications the Brazilian refining structure underwent, the balance of consumption and production (during a period of sudden alterations in the demand profile of petroleum products) was required for diesel and LPG imports and fuel oil and gasoline exports.

The Electrical Sector more than quintupled its installed generation capacity during the 1970/98 period. In december,1998 it had 65.2 GW in operation (including auto producers) proportional to 91% hydraulic generation and 9% thermal and nuclear generation. The installed hydraulic generation capacity of 56.8 GW, as of 12/31/98 represented approximately 22% of Brazil's total potential hydraulics. Electricity consumption during the 1970/98 period grew 7.7% per annum. The share of electricity in the final energy consumption went from 16% in 1970 to 39% in 1998.

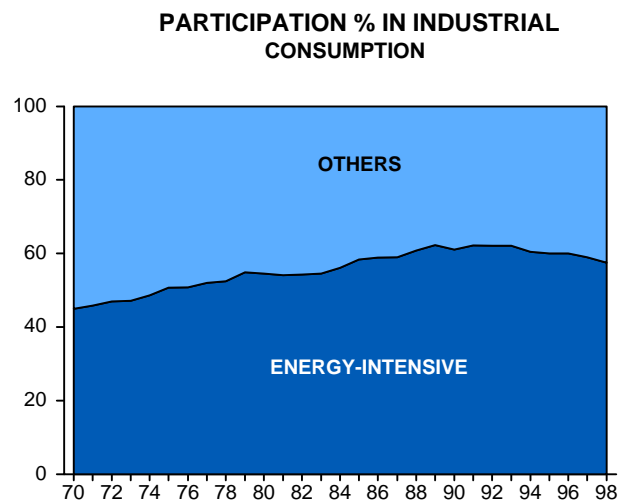
Mineral coal (known reserves of 10.1 billion t), uranium (used in only one nuclear electric plant of 657 MW) and natural gas are not widely used energy resources in the Brazilian Energy System. Since 1975, there has been an industry incentive to use coal as a replacement for fuel oil mainly in the cement industry. Currently, the Coal Sector is fully privatized and competes in the market place with other energy sources, for industrial use. Coal based electricity generation still enjoys some protective measures which allow the industry to gradually adapt to a fully competitive market. The use of metallurgic coal (99% imported) accompanied the expansion of steel production.

Hydroelectricity, firewood and sugar cane products play a major role as renewable resources (58% of DES) in the Brazilian Energy System. The Alcohol Program, created in 1975, represented the most successful effort in the development of renewable resources for the substitution of petroleum products, whether blended with gasoline or as a single fuel for alcohol-fueled vehicles (approximately 3.6 million vehicles exclusively use alcohol as fuel).

In the seventies, the Industrial Sector increased its share in the final energy consumption from 31% to 39%, maintaining this level until 1993 when it started to decline. In figure (b), the growing participation of the energy-intensive industries in the consumption of industrial energy is rising notably from 45% in 1970 to around 62% in 1992. A great part of this growth was a consequence of the Metallurgy expansion, which targeted the external market (the export of steel, ferro-alloys and aluminum, from 1980 to 92, increased from 2.3 to approximately 13 million t). From 1992 onward, the internal market absorbed a portion of the exports, positively reflecting a reduction in the share of energy-intensive industrial consumption, which fell to 57% in 1998.

During the same period, 1970/92, the industrial energy consumption showed an elasticity of 1.57 in relation to the Added Value indicating that there was a favorable decline to 0.92 in the last four years or, in otherwords, that Brazil is placing a higher value on its own industrial products with less energy consumption.

Figure (b)



The participation of the Transport Sector in the final energy consumption represented a slight increase, from 18.8% in 1970 to 21.1% in 1998. In comparison, the Residential Sector showed a decrease (from 34% to 16%), as LPG replaced firewood (LPG efficiency use is 7 to 10 times greater than that of firewood). It is estimated that 96.4% of residences are LPG and city gas users.

Historically, until 1975, investments in the Brazilian Energy Sector represented approximately 8 to 10% of total investments. The policy of reduction of external dependence and the increase in energy-intensity demanded greater investments in energy. The apex occurred in 1984, with investments in energy representing 24% of the total. In recent years investments in energy again represented about 8 to 9%.

The following figures show the main alterations occurring in the expansion of the Brazilian Energy Sector, the period of great variations in crude oil prices and the beginning of the process of open market and economic stability. Figures relative to the periods: 1973/70 - 1980/73 - 1985/80 - 1992/85 and 1998/93 are shown accordingly.

Figure (c) shows the elasticity of some energy variables in relation to the GDP. It shows the great

alterations that occurred during the 85/80 period, as a consequence of the policy aiming at the reduction of dependence on imported petroleum. The main aims of the energy policy in this period were: a real rise in the prices of petroleum products, line of credit for alternative sources, establishment of quotas for fuel oil, subsidized prices for alternative sources, increase in the investments for petroleum production and energy conservation.

Figure (c)

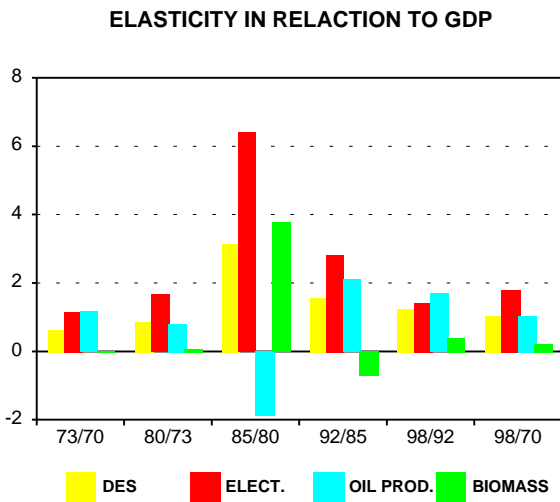
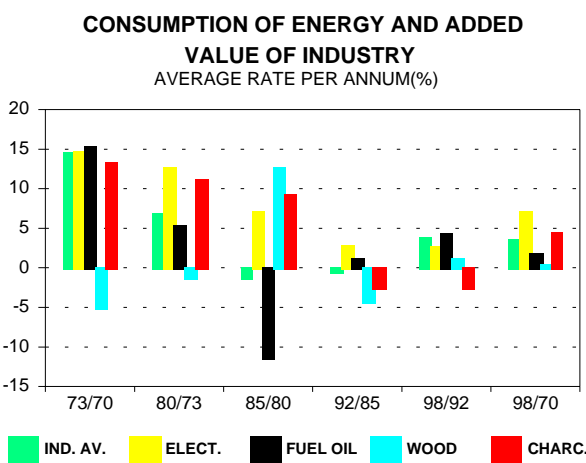


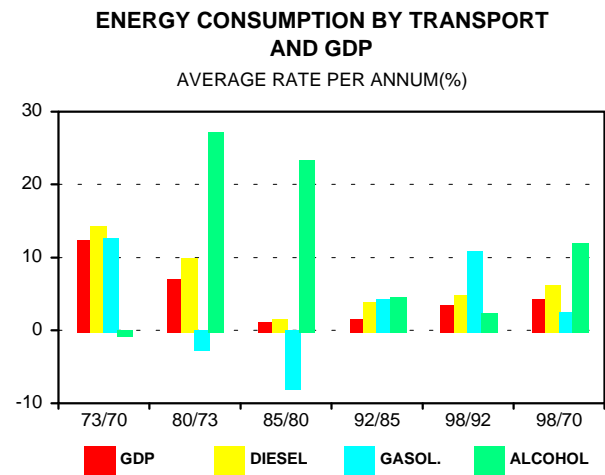
Figure (d) shows the Added Value growth rates of the Industry and the consumption of some energy sources; the distinct behavior in all of the periods is notable. The most significant event occurred during the 80/85 period, when there was a large substitution of fuel oil for mineral coal, firewood, charcoal and electricity, as well as the growth of the electric-intensive industries.

Figure (d)



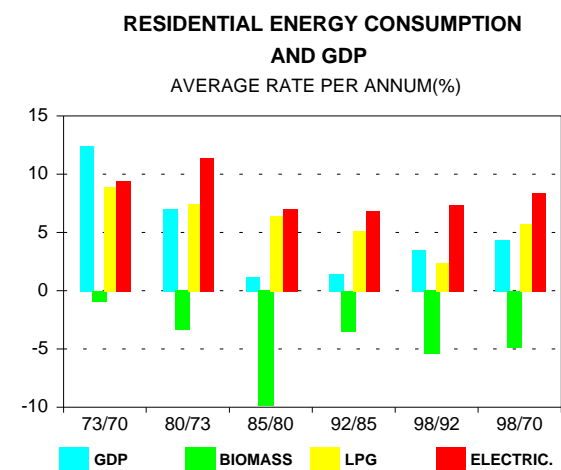
The changes that occurred in the Transport Sector are shown in figure (e). The first alcohol-fueled cars entered the market in 1979, when adaptations of formerly gasoline-fueled vehicles and production of alcohol-fueled vehicles started. During the 80/85 period, note that gasoline consumption rates decreased and alcohol consumption rates increased. Diesel oil, which was not substituted, remained stable in relation to GDP. After 1985, there was an accelerated return to gasoline consumption in relation to alcohol consumption.

Figure (e)



The changes that occurred in the consumption of energy in the Residential Sector are shown in figure (f), where a gradual penetration of LPG and electricity can be seen.

Figure (f)



White page

SUMMARY
1983/1998

1

White page

SYNOPSIS - 1998

BRAZIL'S GENERAL DATA

Area (km ²)	8511965			
Demographic Density (inhab/km ²)	18.9			
Urban Population - 1990(%)	73.9			
Exchange Rate - 1998 average - R\$/US\$	1.1605			
Currency	Real			
Official Language	Portuguese			
SPECIFICATION	UNIT	1997	1998	%
POPULATION	10 ⁶	159	161	1.26
GROSS DOMESTIC PRODUCT - GDP	10 ⁹ US\$ (98)	772	773	0.14
PER CAPITA	US\$ (98)	4860	4800	-1.10
DOMESTIC ENERGY SUPPLY	10 ⁶ toe	242.9	250.1	2.96
PER CAPITA	toe	1.53	1.55	1.69
PER GDP	koe/ US\$	0.31	0.32	2.82
FINAL ENERGY CONSUMPTION	10 ⁶ toe	221.6	228.3	3.02
ELECTRICITY SUPPLY	TWh	348	361	3.60
ELECTRICITY GENERATION	TWh	308	322	4.42
PETROLEUM PRODUCTION (+)NGL	10 ³ b/d	860	1001	16.37
TOTAL ENERGY IMPORTS	10 ³ boe/d	1469	1366	-7.0
TOTAL ENERGY EXPORTS	10 ³ boe/d	96	134	40.3
TOTAL CONSUMPTION				
PETROLEUM DERIVATIVES	10 ³ boe/d	1608	1666	3.6
GASOLINE AND ALCOHOL	10 ³ b/d	541	551	1.9
DIESEL OIL	10 ³ b/d	569	600	5.4
FUEL OIL	10 ³ b/d	239	238	-0.7
JET FUEL	10 ³ b/d	59	66	10.6
TOTAL ELECTRICITY	TWh	295	307	4.2
INDUSTRIAL ELECTRICITY	TWh	136	136	0.7
RESIDENTIAL ELECTRICITY	TWh	74	79	7.2
COMMERCIAL ELECTRICITY	TWh	38	42	8.9
NATURAL GAS	10 ⁶ m ³ /d	17.1	18.4	7.6
TOTAL PETROLEUM RESERVES(+)				
NATURAL GAS(+)NGL	10 ⁹ boe	16.9	17.3	2.4
AVERAGE PRICES - US\$(1998)				
PETROLEUM (CIF)	/b	18.8	11.7	-37.8
GASOLINE	/boe	117.5	133.8	13.9
DIESEL OIL	/boe	57.1	57.8	1.2
FUEL OIL	/boe	24.5	24.1	-1.6
ALCOHOL	/boe	156.4	174.8	11.8
NATURAL GAS (INDUSTRY)	/boe	18.9	18.6	-1.6
FIREWOOD	/boe	14.9	15.0	0.7
CHARCOAL	/boe	17.3	19.3	11.6
RESIDENTIAL ELECTRICITY	/boe	220.3	232.0	5.3
INDUSTRIAL ELECTRICITY	/boe	97.7	100.6	3.0
PRODUCTION				
PIG-IRON AND STEEL	10 ⁶ t	26.2	25.8	-1.3
FERRO-ALLOYS	10 ⁶ t	0.87	0.75	-13.8
ALUMINIUM	10 ⁶ t	1.19	1.21	2.0
CEMENT	10 ⁶ t	38.1	40.0	5.0
CHEMICAL PRODUCTS	10 ⁶ t	28.9	28.5	-1.4
PAPER AND PULP	10 ⁶ t	12.8	13.2	3.0
ELECTRIFIED RESIDENCES(*)	%	91.8	93.0	1.3
HOUSES WITH LPG/CITY GAS (*)	%	96.3	96.4	0.1

Note: boe = barrel oil equivalent.

(*) Includes the rural area in the North Region. (revised data)

ENERGY HIGHLIGHTS

In 1998, due to the Asian Countries' Crisis, the Brazilian Government enforced measures to achieve a strong decrease in the economic growth of the Country. But, in the case of the energy area, the energy sources related to the welfare of the population maintained high levels of consumption, as in the case of residential and commercial electric energy, automotive gasoline, and aviation kerosene. As a consequence the total energy consumption grew by 3 %, and presented a non typical elasticity of 20 in reference to the GDP.

The total reserves (measured, indicated and inferred) of petroleum, NGL and natural gas, reached 17.3 billion barrels equivalent to petroleum-bep, in December of 1998, a volume 2.4% greater than 1997. Considering only the measured reserves of petroleum, 7.4 billion barrels, it corresponds to about 20 years of the current production.

The average production of petroleum was 972 thousand barrels/day, in 1998, (1001 thousand, if including NGL), growing 16.4% in relation to 1997. The consumption of petroleum products increased to 3.6% (1666 thousand boe/day) which includes the consumption of the Petroleum Industry itself). In the same year, imports of crude oil and petroleum products reached 820 thousand boe/day and exports reached 132 thousand boe/day. In this context the dependence on external crude oil and petroleum products remained at 40 % compared to the 46 % of 1997.

As in 1997 the consumption of aviation kerosene and automotive gasoline continued to present significant growth rates in 1998, of 10.6% and 5.1% respectively. Considering the total automotive consumption of gasoline and alcohol, there is a strong decrease in the growth rates, from 3.0% in 1997 to 1.9% in 1998. Thus, after three years of elevated consumption growth rates and attending to the repressed demands resulting from the recession of 1990/93, gasoline consumption returned a performance closer to that of the economic growth.

The consumption of automotive alcohol reached 13.0 million m³ in 1998, 2.5% below the consumption in 1997. As the sales volume of new alcohol fueled cars remained below the amount of scrapped cars, thus

causing a reduction and aging of the fleet, the consumption of hydrating alcohol decreased by 7.9% in 1998. Already the consumption of anhydrous alcohol matched the consumption growth of gasoline.

During 1998, 1.4 million new automobiles were sold to the domestic market implying in the consumption of around 1.6 million m³ of gasoline and alcohol, according to estimates. In the same year were consumed 0.6 million m³ of gasoline and alcohol more than in 1997, a quantity that is inferior to the demands of the new fleet. As such, the calculations indicate that there was a 3.0% reduction in the average consumption per vehicle in 1998.

The consumption of electricity increased 4.2% in 1998, driven by the performance of the Commercial Sector (8.9%) and the Residential Sector (7.2%), which was greatly superior to the performance of the Industrial Sector (0.7%). Although growth was not as strong, residential consumption continued to be driven by new connections and by the purchase of durable consumer goods, mainly by the lower income families, whose purchasing power increased as the rate of inflation decreased. In Commerce, the consumption of electricity reflected the expansion and modernization of services and the more intensive use of air conditioners, as well as the opening of large shopping centers.

Despite an increase of 1.6 million new residential accounts in 1998, the average consumption by account showed growth of 4.5% (about 177 kWh/month) which is still noteworthy but was inferior to the 8.8% verified in 1996.

In the Industrial Sector (excluding the Energy Industry), the energy consumption grew 2.05 % in 1998, against a negative performance of 0.99 % of the Aggregate Value - AV of the sector. The industrial branches that most influenced in the growth of the energy consumption, with higher than 4 % rates, were the Sugar, Pulp and Paper and Cement Industries, all energy intensive. In the energy sources, the sugar cane rejects presented a 16.8 % increase, and mineral coal 8.6 %. Both of these sources are associated to the already mentioned industries. In the case of electricity, the consumption growth was of only 0.6 %, which may be explained by the negative, or near zero, performance of electric intensive industries, such as Pig-Iron and Steel, Ferro-Alloys and Aluminum.

ECONOMIC HIGHLIGHTS

The Brazilian Gross Domestic Product - GDP - grew 0.15% in 1998. This is a result well below that of 1997, which was of 3.68%. Considering an annual population growth of 1.3%, the Brazilian GDP per capita decreased 1.2%

in 1998, going from US\$4,860.00 to US\$ 4,800.00 in 1998 Dollars).

The Brazilian economy, at the beginning of 1998, did not show the expected decrease. Thus, the GDP, of the first quarter, did not vary significantly in volume to that of the last quarter of 1997. Such performance was sustained basically by the growth maintenance of the Transformation Industry. Besides this, in view of the attractive interest rates, which, even though nominally declining, the Brazilian currency reserves were recomposed and surpassed the levels attained before the Asian crisis of the last quarter.

In this scenario, the second quarter of the year pointed towards a relative recuperation of the economic activity level, which translated into a GDP growth of 1.33 % in comparison to that of the first quarter, and an accumulated amount of 1.32 % during the first half.

In the beginning of the second semester, the Russian crisis, which began when that country declared moratorium, affected the course of economic recuperation, interrupting the capital flows to the transition economies, among which is Brazil. Due to this, the Government increased quickly the interest rates, trying to generate a greater level of external confidence, seeing that the country had lost approximately US\$ 30 billion of its international reserves.

In the third quarter, the continuing evasion of foreign capitals made the Government seek an agreement with the IMF and other international financial institutions, to re-enforce the Country's reserves, and consequently, the confidence of the investors as to the capacity of honoring its payments.

The agreement with the IMF had as counterpart the need for the Country put in order its public accounts. This was initiated by the Fiscal Stabilization Program (FSP) announced in October.

Even with the mentioned agreement and a reasonable flow of direct investments (US\$ 2.2 billion each month) - which indicates the confidence in the future stabilization of the country by the productive investors - it wasn't possible to stop the exit of the reserves. These, after reaching US\$ 74.6 billion in April, fell to US\$ 44.5 billion in December, already incorporating the amount of the first part of the funds loaned by the IMF.

Therefore, 1998, was ear marked basically by, besides the already mentioned internal factors, the cautious position of the international markets in relation to Brazil. At the end of the year, the objective of the Government was centered in the balancing of the public accounts. This, in turn delayed the growth of the economic activity to a more stable environment

TABLE 1.1.a

PRIMARY ENERGY PRODUCTION

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	25794	32762	37236	37929	38147	37106	38943	39908	39968	40455	41460	43297	44605	50427	54417	62080
PETROLEUM	16595	23216	27493	28784	28463	27853	29845	31906	31518	31861	32551	33804	34907	39720	42777	49571
NATURAL GAS	3885	4746	5292	5504	5596	5857	5910	6077	6386	6753	7120	7508	7700	8863	9511	10443
STEAM COAL	2308	2605	2572	2443	2333	2442	2179	1564	1919	1762	1752	1910	1931	1760	2072	2030
METALLURGICAL COAL	737	821	887	838	625	775	663	314	145	79	37	75	67	84	57	13
URANIUM - U3O8	2269	1374	992	360	1130	179	346	47	0	0	0	0	0	0	0	23
RENEWABLE ENERGY	90018	98984	104382	103789	108229	110380	111844	108166	111361	111783	114471	119235	120705	124605	130797	134082
HYDRAULIC	43928	48312	51729	52902	53824	57737	59360	59945	63157	64769	68169	70384	73632	77073	80902	84498
FIREWOOD	29855	32922	32513	32356	32367	32158	32541	28180	26367	24776	24493	24547	22970	21694	21392	21233
SUGAR CANE PRODUCTS	15056	16342	18576	16781	20197	18506	17966	17937	19524	19523	18859	21337	21216	22790	25261	24966
OTHERS	1179	1408	1564	1750	1841	1979	1977	2104	2313	2715	2950	2967	2887	3048	3242	3385
TOTAL	115812	131746	141618	141718	146376	147486	150787	148074	151329	152238	155931	162532	165310	175032	185214	196162

PRIMARY ENERGY PRODUCTION

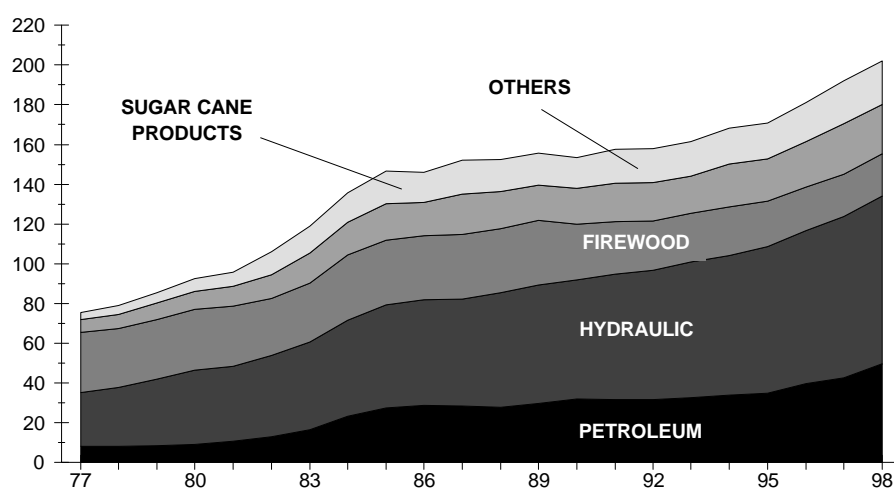
10⁶ toe

TABLE 1.1.b

PRIMARY ENERGY PRODUCTION

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	22.3	24.9	26.3	26.8	26.1	25.2	25.8	27.0	26.4	26.6	26.6	26.6	27.0	28.8	29.4	31.6
PETROLEUM	14.3	17.6	19.4	20.3	19.4	18.9	19.8	21.5	20.8	20.9	20.9	20.8	21.1	22.7	23.1	25.3
NATURAL GAS	3.4	3.6	3.7	3.9	3.8	4.0	3.9	4.1	4.2	4.4	4.6	4.6	4.7	5.1	5.1	5.3
STEAM COAL	2.0	2.0	1.8	1.7	1.6	1.7	1.4	1.1	1.3	1.2	1.1	1.2	1.2	1.0	1.1	1.0
METALLURGICAL COAL	0.6	0.6	0.6	0.6	0.4	0.5	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
URANIUM - U3O8	2.0	1.0	0.7	0.3	0.8	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RENEWABLE ENERGY	77.7	75.1	73.7	73.2	73.9	74.8	74.2	73.0	73.6	73.4	73.4	73.4	73.0	71.2	70.6	68.4
HYDRAULIC	37.9	36.7	36.5	37.3	36.8	39.1	39.4	40.5	41.7	42.5	43.7	43.3	44.5	44.0	43.7	43.1
FIREWOOD	25.8	25.0	23.0	22.8	22.1	21.8	21.6	19.0	17.4	16.3	15.7	15.1	13.9	12.4	11.5	10.8
SUGAR CANE PRODUCTS	13.0	12.4	13.1	11.8	13.8	12.5	11.9	12.1	12.9	12.8	12.1	13.1	12.8	13.0	13.6	12.7
OTHERS	1.0	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.5	1.8	1.9	1.8	1.7	1.7	1.8	1.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1.2.a

DOMESTIC ENERGY SUPPLY - case A

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	55367	57131	61865	66274	68541	70181	71255	70877	73499	75070	77661	81602	87025	94874	100886	104477
PETROLEUM AND DERIVATIVES	46781	45602	48227	52894	53977	55360	56042	56614	58004	59718	61827	65387	69032	75998	80892	84016
NATURAL GAS	1859	2347	2873	3361	3803	3951	4155	4230	4248	4483	4805	5000	5289	5798	6336	6645
COAL AND COKE	6727	8341	9866	9983	10476	10706	10594	9446	10833	10528	10887	11173	11810	12309	12516	12322
URANIUM - U308	0	841	899	36	285	164	464	587	414	341	142	42	894	769	1142	1494
RENEWABLE ENERGY	89067	98176	103739	107637	112938	116155	119098	116384	119068	119017	123244	129187	131971	135696	141992	145611
HYDRAULIC AND ELECTRICITY (*)	43858	48287	52284	55887	58697	62941	65771	67641	71010	71733	76158	79596	83884	87675	92638	95925
FIREWOOD AND CHARCOAL	29855	32922	32513	32356	32367	32158	32541	28180	26367	24776	24483	24544	22975	21701	21397	21238
SUGAR CANE PRODUCTS	14175	15559	17378	17644	20033	19077	18809	18459	19378	19793	19653	22080	22225	23272	24715	25063
OTHERS	1179	1408	1564	1750	1841	1979	1977	2104	2313	2715	2950	2967	2887	3048	3242	3385
TOTAL	144434	155307	165604	173911	181479	186336	190353	187261	192567	194087	200905	210789	218996	230570	242878	250088

(*) 1 kWh = 3132 kcal (average thermal equivalence of fuel oil in the brazilian thermolectric plants)

DOMESTIC SUPPLY OF ENERGY

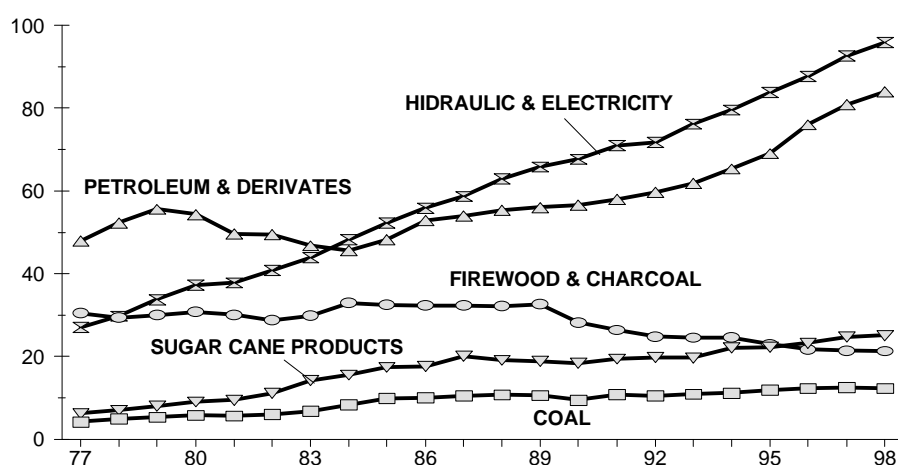
10⁶ toe

TABLE 1.2.b

DOMESTIC ENERGY SUPPLY - case A

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	38.3	36.8	37.4	38.1	37.8	37.7	37.4	37.8	38.2	38.7	38.7	38.7	39.7	41.1	41.5	41.8
PETROLEUM AND DERIVATIVES	32.4	29.4	29.1	30.4	29.7	29.7	29.4	30.2	30.1	30.8	30.8	31.0	31.5	33.0	33.3	33.6
NATURAL GAS	1.3	1.5	1.7	1.9	2.1	2.1	2.2	2.3	2.2	2.3	2.4	2.4	2.4	2.5	2.6	2.7
COAL AND COKE	4.7	5.4	6.0	5.7	5.8	5.7	5.6	5.0	5.6	5.4	5.4	5.3	5.4	5.3	5.2	4.9
URANIUM - U308	0.0	0.5	0.5	0.0	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.0	0.4	0.3	0.5	0.6
RENEWABLE ENERGY	61.7	63.2	62.6	61.9	62.2	62.3	62.6	62.2	61.8	61.3	61.3	61.3	60.3	58.9	58.5	58.2
HYDRAULIC AND ELECTRICITY	30.4	31.1	31.6	32.1	32.3	33.8	34.6	36.1	36.9	37.0	37.9	37.8	38.3	38.0	38.1	38.4
FIREWOOD AND CHARCOAL	20.7	21.2	19.6	18.6	17.8	17.3	17.1	15.0	13.7	12.8	12.2	11.6	10.5	9.4	8.8	8.5
SUGAR CANE PRODUCTS	9.8	10.0	10.5	10.1	11.0	10.2	9.9	9.9	10.1	10.2	9.8	10.5	10.1	10.1	10.2	10.0
OTHERS	0.8	0.9	0.9	1.0	1.0	1.1	1.0	1.1	1.2	1.4	1.5	1.4	1.3	1.3	1.3	1.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1.3.a

DOMESTIC ENERGY SUPPLY - case B

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	55367	57131	61865	66274	68541	70181	71255	70877	73499	75070	77661	81602	87025	94874	100886	104477
PETROLEUM AND DERIVATIVES	46781	45602	48227	52894	53977	55360	56042	56614	58004	59718	61827	65387	69032	75998	80892	84016
NATURAL GAS	1859	2347	2873	3361	3803	3951	4155	4230	4248	4483	4805	5000	5289	5798	6336	6645
COAL AND COKE	6727	8341	9866	9983	10476	10706	10594	9446	10833	10528	10887	11173	11810	12309	12516	12322
URANIUM - U308	0	841	899	36	285	164	464	587	414	341	142	42	894	769	1142	1494
RENEWABLE ENERGY	57308	63210	65878	67167	70433	70577	71471	67403	67647	67072	68095	71549	71227	72207	74909	76148
HYDRAULIC AND ELECTRICITY (*)	12099	13321	14423	15417	16192	17363	18144	18660	19589	19788	21009	21958	23140	24186	25555	26462
FIREWOOD AND CHARCOAL	29855	32922	32513	32356	32367	32158	32541	28180	26367	24776	24483	24544	22975	21701	21397	21238
SUGAR CANE PRODUCTS	14175	15559	17378	17644	20033	19077	18809	18459	19378	19793	19653	22080	22225	23272	24715	25063
OTHERS	1179	1408	1564	1750	1841	1979	1977	2104	2313	2715	2950	2967	2887	3048	3242	3385
TOTAL	112675	120341	127743	133441	138974	140758	142726	138280	141146	142142	145756	153151	158252	167081	175795	180625

(*) 1 kWh = 860 kcal (theoretical thermal equivalence - First Principal of Thermodynamics)

See APPENDICES 9, D - Treatment of Informations, item 4, page 114

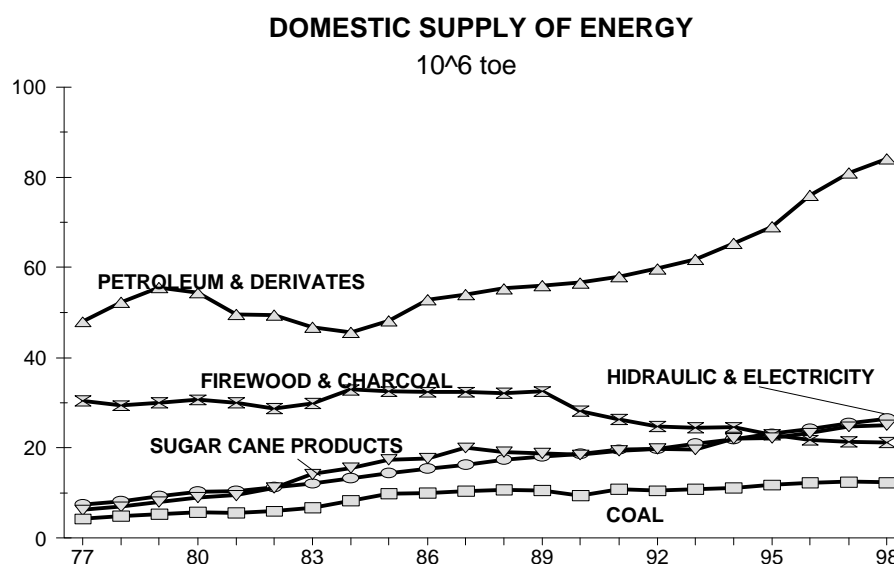


TABLE 1.3.b

DOMESTIC ENERGY SUPPLY - case B

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NON-RENEWABLE ENERGY	49.1	47.5	48.4	49.7	49.3	49.9	49.9	51.3	52.1	52.8	53.3	53.3	55.0	56.8	57.4	57.8
PETROLEUM AND DERIVATIVES	41.5	37.9	37.8	39.6	38.8	39.3	39.3	40.9	41.1	42.0	42.4	42.7	43.6	45.5	46.0	46.5
NATURAL GAS	1.6	2.0	2.2	2.5	2.7	2.8	2.9	3.1	3.0	3.2	3.3	3.3	3.3	3.5	3.6	3.7
COAL AND COKE	6.0	6.9	7.7	7.5	7.5	7.6	7.4	6.8	7.7	7.4	7.5	7.3	7.5	7.4	7.1	6.8
URANIUM - U308	0.0	0.7	0.7	0.0	0.2	0.1	0.3	0.4	0.3	0.2	0.1	0.0	0.6	0.5	0.6	0.8
RENEWABLE ENERGY	50.9	52.5	51.6	50.3	50.7	50.1	50.1	48.7	47.9	47.2	46.7	46.7	45.0	43.2	42.6	42.2
HYDRAULIC AND ELECTRICITY	10.7	11.1	11.3	11.6	11.7	12.3	12.7	13.5	13.9	13.9	14.4	14.3	14.6	14.5	14.5	14.7
FIREWOOD AND CHARCOAL	26.5	27.4	25.5	24.2	23.3	22.8	22.8	20.4	18.7	17.4	16.8	16.0	14.5	13.0	12.2	11.8
SUGAR CANE PRODUCTS	12.6	12.9	13.6	13.2	14.4	13.6	13.2	13.3	13.7	13.9	13.5	14.4	14.0	13.9	14.1	13.9
OTHERS	1.0	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.9	2.0	1.9	1.8	1.8	1.8	1.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1.4.a

FINAL ENERGY CONSUMPTION BY SOURCE

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	1491	1735	2176	2535	2830	2919	2995	3015	3028	3213	3540	3660	3829	4422	4803	4964
COAL COKE	1456	1385	1494	1679	1679	1455	1152	972	1270	911	946	1098	1255	1731	2078	2256
FIREWOOD	19956	20684	19672	18794	19149	18120	16972	15441	15182	14467	13629	13592	12882	12734	12758	12951
SUGAR CANE BAGASSE	9839	10548	11511	10651	12684	11578	11176	11061	11872	12546	12255	14281	14083	14670	16370	16831
OTHER RENEWABLE PRIMARY SOURCES	831	928	1151	1302	1338	1474	1491	1475	1598	1917	2114	2178	2107	2258	2349	2475
GAS COKE	745	974	1106	1137	1360	1453	1410	1192	1261	1253	1302	1338	1368	1368	1341	1281
COAL COKE	3311	4351	4843	4847	5435	6131	6046	5030	6030	6114	6465	6591	6673	6671	6562	6352
ELECTRICITY	41735	46400	50334	54250	55899	59132	61591	63121	65358	66837	69938	72440	76793	80529	85460	89027
CHARCOAL	4609	5758	6031	6365	6192	6594	7343	5987	5271	4840	5128	5203	4795	4443	4273	4095
ETHYL ALCOHOL	2983	3694	4527	5814	5886	6198	6700	6177	6283	6160	6507	6991	7281	7523	7238	7158
COAL BITUMEN	213	268	265	283	257	258	251	219	268	257	268	269	247	235	310	242
PETROLEUM DERIVATIVES	45326	44313	47080	50628	52437	53127	54794	55728	56246	57781	59948	63217	67512	72393	78053	80656
DIESEL OIL	15192	15716	16640	18536	19250	19809	20558	20298	21138	21582	22281	23185	24548	25526	26851	28071
FUEL OIL	9423	8287	8587	8852	9746	9678	9348	9448	8701	9298	9996	10241	10831	11724	11970	11855
GASOLINE	6734	6043	5939	6702	5842	5717	6448	7336	7942	7902	8311	9102	10885	12740	13932	14651
LIQUEFIED PETROLEUM GAS	3713	3676	3999	4303	4724	5040	5310	5545	5508	5819	5854	5970	6321	6670	6938	7117
NAPHTHA	3030	3153	3907	3910	4462	4431	4764	4781	4654	5076	5242	5921	5760	5581	6881	6891
KEROSENE	2275	2026	2077	2232	2269	2197	2286	2132	2218	2068	2143	2141	2457	2595	2881	3167
GASWORKS GAS	262	267	278	294	307	307	298	269	260	227	208	134	114	108	103	105
OTHER SECONDARY OF PETROLEUM	2238	2576	2406	2686	2950	2953	2889	2758	2892	2919	3033	3442	3662	4047	4851	4660
NON-ENERGY PRODUCTS OF PETROL.	2459	2569	3247	3113	2887	2995	2893	3161	2933	2890	2880	3081	2934	3402	3646	4139
TOTAL	132495	141038	150190	158285	165146	168439	171921	169418	173667	176296	182040	190858	198825	208977	221595	228288

FINAL ENERGY CONSUMPTION

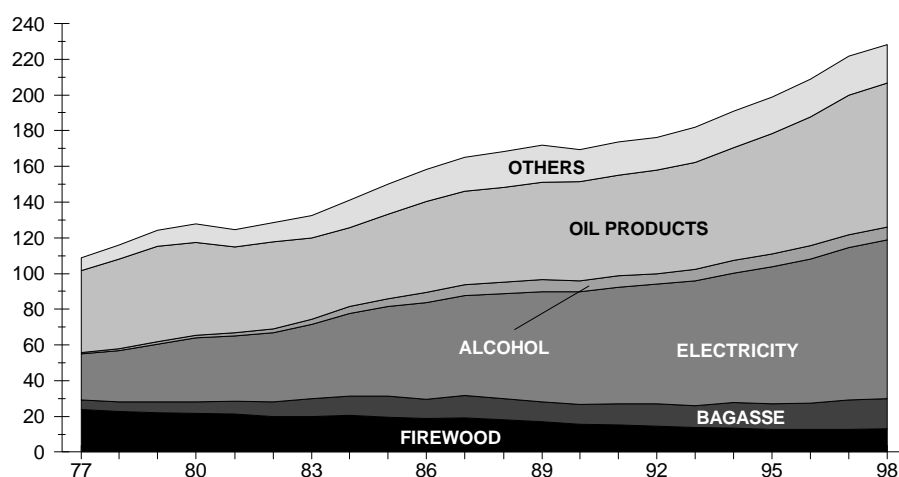
10⁶ toe

TABLE 1.4.b

FINAL ENERGY CONSUMPTION BY SOURCE

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	1.1	1.2	1.4	1.6	1.7	1.7	1.7	1.8	1.7	1.8	1.9	1.9	1.9	2.1	2.2	2.2
COAL COKE	1.1	1.0	1.0	1.1	1.0	0.9	0.7	0.6	0.7	0.5	0.5	0.6	0.6	0.8	0.9	1.0
FIREWOOD	15.1	14.7	13.1	11.9	11.6	10.8	9.9	9.1	8.7	8.2	7.5	7.1	6.5	6.1	5.8	5.7
SUGAR CANE BAGASSE	7.4	7.5	7.7	6.7	7.7	6.9	6.5	6.5	6.8	7.1	6.7	7.5	7.1	7.0	7.4	7.4
OTHER RENEWABLE PRIMARY SOURCES	0.6	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.1	1.2	1.1	1.1	1.1	1.1	1.1
GAS COKE	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6
COAL COKE	2.5	3.1	3.2	3.1	3.3	3.6	3.5	3.0	3.5	3.5	3.6	3.5	3.4	3.2	3.0	2.8
ELECTRICITY	31.5	32.9	33.5	34.3	33.8	35.1	35.8	37.3	37.6	37.9	38.4	38.0	38.6	38.5	38.6	39.0
CHARCOAL	3.5	4.1	4.0	4.0	3.7	3.9	4.3	3.5	3.0	2.7	2.8	2.7	2.4	2.1	1.9	1.8
ETHYL ALCOHOL	2.3	2.6	3.0	3.7	3.6	3.7	3.9	3.6	3.6	3.5	3.6	3.7	3.7	3.6	3.3	3.1
COAL BITUMEN	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PETROLEUM DERIVATIVES	34.2	31.4	31.3	32.0	31.8	31.5	31.9	32.9	32.4	32.8	32.9	33.1	34.0	34.6	35.2	35.3
DIESEL OIL	11.5	11.1	11.1	11.7	11.7	11.8	12.0	12.0	12.2	12.2	12.2	12.1	12.3	12.2	12.1	12.3
FUEL OIL	7.1	5.9	5.7	5.6	5.9	5.7	5.4	5.6	5.0	5.3	5.5	5.4	5.4	5.6	5.4	5.2
GASOLINE	5.1	4.3	4.0	4.2	3.5	3.4	3.8	4.3	4.6	4.5	4.6	4.8	5.5	6.1	6.3	6.4
LIQUEFIED PETROLEUM GAS	2.8	2.6	2.7	2.7	2.9	3.0	3.1	3.3	3.2	3.3	3.2	3.1	3.2	3.2	3.1	3.1
NAPHTHA	2.3	2.2	2.6	2.5	2.7	2.6	2.8	2.8	2.7	2.9	2.9	3.1	2.9	2.7	3.1	3.0
KEROSENE	1.7	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.2	1.2	1.3	1.4
GASWORKS GAS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
OTHER SECONDARY OF PETROLEUM	1.7	1.8	1.6	1.7	1.8	1.8	1.7	1.6	1.7	1.7	1.7	1.8	1.8	1.9	2.2	2.0
NON-ENERGY PRODUCTS OF PETROL.	1.9	1.8	2.2	2.0	1.7	1.8	1.7	1.9	1.7	1.6	1.6	1.6	1.5	1.6	1.6	1.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

FINAL ENERGY CONSUMPTION

%

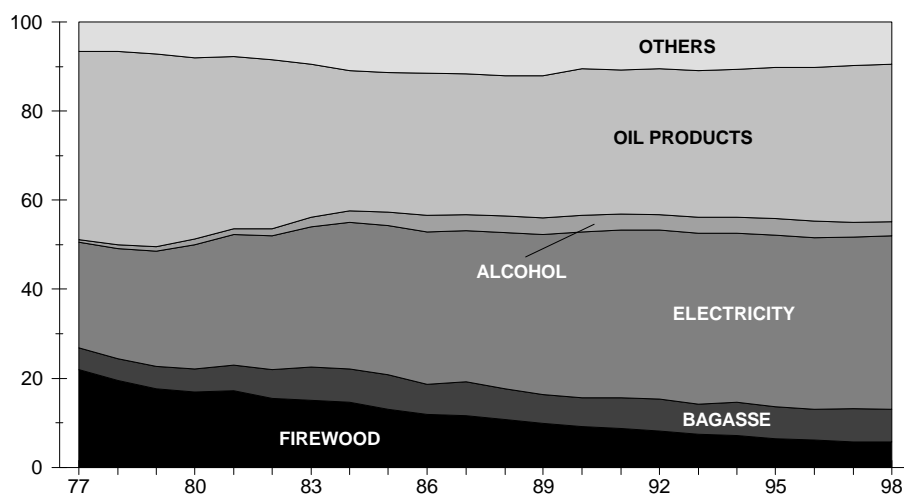


TABLE 1.5.a

FINAL ENERGY CONSUMPTION BY SECTOR

UNIT: 10³ toe

SECTOR	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL CONSUMPTION	132495	141038	150190	158285	165146	168439	171921	169418	173667	176296	182040	190858	198825	208977	221595	228288
FINAL NON-ENERGY CONSUMPTION	6935	7339	8829	8959	9313	9273	9514	9716	9254	9476	9767	10797	10460	10575	12102	12716
FINAL ENERGY CONSUMPTION	125560	133699	141361	149326	155833	159166	162407	159702	164413	166820	172273	180061	188365	198402	209493	215572
ENERGY SECTOR	9478	10858	12547	12050	13774	13366	13641	13181	13878	13708	13840	14625	14258	15393	16967	16194
RESIDENTIAL	24665	25211	24939	24957	26414	26714	27167	27730	28498	28895	28590	29052	30821	32500	34041	35749
COMMERCIAL	5460	5644	5898	6287	6536	6867	7286	7774	7876	8350	8610	9036	10023	10768	11794	12854
PUBLIC	3921	4117	4357	4459	4757	5171	5169	5426	5613	5815	6237	6837	7346	7453	8019	8509
AGRICULTURE	6461	6418	6860	6864	7472	7613	7690	7259	7526	7497	7942	8234	8785	9155	9586	9583
TRANSPORTATION - TOTAL	24930	25301	26829	30578	30228	30566	32109	32311	33843	33941	35303	37068	40569	43928	45976	48193
HIGHWAYS	20023	20529	21543	25664	25632	26123	28099	28479	29996	30121	31225	33191	36342	39320	41503	43311
RAILROADS	882	901	920	927	905	940	975	859	826	872	882	741	780	729	652	683
AIRWAYS	1929	1712	1810	1961	1976	1916	2023	1915	2004	1885	1990	2042	2372	2532	2850	3149
WATERWAYS	2096	2159	2556	2026	1715	1587	1012	1058	1017	1063	1206	1094	1075	1347	971	1050
INDUSTRIAL - TOTAL	50524	56150	59931	64131	66551	68779	69256	65718	67179	68475	71751	75209	76563	79205	82733	84428
CEMENT	2567	2303	2562	2970	2933	2848	2743	2819	2942	2496	2560	2590	2974	3487	3970	4129
PIG-IRON AND STEEL	10035	12700	13690	14556	15489	16873	17616	14575	15015	15071	16191	16851	16606	16342	16861	16574
FERRO-ALLOYS	1285	1467	1646	1901	1944	2248	2555	2202	2318	2646	2662	2346	2247	2637	2277	1907
MINING/PELLETIZATION	1877	2262	2366	2505	2529	2544	2455	2484	2410	2517	2580	2821	2814	2837	2994	3247
NON-FERROUS/OTHER METALS	4221	4959	5871	6829	7300	7995	8201	8515	9195	9196	9486	9459	9664	9873	9467	9337
CHEMICAL	5567	6062	6726	6790	6830	6910	6819	6874	6818	7011	7203	7506	7724	8174	9037	9070
FOODS AND BEVERAGES	10554	10817	10581	10652	11239	10587	9797	10320	10478	11554	11745	13210	13684	14323	15104	16706
TEXTILES	1900	1977	2162	2343	2326	2424	2495	2476	2406	2357	2511	2488	2397	2327	2276	2256
PAPER AND PULP	3898	4038	4475	4718	4738	4992	5168	5133	5497	6128	6486	6709	6799	7057	7215	7557
CERAMICS	2640	2822	2828	3244	3182	3062	3150	2673	2585	2592	2802	2870	2891	3112	3361	3409
OTHERS	5980	6743	7024	7623	8041	8296	8257	7647	7515	6907	7525	8359	8763	9036	10171	10236
UNIDENTIFIED CONSUMPTION	121	0	0	0	101	90	89	303	0	139	0	0	0	0	377	62

TABLE 1.5.b

FINAL ENERGY CONSUMPTION BY SECTOR

UNIT: %

SECTOR	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL CONSUMPTION	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
FINAL NON-ENERGY CONSUMPTION	5.2	5.2	5.9	5.7	5.6	5.5	5.5	5.7	5.3	5.4	5.4	5.7	5.3	5.1	5.5	5.6
FINAL ENERGY CONSUMPTION	94.8	94.8	94.1	94.3	94.4	94.5	94.5	94.3	94.7	94.6	94.6	94.3	94.7	94.9	94.5	94.4
ENERGY SECTOR	7.2	7.7	8.4	7.6	8.3	7.9	7.9	7.8	8.0	7.8	7.6	7.7	7.2	7.4	7.7	7.1
RESIDENTIAL	18.6	17.9	16.6	15.8	16.0	15.9	15.8	16.4	16.4	16.4	15.7	15.2	15.5	15.6	15.4	15.7
COMMERCIAL	4.1	4.0	3.9	4.0	4.0	4.1	4.2	4.6	4.5	4.7	4.7	4.7	5.0	5.2	5.3	5.6
PUBLIC	3.0	2.9	2.9	2.8	2.9	3.1	3.0	3.2	3.2	3.3	3.4	3.6	3.7	3.6	3.6	3.7
AGRICULTURE	4.9	4.6	4.6	4.3	4.5	4.5	4.5	4.3	4.3	4.3	4.4	4.3	4.4	4.4	4.3	4.2
TRANSPORTATION - TOTAL	18.8	17.9	17.9	19.3	18.3	18.1	18.7	19.1	19.5	19.3	19.4	19.4	20.4	21.0	20.7	21.1
HIGHWAYS	15.1	14.6	14.3	16.2	15.5	15.5	16.3	16.8	17.3	17.1	17.2	17.4	18.3	18.8	18.7	19.0
RAILROADS	0.7	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3
AIRWAYS	1.5	1.2	1.2	1.2	1.2	1.1	1.2	1.1	1.2	1.1	1.1	1.1	1.2	1.2	1.3	1.4
WATERWAYS	1.6	1.5	1.7	1.3	1.0	0.9	0.6	0.6	0.6	0.6	0.7	0.6	0.5	0.6	0.4	0.5
INDUSTRIAL - TOTAL	38.1	39.8	39.9	40.5	40.3	40.8	40.3	38.8	38.7	38.8	39.4	39.4	38.5	37.9	37.3	37.0
CEMENT	1.9	1.6	1.7	1.9	1.8	1.7	1.6	1.7	1.7	1.4	1.4	1.4	1.5	1.7	1.8	1.8
PIG-IRON AND STEEL	7.6	9.0	9.1	9.2	9.4	10.0	10.2	8.6	8.6	8.5	8.9	8.8	8.4	7.8	7.6	7.3
FERRO-ALLOYS	1.0	1.0	1.1	1.2	1.2	1.3	1.5	1.3	1.3	1.5	1.5	1.2	1.1	1.3	1.0	0.8
MINING/PELLETIZATION	1.4	1.6	1.6	1.6	1.5	1.5	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.4
NON-FERROUS/OTHER METALS	3.2	3.5	3.9	4.3	4.4	4.7	4.8	5.0	5.3	5.2	5.2	5.0	4.9	4.7	4.3	4.1
CHEMICAL	4.2	4.3	4.5	4.3	4.1	4.1	4.0	4.1	3.9	4.0	4.0	3.9	3.9	3.9	4.1	4.0
FOODS AND BEVERAGES	8.0	7.7	7.0	6.7	6.8	6.3	5.7	6.1	6.0	6.6	6.5	6.9	6.9	6.9	6.8	7.3
TEXTILES	1.4	1.4	1.4	1.5	1.4	1.4	1.5	1.5	1.4	1.3	1.4	1.3	1.2	1.1	1.0	1.0
PAPER AND PULP	2.9	2.9	3.0	3.0	2.9	3.0	3.0	3.0	3.2	3.5	3.6	3.5	3.4	3.4	3.3	3.3
CERAMICS	2.0	2.0	1.9	2.0	1.9	1.8	1.8	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
OTHERS	4.5	4.8	4.7	4.8	4.9	4.9	4.8	4.5	4.3	3.9	4.1	4.4	4.4	4.3	4.6	4.5
UNIDENTIFIED CONSUMPTION	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0

TABLE 1.6

FINAL CONSUMPTION BY SOURCE FOR ENERGY USE

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	804	983	1364	1646	1881	1893	1907	2143	2112	2322	2651	2701	3010	3670	4090	4193
COAL COKE	1456	1385	1494	1679	1679	1455	1152	972	1270	911	946	1098	1255	1731	2078	2256
FIREWOOD	19956	20684	19672	18794	19149	18120	16972	15441	15182	14467	13629	13592	12882	12734	12758	12951
SUGAR CANE BAGASSE	9839	10548	11511	10651	12684	11578	11176	11061	11872	12546	12255	14281	14083	14670	16370	16831
BLACK LIQUOR	770	862	949	989	1023	1124	1030	1068	1179	1410	1649	1733	1649	1837	1913	2034
OTHER WASTES	61	66	202	313	315	350	461	407	419	507	465	445	458	421	436	441
GAS COKE	745	974	1106	1137	1360	1453	1410	1192	1261	1253	1302	1338	1368	1368	1341	1281
COAL COKE	3311	4351	4843	4847	5435	6131	6046	5030	6030	6114	6465	6591	6673	6671	6562	6352
ELECTRICITY	41735	46400	50334	54250	55899	59132	61591	63121	65358	66837	69938	72440	76793	80529	85460	89027
CHARCOAL	4609	5758	6031	6365	6192	6594	7343	5987	5271	4840	5128	5203	4795	4443	4273	4095
ETHYL ALCOHOL	2606	3352	4122	5435	5535	5863	6333	5700	5942	5814	6063	6467	6686	6961	6726	6568
COAL BITUMEN	48	55	56	62	135	192	186	112	152	209	214	195	182	72	94	57
PETROLEUM DERIVATIVES	39620	38281	39677	43158	44546	45281	46800	47468	48365	49590	51568	53977	58531	63295	67392	69486
DIESEL OIL	15192	15716	16640	18536	19250	19809	20558	20298	21138	21582	22281	23185	24548	25526	26851	28071
FUEL OIL	9423	8287	8587	8852	9746	9678	9348	9448	8701	9298	9996	10241	10831	11724	11970	11855
GASOLINE	6734	6043	5939	6702	5842	5717	6448	7336	7942	7902	8311	9102	10885	12740	13932	14651
LIQUEFIED PETROLEUM GAS	3713	3676	3999	4303	4724	5040	5310	5545	5508	5819	5854	5970	6321	6670	6938	7117
NAPHTHA	1	12	0	0	0	0	0	0	0	0	0	4	29	10	4	4
KEROSENE	2188	1962	2022	2151	2152	2095	2179	2053	2140	2004	2082	2110	2424	2559	2854	3142
GASWORKS GAS	262	267	278	294	307	307	298	269	260	227	208	134	114	108	103	105
OTHERS	2107	2318	2212	2320	2525	2635	2659	2519	2676	2758	2836	3231	3379	3958	4740	4541
TOTAL	125560	133699	141361	149326	155833	159166	162407	159702	164413	166820	172273	180061	188365	198402	209493	215572

TABLE 1.7

FINAL NON-ENERGY CONSUMPTION BY SOURCE

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	687	752	812	889	949	1026	1088	872	916	891	889	959	819	752	713	771
ANHYDROUS ALCOHOL	20	18	62	49	40	27	42	31	0	0	62	65	62	78	70	122
HYDRATED ALCOHOL	357	324	343	330	311	308	325	446	341	346	382	459	533	484	442	468
COAL BITUMEN	165	213	209	221	122	66	65	107	116	48	54	74	65	163	216	185
PETROLEUM DERIVATIVES	5706	6032	7403	7470	7891	7846	7994	8260	7881	8191	8380	9240	8981	9098	10661	11170
NAPHTHA	3029	3141	3907	3910	4462	4431	4764	4781	4654	5076	5242	5917	5731	5571	6877	6887
LIGHTING KEROSENE	87	64	55	81	117	102	107	79	78	64	61	31	33	36	27	25
REFINERY GAS	79	188	122	298	366	282	195	239	216	161	197	211	283	89	111	119
OTHERS	2511	2639	3319	3181	2946	3031	2928	3161	2933	2890	2880	3081	2934	3402	3646	4139
TOTAL	6935	7339	8829	8959	9313	9273	9514	9716	9254	9476	9767	10797	10460	10575	12102	12716

TABLE 1.8

EXTERNAL DEPENDENCE ON ENERGY (*)

SPECIFICATION	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	10 ³ toe	30997	26101	26910	34517	37050	40802	41473	41179	42572	44299	47404	51147	56088	56994	60505	57240
	%	21.1	16.5	16.0	19.6	20.2	21.7	21.6	21.8	22.0	22.5	23.3	23.9	25.3	24.6	24.6	22.6
PETROLEUM	10 ³ boe/d	607	450	422	485	510	551	528	499	513	559	587	638	687	696	756	680
	%	64.1	48.5	42.8	45.0	46.4	48.9	46.1	43.1	44.1	45.9	46.6	47.8	48.8	46.0	46.3	40.1
METALLURGICAL COAL	10 ³ t	5295	7266	8215	8409	9764	10488	10631	9948	11453	11608	12487	12684	13569	14317	14414	14551
	%	81.5	85.1	84.3	84.5	88.3	90.3	88.4	88.7	96.1	97.9	98.8	98.8	97.9	98.6	98.7	99.8
ELECTRICITY	GWh	-243	-86	1913	10292	16803	17943	22106	26538	27080	24014	27550	31767	35352	36558	40470	39404
	%	-0.1	-0.0	1.0	4.8	7.6	7.7	9.1	10.6	10.4	9.0	9.9	10.9	11.4	11.2	11.6	10.9

Notes: Negatives values corresponds to net exports

(*) Difference between Domestic Demand for Energy (including losses in transformation, distribution and storage) and Domestic Production.

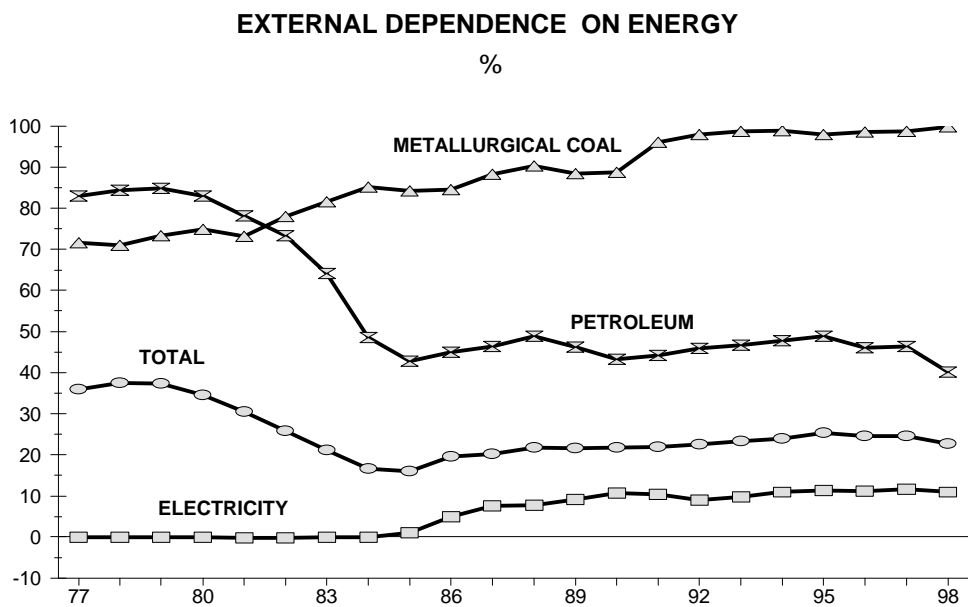


TABLE 1.9

OIL PRODUCTS CONSUMPTION BY SECTOR

UNIT: %

SECTORS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
T O T A L (10 ³ toe)	46329	45203	48101	53278	54664	55228	56340	56989	57572	59490	61484	64851	69449	74712	80626	83534
TOTAL TRANSFORMATION	2.2	2.0	2.1	5.0	4.1	3.8	2.7	2.2	2.3	2.9	2.5	2.5	2.8	3.1	3.2	3.4
PUBLIC UTIL. POWER PLANTS	1.2	1.2	1.4	4.0	3.2	2.9	1.9	1.3	1.4	1.7	1.4	1.5	1.8	2.0	2.1	2.4
AUTO-GENERATION	1.0	0.8	0.8	1.0	0.9	0.9	0.9	1.0	0.9	1.2	1.1	1.0	1.0	1.1	1.1	1.1
FINAL ENERGY CONSUMPTION	85.5	84.7	82.5	81.0	81.5	82.0	83.1	83.3	84.0	83.4	83.9	83.2	84.3	84.7	83.6	83.2
ENERGY SECTOR	6.5	6.9	6.3	6.0	6.4	6.4	6.4	6.1	5.5	5.5	5.7	5.7	5.2	5.1	5.4	5.1
RESIDENTIAL	8.1	8.2	8.3	8.0	8.2	8.7	8.9	9.0	9.1	9.2	9.2	8.7	8.5	8.2	7.6	7.3
COMMERCIAL	0.8	0.6	0.7	0.7	0.7	0.9	1.1	1.2	1.1	1.1	0.8	0.8	0.7	0.7	0.6	0.7
PUBLIC	0.4	0.4	0.4	0.3	0.4	0.6	0.3	0.3	0.3	0.3	0.4	0.9	0.9	0.6	0.6	0.7
AGRICULTURE	5.2	5.6	6.1	5.5	5.8	6.0	6.2	5.6	5.7	5.7	6.1	6.1	6.1	5.9	5.7	5.3
TRANSPORTATION	47.5	47.8	46.5	46.5	44.5	44.1	45.1	46.1	47.9	46.7	47.0	46.6	48.2	49.0	48.2	49.3
INDUSTRIAL	16.8	15.2	14.2	14.0	15.2	15.1	15.1	14.5	14.3	14.6	14.7	14.4	14.7	15.2	14.9	14.7
UNIDENTIFIED	0.3	0.0	0.0	0.0	0.2	0.2	0.2	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.1
FINAL NON-ENERGY CONSUMPTION	12.3	13.3	15.4	14.0	14.4	14.2	14.2	14.5	13.7	13.8	13.6	14.2	12.9	12.2	13.2	13.4
T O T A L	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(*) Includes net of natural gas.

OIL PRODUCTS CONSUMPTION BY SECTOR

%

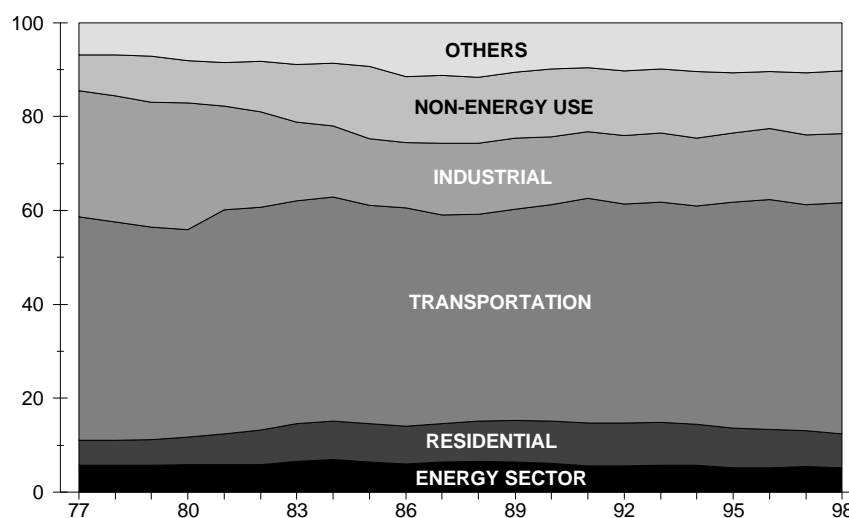


TABLE 1.10

ELECTRICITY CONSUMPTION BY SECTOR

UNIT: %

SECTORS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL CONSUMPTION (10 ³ toe)	41735	46400	50334	54250	55899	59132	61591	63121	65358	66837	69938	72440	76793	80529	85460	89027
ENERGY SECTOR	3.5	3.6	3.6	3.4	3.3	3.2	3.1	3.1	3.5	3.4	3.3	3.1	3.1	3.2	3.1	3.1
RESIDENTIAL	20.7	19.3	18.8	19.1	19.9	19.9	20.6	22.4	22.6	22.5	22.2	22.4	24.0	24.9	25.1	25.9
COMMERCIAL	11.6	11.1	10.6	10.5	10.6	10.5	10.6	10.9	10.8	11.3	11.4	11.6	12.2	12.5	13.0	13.5
PUBLIC	8.9	8.5	8.3	7.9	8.1	8.1	8.1	8.3	8.3	8.5	8.5	8.6	8.7	8.7	8.8	8.9
AGRICULTURE	2.2	2.4	2.6	2.7	3.0	3.1	3.0	3.1	3.2	3.3	3.3	3.4	3.5	3.5	3.7	3.8
TRANSPORTATION	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
INDUSTRIAL	52.3	54.5	55.4	55.8	54.4	54.7	53.9	51.6	51.0	50.6	50.8	50.5	48.0	46.7	46.0	44.4
FINAL CONSUMPTION	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1.11

STEAM COAL CONSUMPTION BY SECTOR

UNIT: %

SECTORS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL CONSUMPTION (10 ³ toe)	2163	2198	2472	2931	2697	2247	2224	1917	2385	2022	1790	1921	1928	1872	2000	1750
POWER PLANTS	32.7	37.0	39.6	42.7	37.7	35.2	48.2	49.3	46.8	54.9	56.8	56.3	66.6	70.0	78.0	84.4
INDUSTRIAL	66.2	62.0	59.9	57.0	62.0	64.4	51.5	50.4	53.2	45.1	43.2	43.7	33.4	30.0	22.0	15.6
CEMENT	41.9	38.2	39.8	39.1	38.1	40.3	28.1	29.9	33.2	20.0	18.2	17.9	13.2	10.4	4.5	0.7
CHEMICAL	6.5	7.0	6.7	5.8	7.1	7.7	5.1	4.9	5.4	6.6	7.0	6.3	6.6	6.1	5.5	5.5
FOODS AND BEVERAGES	7.7	6.6	4.3	3.7	5.3	4.3	4.9	5.5	2.9	3.7	4.4	4.1	4.5	4.4	3.3	2.6
PAPER AND PULP	5.6	5.6	5.3	4.3	5.6	6.3	6.7	6.8	5.4	5.9	6.2	4.3	4.8	5.0	4.5	3.8
OTHERS	4.4	4.6	3.8	4.3	5.9	5.8	6.7	3.4	6.2	8.9	7.4	11.1	4.3	4.1	4.3	2.9
OTHER SECTORS	1.1	1.0	0.5	0.2	0.2	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	(0.0)	0.0	(0.0)
TOTAL CONSUMPTION	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

STEAM COAL CONSUMPTION BY SECTOR

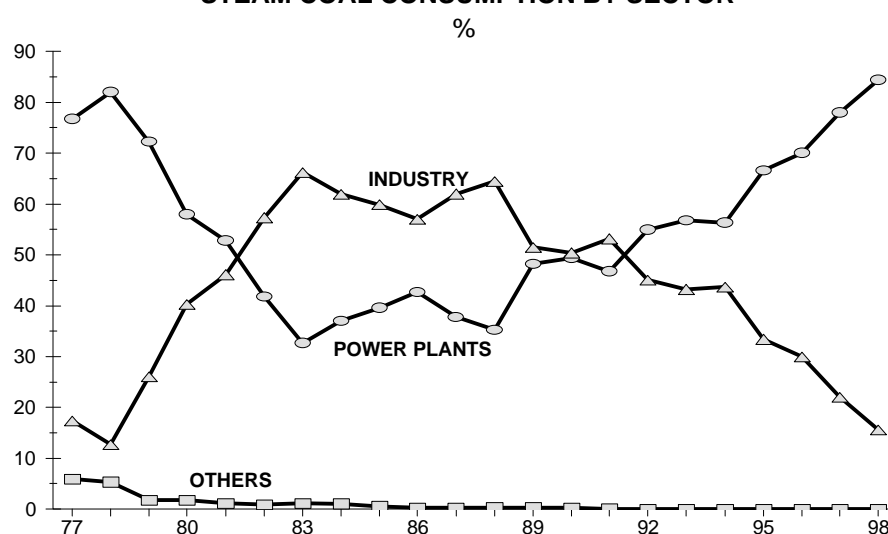


TABLE 1.12

BIOMASS CONSUMPTION BY SECTOR (*)

UNIT: %

SECTORS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL CONSUMPTION (10 ³ toe)	37841	41270	42487	42547	44898	43629	43315	39664	39865	39584	39189	41721	40553	41066	42476	42920
ENERGY SECTOR	11.6	12.7	15.5	13.6	16.0	15.4	16.1	16.6	18.5	17.6	17.2	17.7	17.4	18.2	19.9	17.7
RESIDENTIAL	32.5	30.4	27.0	24.3	24.1	23.3	21.9	21.4	21.1	21.2	18.8	17.2	15.9	15.3	15.0	15.3
COMMERCIAL AND PUBLIC	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3
AGRICULTURE	8.2	6.7	6.1	5.8	5.8	5.7	5.4	5.4	5.3	4.8	4.7	4.4	4.6	4.5	4.3	4.1
TRANSPORTATION	6.9	8.1	9.7	12.8	12.3	13.4	14.6	14.4	14.9	14.7	15.5	15.5	16.5	17.0	15.8	15.3
INDUSTRIAL	40.2	41.5	41.1	43.0	41.3	41.7	41.6	41.8	39.8	41.3	43.4	44.9	45.3	44.6	44.6	47.3
CEMENT	1.2	1.5	1.8	1.7	1.2	1.2	1.0	1.0	0.7	0.6	0.7	0.7	0.8	0.9	0.7	0.6
PIG-IRON AND STEEL	7.3	8.8	8.8	9.9	9.2	10.2	12.0	10.7	9.0	8.5	9.4	9.1	8.6	7.3	7.4	7.2
FERRO-ALLOYS	0.8	0.8	1.0	1.0	1.0	1.2	1.5	0.9	1.2	1.0	1.3	1.0	0.9	1.4	1.0	0.8
MINING/PELLETIZATION	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
NON-FERROUS/OTHER METALS	0.3	0.3	0.3	0.2	0.4	0.5	0.6	0.7	0.6	0.6	0.4	0.4	0.4	0.1	0.1	0.1
CHEMICAL	0.8	1.0	0.9	0.8	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.3	0.3	0.2
FOODS AND BEVERAGES	19.2	17.7	16.5	16.5	16.9	15.7	14.1	15.9	16.0	18.3	18.4	20.6	21.5	21.8	22.7	25.6
TEXTILES	0.4	0.4	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.2	0.3	0.2	0.3	0.3	0.2	0.2
PAPER AND PULP	4.0	4.3	4.8	5.0	4.6	5.2	5.0	5.5	5.6	6.5	7.2	7.2	7.2	7.2	7.0	7.4
CERAMICS	4.5	4.5	4.4	4.8	4.5	4.3	4.4	4.1	3.8	3.5	3.8	3.7	3.6	3.9	3.8	3.8
OTHERS	1.5	2.0	2.0	2.3	2.1	1.9	1.8	1.8	1.7	1.3	1.4	1.4	1.5	1.5	1.4	1.4
FINAL CONSUMPTION	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Including sugar cane bagasse, firewood, charcoal, alcohol and other renewable primary sources.

TABLE 1.13.a

DOMESTIC ENERGY SUPPLY

UNIT: 10³ toe

SOURCES	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996	1997	1998
PETROLEUM AND NATURAL GAS	1490	1425	4190	8393	12401	16010	24821	43468	55428	51100	60844	70387	74321	81796	87228	90661
COAL	1502	1317	1564	1739	1395	1811	2679	3129	5784	9866	9446	11173	11810	12309	12516	12322
HYDRAULIC	1188	1392	1809	3120	5331	7399	11757	20979	37321	52284	67641	79596	83884	87675	92638	95925
FIREWOOD	19548	22348	25662	28072	31038	33271	31789	32739	30695	32513	28180	24544	22975	21701	21397	21238
SUGAR CANE PRODUCTS	547	563	867	1282	2072	2909	3528	4086	9000	17378	18459	22080	22225	23272	24715	25063
OTHERS	0	0	0	0	0	0	0	358	995	2463	2691	3009	3781	3817	4384	4879
TOTAL	24275	27045	34092	42606	52238	61400	74574	104759	139223	165604	187261	210789	218996	230570	242878	250088

TABLE 1.13.b

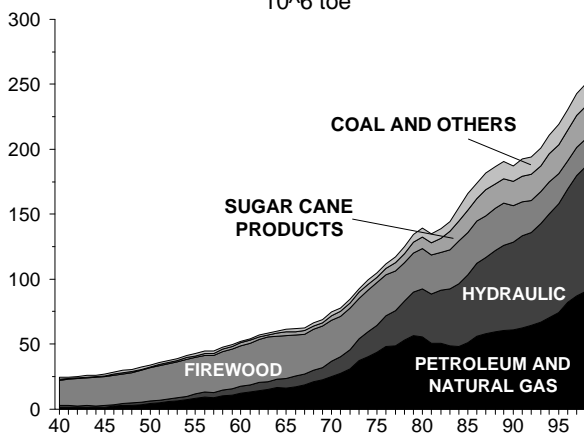
DOMESTIC ENERGY SUPPLY

UNIT: %

SOURCES	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1994	1995	1996	1997	1998
PETROLEUM AND NATURAL GAS	6.1	5.3	12.3	19.7	23.7	26.1	33.3	41.5	39.8	30.9	32.5	33.4	33.9	35.5	35.9	36.3
COAL	6.2	4.9	4.6	4.1	2.7	2.9	3.6	3.0	4.2	6.0	5.0	5.3	5.4	5.3	5.2	4.9
HYDRAULIC	4.9	5.1	5.3	7.3	10.2	12.1	15.8	20.0	26.8	31.6	36.1	37.8	38.3	38.0	38.1	38.4
FIREWOOD	80.5	82.6	75.3	65.9	59.4	54.2	42.6	31.3	22.0	19.6	15.0	11.6	10.5	9.4	8.8	8.5
SUGAR CANE PRODUCTS	2.3	2.1	2.5	3.0	4.0	4.7	4.7	3.9	6.5	10.5	9.9	10.5	10.1	10.1	10.2	10.0
OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.5	1.4	1.4	1.7	1.7	1.8	2.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

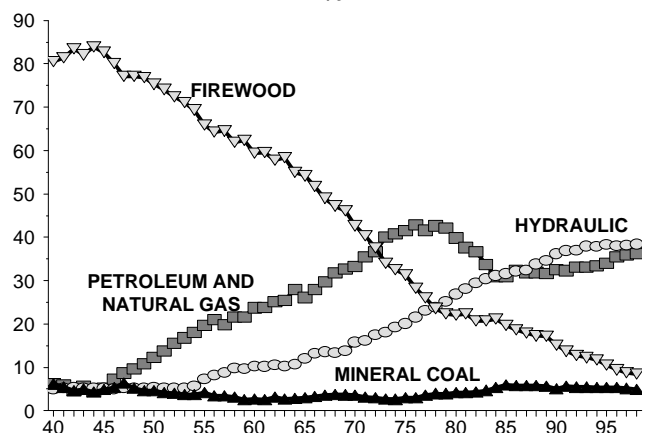
DOMESTIC ENERGY SUPPLY

10⁶ toe



DOMESTIC ENERGY SUPPLY

%



White page

USABLE ENERGY BALANCE

Usable energy is the energy that is at the disposal of the consumer after the last conversion made by his own equipment. It is the final energy (the energy supplied to the equipment) minus the losses on conversion.

Measuring the usable energy one can identify which economic sectors are less efficient users of energy and which forms of energy are used with more efficiency allowing, therefore, the implementation of substitution and energy conservation programs.

In 1984 the first study of usable energy at national level was made, using the 1983 BEB's (Brazilian Energy Balance) final energy consumption data by economic sector, where the following final uses were considered: *motive power, process heath, direct heating, illumination, electrochemical and other uses.*

In 1995, the Ministry of Mines and Energy concluded a new study of usable energy, applied to BEB's 1993 final energy consumption by economic sector, incorporating the technological changes that occurred in the period 1983/93. Aluminum, Sugar and Pelletization sectors, not considered before, were included. The study also incorporated a model to forecast the potential of energy savings, considering the reference efficiency concept. (Reference efficiency is the efficiency of more modern equipments in use, in each economic sector for the year of 1993).

The following tables show the main results of the studies, by Sectors, by Energy Sources and by Uses. The values shown in the tables represent the following:

- 1st Column - average efficiency in 1983.
- 2nd Column - average efficiency in 1983, using the 1993 efficiency equipment.
- 3rd Column - average efficiency in 1993.
- 4th Column - average efficiency in 1993 using the reference efficiency.

The average efficiency is the quotient between usable energy and final energy and is affected both by the typical efficiency of each process and by the distribution of final energy use.

These tables permit the separation of the effects of the improvements of equipment efficiency (comparison

between columns 1 and 2), from the effects of modifications in the consumption structure (comparison between columns 2 and 3).

AVERAGE EFFICIENCY BY USE - %

Uses	83	83\93	93	93R
Motive power	40	46	46	51
Process heath	66	69	70	74
Direct heating	38	40	50	57
Others	22	27	32	41
Total	44	48	52	58

AVERAGE EFFICIENCY BY SECTOR - %

Sectors	83	83\93	93	93R
Energy Sector	74	74	72	76
Residential	23	24	36	45
Public/Commercial./agricult.	33	36	51	54
Industrial	61	65	67	71
Transport	32	37	36	40
Total	44	48	52	58

AVERAGE EFFICIENCY BY SOURCE - %

Sources	83	83\93	93	93R
Nat.Gas/Gas/LPG	54	59	60	61
Charcoal/Firewood/Bagasse	35	36	48	55
Electricity	66	72	69	77
Fuel Oil	66	72	71	73
Gasol./Keros./Diesel/Alcohol	32	37	36	40
Total	44	48	52	58

The tables show that from BUE/83 to BUE/93 the total energetic efficiency went from 44% to 52% which means an increase of 8 percentage points.

Half of this increase is due to an improved yield from the equipment. The other half is due to reduced use of the less efficient sources (firewood, coal, etc.), by the increase in the use of more efficient sources (LPG, natural gas, city gas, electricity, etc.).

Comparing the 3rd and 4th columns we conclude that there is a 6 percentage points potential for energy savings, if using the reference efficiency.

SECTORIAL ANALYSES

ENERGY SECTOR

The consumption of energy in the Brazilian Energy Sector is centered, largely, in two areas: Petroleum

Refineries and Alcohol Distilleries. Generation and distribution of electricity are minor consumers of final energy.

Petroleum refining is the major final energy consumer, however the increase was only 18% in the 1983/93 period (around 1.7% per annum) .

The production of alcohol increased 43% (3.6% per annum) in this period.

Using more bagasse for process heat in alcohol distilleries led to a decrease of efficiency in the Energy Sector as a whole.

RESIDENTIAL SECTOR

The increase in the average efficiency can be explained by factors, such as:

- increase in the use of LPG, 7 to 10 times more efficient than firewood;
- increase of 80% in the use of electricity in the sector (6% per annum);
- increase in the more efficient use of electricity;
- improvement in the efficiency of the final uses, such as motive power and illumination.

PUBLIC, COMMERCIAL AND AGRICULTURE SECTORS

These three sectors went through a process similar to that described in the Residential Sector:

- increase in the consumption of electricity (64% in the Commercial Sector, 60% in the Public Sector and 149% in the Agriculture Sector);
- increase in the more efficient uses of electricity;
- improvement in the efficiency of electric processes;
- reduction in the consumption of firewood (43% in the Commercial Sector, 83% in the Public Sector and 40% in the Agriculture Sector).

TRANSPORT SECTOR

The Transport Sector is directly linked with motive power and with gasoline, kerosene, diesel and alcohol consumption. The noted changes are, of course, largely associated with the improvement in the efficiency of motors.

The average efficiency shown in the 3rd column is smaller than that of the 2nd column as result of the increase in the shares of gasoline and alcohol in the sectorial

consumption; both of them are less efficient fuels than diesel oil.

INDUSTRIAL SECTOR

In the Industrial Sector, the average efficiency increased from 61% to 67%. Four percentage points of the gain were due to the increase in the efficiency of equipment and the other 2 percentage points were due to structural alterations in consumption. Some examples that contributed to this gain are the larger use of natural gas and of electricity and, also, the increased growth in the industrial segments that are more efficient in terms of energy.

It is important to emphasize that the expansion of the Industrial Sector has been characterized by the installation of more efficient industrial plants than the existing ones.

CONCLUSIONS

The results of these studies show a significant improvement in the average energy efficiency use of the **Brazilian Productive System**.

From 1983 to 1993, there was an increase of only 28% (2.5% per annum - electricity = 860 kcal/kWh) in terms of the final energy, although the increase in usable energy is estimated to have been 51% (4.2% per annum).

The growth in the GDP for the same period was, however, only 31% (2.7% per annum), showing closer correlation with the variation in the final energy than with the variation in usable energy.

In order to explain this high increase in usable energy by unit of GDP, it is convenient to remember, initially, that not all usable energy goes to productive activities. Therefore, the portion of usable energy destined for the Residential Sector is not directly connected to the productive system. This also happens with the portion of energy channelled to the Public and Transport Sectors. This energy is consumed to generate well-being in the population, therefore, it is not connected to productive activity.

Another factor that explains the increase of energetic intensity is Brazil's option for a strong growth of energy-intensive segments, with a Added Value disproportional to the energy consumption (Aluminum, Steel, Soda-chlorine, Paper and Pulp, Fertilizers, etc.).

**ENERGY SUPPLY
AND
CONSUMPTION
BY SOURCE
1983/1998**

2

White page

TABLE 2.1

TOTAL PRIMARY ENERGY

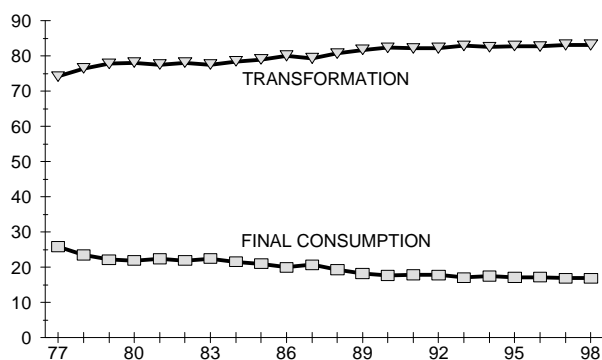
UNIT: 10³ toe

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	115812	131746	141618	141718	146376	147486	150787	148074	151329	152238	155931	162532	165310	175032	185214	196162
IMPORT	40694	38242	33322	36422	38190	38914	36669	36319	34491	34434	33757	36235	33996	39628	46881	42791
EXPORT	-51	0	0	-51	0	-187	0	0	0	0	0	0	-677	-105	-130	0
VAR. INV. LOSSES AND ADJUSTMEN. (*)	-6982	-6310	-3757	-2972	-2298	-1939	-1921	-3313	-1381	-698	545	632	338	-6575	-4795	-4966
TOTAL CONSUMPTION	149473	163678	171183	175117	182268	184274	185535	181080	184439	185974	190233	199399	198967	207980	227170	233987
TRANSFORMATION	115900	128398	135179	140156	144588	148728	151749	149116	151489	152920	157749	164590	164811	172165	188812	194510
FINAL CONSUMPTION	33573	35280	36004	34961	37680	35546	33786	31964	32950	33054	32484	34809	34156	35815	38358	39477
FINAL NON-ENERGY CONSUMPTION	687	752	812	889	949	1026	1088	872	916	891	889	959	819	752	713	771
FINAL ENERGY CONSUMPTION	32886	34528	35192	34072	36731	34520	32698	31092	32034	32163	31595	33850	33337	35063	37645	38706
ENERGY SECTOR	4793	5784	7368	6666	8094	7570	7785	7377	8077	7746	7654	8278	7914	8575	9608	8839
RESIDENTIAL	11440	11657	10629	9547	10053	9441	8795	7866	7833	7852	6872	6684	6076	5974	6055	6236
COMMERCIAL	171	171	159	165	150	135	113	114	109	102	107	103	114	130	161	182
PUBLIC	6	5	4	4	4	2	3	4	4	2	4	4	6	5	8	10
AGRICULTURE	3111	2765	2601	2479	2571	2463	2326	2142	2081	1897	1851	1824	1861	1846	1828	1755
TRANSPORTATION - TOTAL	27	26	16	9	8	12	11	9	6	0	21	39	42	31	40	68
HIGHWAYS	0	0	0	0	0	3	2	2	2	0	21	39	42	31	40	68
RAILROADS	27	26	16	9	8	9	9	7	4	0	0	0	0	0	0	0
WATERWAYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRIAL - TOTAL	13338	14120	14415	15202	15851	14897	13665	13580	13924	14564	15086	16918	17324	18502	19945	21616
CEMENT	975	893	1037	1213	1106	993	708	656	885	488	372	390	462	532	618	597
PIG-IRON AND STEEL	121	127	222	308	400	345	416	343	365	382	552	701	859	1216	1527	1823
FERRO-ALLOYS	13	0	0	0	0	0	0	3	7	13	37	36	14	34	42	38
MINING/PELLETIZATION	41	109	96	111	94	111	86	85	100	85	71	75	249	402	422	363
NON-FERROUS/OTHER METALS	7	11	16	13	35	78	38	64	55	64	77	137	70	123	145	132
CHEMICAL	666	770	756	732	835	730	695	664	719	733	755	789	814	817	1147	1140
FOODS AND BEVERAGES	7442	7450	7119	7172	7769	7019	6254	6557	6552	7478	7467	8823	8972	9263	9849	11186
TEXTILES	149	181	234	254	235	225	203	208	207	167	177	185	197	287	170	155
PAPER AND PULP	1658	1892	2181	2283	2232	2423	2348	2353	2410	2779	3008	3162	3139	3173	3216	3383
CERAMICS	1699	1871	1875	2095	2076	1974	2004	1691	1637	1530	1659	1704	1613	1726	1770	1776
OTHERS	567	816	879	1021	1069	999	913	956	987	845	911	916	935	929	1039	1023
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(*) Including non-utilized and re-injection energy.

PRIMARY ENERGY CONSUMPTION

%



PRIMARY ENERGY

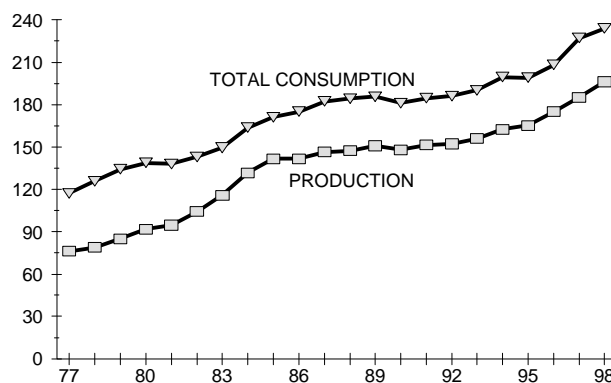
10⁶ toe

TABLE 2.2

PETROLEUM

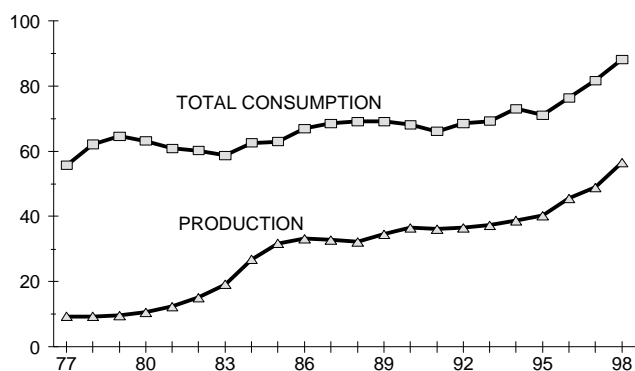
UNIT: 10³ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION (1)	19141	26839	31710	33200	32829	32237	34543	36590	36145	36538	37329	38766	40216	45603	48832	56587
IMPORT (2)	42321	37791	31629	34872	35882	37165	34336	33121	30510	30748	29487	32061	29209	33095	33341	31933
EXPORT	-59	0	0	0	0	-216	0	0	0	0	0	0	-780	-120	-148	0
VAR. INV., LOSSES AND ADJUSTMENTS	-2689	-2059	-387	-1081	-129	-78	300	-1613	-556	1237	2404	2209	2505	-2182	-235	-422
TOTAL CONSUMPTION	58714	62571	62952	66991	68582	69108	69179	68098	66099	68523	69220	73036	71150	76396	81790	88098
TRANSFORMATION (*)	58714	62571	62952	66991	68582	69108	69179	68098	66099	68523	69220	73036	71150	76396	81790	88098

(1) Does not include domestic NGL

(2) Includes condensed naphta and imported NGL

PETROLEUM

10⁶ m³

NATURAL GAS CONSUMPTION

%

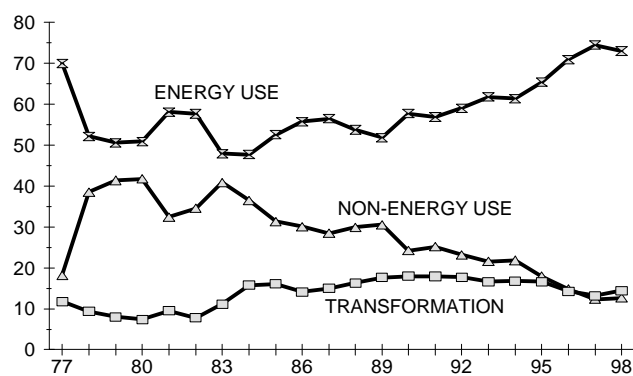


TABLE 2.3

NATURAL GAS

UNIT: 10⁶ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	4013	4903	5467	5687	5781	6076	6105	6279	6597	6976	7355	7756	7955	9156	9825	10788
VAR. INV., LOSSES AND ADJUSTMEN. (*)	-2056	-2499	-2440	-2242	-1894	-2104	-1967	-2116	-2383	-2483	-2535	-2633	-2633	-3212	-3592	-4086
TOTAL CONSUMPTION	1958	2403	3027	3444	3886	3972	4138	4163	4214	4493	4820	5123	5322	5944	6233	6702
TRANSFORMATION	219	379	488	486	584	648	730	749	756	798	804	860	887	850	825	965
FINAL CONSUMPTION	1739	2024	2539	2958	3302	3324	3408	3414	3458	3695	4016	4263	4435	5094	5408	5737
FINAL NON-ENERGY CONSUMPTION	801	877	948	1037	1107	1188	1263	1010	1061	1040	1037	1119	956	878	768	845
FINAL ENERGY CONSUMPTION	938	1147	1591	1921	2195	2136	2145	2404	2397	2655	2979	3144	3479	4216	4640	4892
ENERGY SECTOR	489	628	911	1050	1062	935	894	859	768	840	974	1025	989	1199	1226	1471
RESIDENTIAL	0	0	0	0	1	0	2	5	6	6	20	30	52	72	81	87
COMMERCIAL/PUBLIC	0	0	0	0	1	0	1	3	4	3	13	18	36	49	92	125
TRANSPORTATION	0	0	0	0	0	3	2	2	2	0	25	46	49	36	47	79
HIGHWAYS	0	0	0	0	0	3	2	2	2	0	25	46	49	36	47	79
INDUSTRIAL	449	519	680	871	1131	1198	1246	1535	1617	1806	1947	2025	2353	2860	3194	3130
CEMENT	25	12	7	21	24	24	33	40	40	40	6	6	27	31	37	52
PIG-IRON AND STEEL	120	114	224	322	410	370	406	379	410	440	435	505	682	841	804	795
FERRO-ALLOYS	0	0	0	0	0	0	0	4	8	15	29	30	0	0	0	0
MINING/PELLETIZATION	0	59	66	71	49	68	93	92	96	74	83	87	91	125	175	121
NON-FERROUS/OTHER METALS	0	0	0	0	12	62	24	31	33	35	49	40	19	29	41	28
CHEMICAL	290	305	301	320	327	301	336	358	390	458	481	512	580	686	1085	1108
FOODS AND BEVERAGES	0	0	10	29	68	72	65	149	141	190	196	180	186	288	168	157
TEXTILES	0	0	0	5	7	35	30	59	69	80	86	91	107	213	81	69
PAPER AND PULP	11	9	16	30	35	28	34	62	73	90	101	104	142	162	162	165
CERAMICS	3	10	25	27	35	52	68	69	67	100	112	118	129	102	116	122
OTHERS	0	10	31	46	164	186	157	292	290	284	369	352	390	383	525	513

(*) Including non-utilized and re-injection energy.

TABLE 2.4

STEAM COAL

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	5566	6216	6305	6061	5893	6102	5619	4096	4959	4605	4537	5015	5093	4672	5557	5496
EXPORT/IMPORT	0	0	0	-107	0	0	0	0	0	0	0	107	0	0	0	0
VAR. INV., LOSSES AND ADJUSTMENTS	-348	-855	-218	1113	760	-515	170	851	1124	677	139	-101	69	248	-280	-832
TOTAL CONSUMPTION	5218	5361	6087	7067	6653	5587	5789	4947	6083	5282	4676	5021	5162	4920	5277	4664
TRANSFORMATION (*)	1982	2198	2660	3341	2742	2207	3084	2758	3232	3171	2874	3128	3699	3643	4243	4011
FINAL CONSUMPTION	3236	3163	3427	3726	3911	3380	2705	2189	2851	2111	1802	1893	1463	1277	1034	653
FINAL ENERGY CONSUMPTION	3236	3163	3427	3726	3911	3380	2705	2189	2851	2111	1802	1893	1463	1277	1034	653
TRANSPORTATION	50	48	26	14	13	15	14	11	6	0	0	0	0	0	0	0
RAILROADS	50	48	26	14	13	15	14	11	6	0	0	0	0	0	0	0
INDUSTRIAL	3186	3115	3401	3712	3898	3365	2691	2178	2845	2111	1802	1893	1463	1277	1034	653
CEMENT	1912	1865	2203	2441	2258	1987	1467	1256	1705	890	715	748	546	398	178	28
PIG-IRON AND STEEL	41	67	74	79	132	66	165	49	34	11	15	18	17	17	17	11
FERRO-ALLOYS	30	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0
MINING/PELLETIZATION	57	91	43	70	80	81	0	0	22	45	0	0	0	0	0	0
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	122	0	0	24	0
CHEMICAL	413	442	477	481	553	504	329	260	375	390	362	354	358	328	315	263
FOODS AND BEVERAGES	379	316	231	234	311	228	236	232	167	172	180	176	192	190	154	107
TEXTILES	26	16	10	11	12	10	7	8	7	7	7	8	6	5	4	0
PAPER AND PULP	251	261	272	262	329	298	307	273	269	247	235	177	187	195	189	138
CERAMICS	50	20	35	64	154	117	162	80	145	156	177	178	145	128	148	99
OTHERS	27	37	56	70	69	74	18	20	121	193	111	91	12	16	5	7
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(*) Input for electricity generation.

TABLE 2.5

METALLURGICAL COAL

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	1171	1303	1407	1330	991	1229	1052	499	229	126	58	119	106	133	90	20
IMPORT	5459	7576	8049	8442	9660	9282	9552	10146	10758	10399	10975	11212	11790	12847	12883	12964
VAR. INV., LOSSES AND ADJUSTMENTS	-357	-511	20	-90	-612	47	-119	-358	-493	293	401	-80	-78	-408	-177	-48
TOTAL CONSUMPTION	6273	8368	9476	9682	10039	10558	10485	10287	10494	10818	11434	11251	11818	12572	12796	12936
TRANSFORMATION (*)	6273	8368	9476	9682	10039	10558	10485	10287	10494	10818	11199	10897	10984	10976	10562	10230
FINAL CONSUMPTION IN INDUSTRY	0	0	0	0	0	0	0	0	0	0	235	354	834	1596	2234	2706

(*) Input for coal coke production.

TABLE 2.6

HYDRAULIC ENERGY

UNIT: 10³ MWh

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	151475	166593	178375	182419	185600	199093	204690	206708	217782	223343	235065	242705	253905	265769	278972	291371
TOTAL CONSUMPTION	151475	166593	178375	182419	185600	199093	204690	206708	217782	223343	235065	242705	253905	265769	278972	291371
TRANSFORMATION	151475	166593	178375	182419	185600	199093	204690	206708	217782	223343	235065	242705	253905	265769	278972	291371

TABLE 2.7

URANIUM (U3O8)

UNIT: 10³ kg

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	228	138	100	36	114	18	35	5	0	0	0	0	0	0	0	2
IMPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	139	827	534
VAR. INV., LOSSES AND ADJUSTMENTS	-228	-138	-100	-36	-32	18	-35	-5	116	0	43	136	76	-139	-105	-35
TOTAL CONSUMPTION	0	0	0	0	82	36	0	0	116	0	43	136	76	0	722	502
TRANSFORMATION (*)	0	0	0	0	82	36	0	0	116	0	43	136	76	0	722	502

(*) Input for production of uranium contained in UO₂.

TABLE 2.8

CANE JUICE

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	68631	82520	102900	89702	109619	100360	99035	99776	112673	99358	94029	98986	95510	105627	118285	100637
TOTAL CONSUMPTION	68631	82520	102900	89702	109619	100360	99035	99776	112673	99358	94029	98986	95510	105627	118285	100637
TRANSFORMATION (*)	68631	82520	102900	89702	109619	100360	99035	99776	112673	99358	94029	98986	95510	105627	118285	100637

(*) Input for alcohol production.

TABLE 2.9

FIREWOOD

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	97566	107590	106252	105739	105774	105091	106343	92091	86167	80966	80043	80218	75066	70897	69909	69389
IMPORTS	0	0	0	0	0	0	0	0	0	0	0	0	3	5	2	12
TOTAL CONSUMPTION	97566	107590	106252	105739	105774	105091	106343	92091	86167	80966	80043	80218	75069	70902	69913	69401
TRANSFORMATION (*)	32350	39995	41963	44321	43196	45877	50879	41632	36551	33689	35504	35799	32971	29287	28221	27079
FINAL CONSUMPTION	65216	67595	64289	61418	62578	59214	55464	50459	49616	47277	44539	44419	42098	41615	41692	42322
FINAL ENERGY CONSUMPTION	65216	67595	64289	61418	62578	59214	55464	50459	49616	47277	44539	44419	42098	41615	41692	42322
RESIDENTIAL	37387	38097	34735	31200	32850	30848	28735	25687	25583	25642	22402	21756	19710	19322	19562	20133
COMMERCIAL	560	560	520	540	490	440	370	370	350	328	320	295	289	303	294	279
PUBLIC	18	15	13	12	10	8	8	8	6	4	4	3	2	0	0	0
AGRICULTURE	10166	9035	8500	8100	8400	8050	7600	7000	6800	6198	6050	5962	6081	6033	5973	5734
TRANSPORTATION	10	10	10	8	8	8	8	8	5	0	0	0	0	0	0	0
RAILROADS	10	10	10	8	8	8	8	8	5	0	0	0	0	0	0	0
WATERWAYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRIAL	17075	19878	20511	21558	20820	19860	18743	17386	16872	15105	15763	16403	16016	15957	15863	16176
CEMENT	0	27	25	24	39	32	11	7	0	4	3	3	5	13	2	27
MINING/PELLETIZATION	50	60	72	70	65	60	0	0	0	0	0	0	0	0	0	0
FERRO ALLOYS/OTHER METALS	23	36	52	44	81	67	55	122	89	110	154	117	132	67	128	131
CHEMICAL	860	1050	970	820	1060	850	810	705	680	540	568	586	469	375	338	314
FOODS AND BEVERAGES	5963	6654	7031	7300	7120	6950	6540	6340	6467	5719	5776	5810	5694	5808	5692	5806
TEXTILES	450	570	750	800	730	620	570	500	475	310	326	336	333	340	323	313
PAPER AND PULP	2475	2942	3167	2956	2505	2714	2369	2427	2173	2380	2464	2884	2932	2428	2325	2499
CERAMICS	5440	5953	5744	6444	6270	5917	5888	5035	4783	4366	4715	4822	4533	4986	5136	5187
OTHERS	1814	2586	2700	3100	2950	2650	2500	2250	2205	1676	1757	1845	1918	1940	1919	1899

(*) Input for charcoal production and electricity generation.

FIREWOOD CONSUMPTION

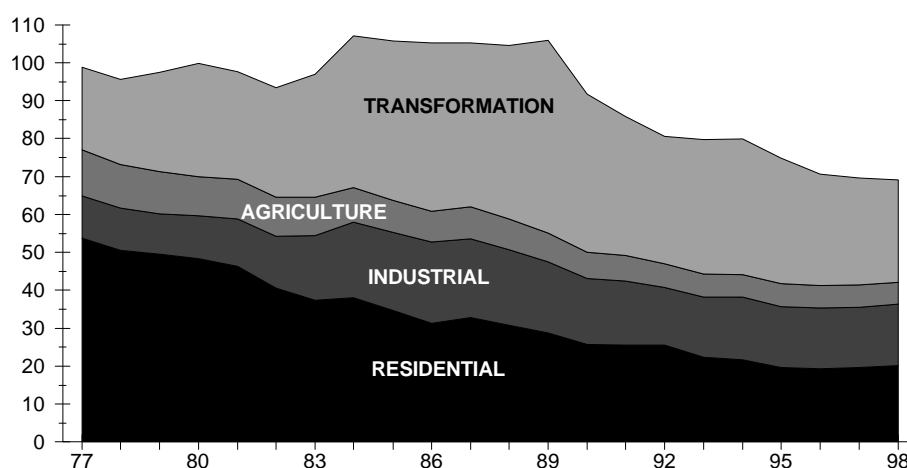
10⁶ t

TABLE 2.10

MOLASSESUNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	5178	4166	4613	3672	4775	4480	4230	4480	4544	5032	4696	5866	6561	7709	7669	8957
TOTAL CONSUMPTION	5178	4166	4613	3672	4775	4480	4230	4480	4544	5032	4696	5866	6561	7709	7669	8957
TRANSFORMATION (*)	5178	4166	4613	3672	4775	4480	4230	4480	4544	5032	4696	5866	6561	7709	7669	8957

(*) Input for alcohol production.

TABLE 2.11

SUGAR CANE BAGASSEUNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	48887	52113	56867	52685	62653	57337	55330	54776	58801	62002	60564	70543	69847	73632	82039	84341
TOTAL CONSUMPTION	48887	52113	56867	52685	62653	57337	55330	54776	58801	62002	60564	70543	69847	73632	82039	84341
TRANSFORMATION (*)	1809	1644	1790	1721	1963	1938	1856	1854	1995	1975	1929	2214	2463	3438	3714	3807
FINAL CONSUMPTION	47078	50469	55077	50964	60690	55399	53474	52922	56806	60027	58635	68329	67384	70194	78325	80534
FINAL ENERGY CONSUMPTION	47078	50469	55077	50964	60690	55399	53474	52922	56806	60027	58635	68329	67384	70194	78325	80534
ENERGY SECTOR	20929	25101	31517	27592	34373	32162	33331	31503	35347	33395	32155	35372	33680	35837	40420	36260
INDUSTRIAL	26149	25368	23560	23372	26317	23237	20143	21419	21459	26632	26480	32957	33704	34357	37905	44274
CHEMICAL	63	167	172	180	190	180	210	190	185	196	210	240	220	0	0	0
FOODS AND BEVERAGES	26081	25194	23218	22994	25793	22647	19558	20976	20965	26269	26096	32597	33420	34247	37785	44152
PAPER AND PULP	0	0	161	188	320	390	350	233	283	143	142	80	22	110	116	122
OTHERS	5	7	9	10	14	20	25	20	26	24	32	40	42	0	4	0

(*) Input for electricity generation

TABLE 2.12

BLACK LIQUORUNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	3184	3558	3876	4039	4231	4515	4221	4594	5192	6210	7029	7637	7375	8101	8491	8948
TOTAL CONSUMPTION	3184	3558	3876	4039	4231	4515	4221	4594	5192	6210	7029	7637	7375	8101	8491	8948
TRANSFORMATION (*)	446	491	497	519	592	514	556	793	998	1192	1161	1468	1505	1563	1685	1710
FINAL CONSUMPTION	2738	3067	3379	3520	3639	4001	3665	3801	4194	5018	5868	6169	5870	6538	6806	7238
FINAL ENERGY CONSUMPTION	2738	3067	3379	3520	3639	4001	3665	3801	4194	5018	5868	6169	5870	6538	6806	7238
INDUSTRIAL	2738	3067	3379	3520	3639	4001	3665	3801	4194	5018	5868	6169	5870	6538	6806	7238
PAPER AND PULP	2738	3067	3379	3520	3639	4001	3665	3801	4194	5018	5868	6169	5870	6538	6806	7238

(*) Input for electricity generation.

TABLE 2.13

OTHER WASTESUNIT: 10³ toe

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	284	408	475	615	652	711	791	813	854	970	975	821	815	772	856	871
TOTAL CONSUMPTION	284	408	475	615	652	711	791	813	854	970	975	821	815	772	856	871
TRANSFORMATION (*)	223	342	273	302	337	361	330	406	435	463	510	376	357	351	420	430
FINAL CONSUMPTION	61	66	202	313	315	350	461	407	419	507	465	445	458	421	436	441
FINAL ENERGY CONSUMPTION	61	66	202	313	315	350	461	407	419	507	465	445	458	421	436	441
INDUSTRIAL	61	66	202	313	315	350	461	407	419	507	465	445	458	421	436	441
CEMENT	47	35	38	43	45	54	47	42	54	49	40	41	37	30	61	52
PAPER AND PULP	0	0	84	199	194	221	341	309	315	415	378	359	373	337	340	351
CERAMICS	14	31	80	71	76	75	73	56	50	43	47	45	48	54	35	38

(*) Input for electricity generation and alcohol production.

TABLE 2.14

TOTAL OF SECONDARY SOURCES

UNIT: 10³ toe

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	112884	123192	130208	136474	141009	144418	147223	145180	147664	149101	153623	160767	162087	171543	189671	195896
IMPORT	1465	648	2164	4952	7651	9576	11153	11579	13272	13207	22372	21457	23661	25088	26782	25711
EXPORT	-6166	-9229	-8146	-6505	-7482	-7858	-7115	-4899	-4287	-4892	-7044	-6870	-4094	-4093	-4657	-6716
VAR. INV., LOSSES AND ADJUSTMENTS	-6321	-6222	-7264	-7939	-9907	-8823	-9100	-10527	-12330	-10763	-16070	-16185	-13815	-14783	-22972	-19750
TOTAL CONSUMPTION	101862	108389	116962	126982	131271	137313	142161	141333	144319	146653	152881	159169	167839	177755	188824	195141
TRANSFORMATION	2940	2631	2776	3658	3805	4420	4026	3879	3602	3411	3325	3120	3170	4593	5587	6330
FINAL CONSUMPTION	98922	105758	114186	123324	127466	132893	138135	137454	140717	143242	149556	156049	164669	173162	183237	188811
FINAL NON-ENERGY CONSUMPTION	6248	6587	8017	8070	8364	8247	8426	8844	8338	8585	8878	9838	9641	9823	11389	11945
FINAL ENERGY CONSUMPTION	92674	99171	106169	115254	119102	124646	129709	128610	132379	134657	140678	146211	155028	163339	171848	176866
ENERGY SECTOR	4685	5074	5179	5384	5680	5796	5856	5804	5801	5962	6186	6347	6344	6818	7359	7355
RESIDENTIAL	13225	13554	14310	15410	16361	17273	18372	19864	20665	21043	21718	22368	24745	26526	27986	29513
COMMERCIAL	5289	5473	5739	6122	6386	6732	7173	7660	7767	8248	8503	8933	9909	10638	11633	12672
PUBLIC	3915	4112	4353	4455	4753	5169	5166	5422	5609	5813	6233	6833	7340	7448	8011	8499
AGRICULTURE	3350	3653	4259	4385	4901	5150	5364	5117	5445	5600	6091	6410	6924	7309	7758	7828
TRANSPORTATION	24903	25275	26813	30569	30220	30554	32098	32302	33837	33941	35282	37029	40527	43897	45936	48125
HIGHWAYS	20023	20529	21543	25664	25632	26120	28097	28477	29994	30121	31204	33152	36300	39289	41463	43243
RAILROADS	855	875	904	918	897	931	966	852	822	872	882	741	780	729	652	683
AIRWAYS	1929	1712	1810	1961	1976	1916	2023	1915	2004	1885	1990	2042	2372	2532	2850	3149
WATERWAYS	2096	2159	2556	2026	1715	1587	1012	1058	1017	1063	1206	1094	1075	1347	971	1050
INDUSTRIAL	37186	42030	45516	48929	50700	53882	55591	52138	53255	53911	56665	58291	59239	60703	62788	62812
CEMENT	1592	1410	1525	1757	1827	1855	2035	2163	2057	2008	2188	2200	2512	2955	3352	3532
PIG-IRON AND STEEL	9914	12573	13468	14248	15089	16528	17200	14232	14650	14689	15639	16150	15747	15126	15334	14751
FERRO-ALLOYS	1272	1467	1646	1901	1944	2248	2555	2199	2311	2633	2625	2310	2233	2603	2235	1869
MINING/PELLETIZATION	1836	2153	2270	2394	2435	2433	2369	2399	2310	2432	2509	2746	2565	2435	2572	2884
NON-FERROUS/OTHER METALS	4214	4948	5855	6816	7265	7917	8163	8451	9140	9132	9409	9322	9594	9750	9322	9205
CHEMICAL	4901	5292	5970	6058	5995	6180	6124	6210	6099	6278	6448	6717	6910	7357	7890	7930
FOODS AND BEVERAGES	3112	3367	3462	3480	3470	3568	3543	3763	3926	4076	4278	4387	4712	5060	5255	5520
TEXTILES	1751	1796	1928	2089	2091	2199	2292	2268	2199	2190	2334	2303	2200	2040	2106	2101
PAPER AND PULP	2240	2146	2294	2435	2506	2569	2820	2780	3087	3349	3478	3547	3660	3884	3999	4174
CERAMICS	941	951	953	1149	1106	1088	1146	982	948	1062	1143	1166	1278	1386	1591	1633
OTHERS	5413	5927	6145	6602	6972	7297	7344	6691	6528	6062	6614	7443	7828	8107	9132	9213
UNIDENTIFIED CONSUMPTION	121	0	0	0	101	90	89	303	0	139	0	0	0	0	377	62

SECONDARY SOURCES
10⁶ toe

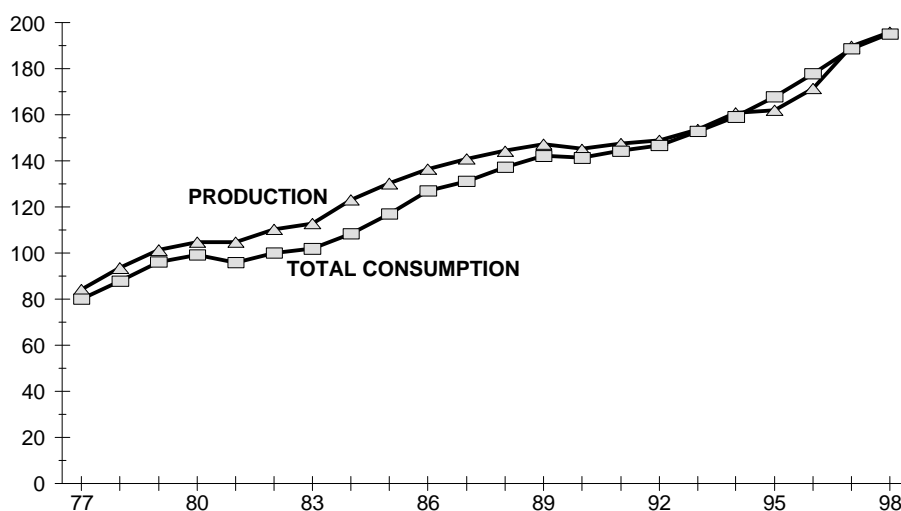


TABLE 2.15

PETROLEUM AND NATURAL GAS DERIVATIVES

UNIT: 10³ toe

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	50949	54324	54919	58881	60472	59628	60141	59854	57683	59611	60064	63641	62423	66594	71923	77431
IMPORT	1312	603	1542	1901	2285	3796	3458	2909	4149	5301	12874	10306	10983	12664	13436	13170
EXPORT	-5872	-8704	-7929	-6341	-7459	-7811	-6677	-4897	-4285	-4890	-6946	-6718	-3888	-3983	-4565	-6638
VAR. INV., LOSSES AND ADJUSTMENTS(*)	-60	-1020	-431	-1163	-634	-385	-582	-877	25	-532	-4508	-2378	-69	-563	-168	-429
TOTAL CONSUMPTION	46329	45203	48101	53278	54664	55228	56340	56989	57572	59490	61484	64851	69449	74712	80626	83534
TRANSFORMATION	1003	890	1021	2650	2227	2101	1546	1261	1326	1709	1536	1634	1937	2319	2573	2878
FINAL CONSUMPTION	45326	44313	47080	50628	52437	53127	54794	55728	56246	57781	59948	63217	67512	72393	78053	80656
FINAL NON-ENERGY CONSUMPTION	5706	6032	7403	7470	7891	7846	7994	8260	7881	8191	8380	9240	8981	9098	10661	11170
FINAL ENERGY CONSUMPTION	39620	38281	39677	43158	44546	45281	46800	47468	48365	49590	51568	53977	58531	63295	67392	69486
ENERGY SECTOR	3025	3137	3024	3195	3491	3543	3579	3492	3184	3298	3489	3724	3583	3838	4370	4250
RESIDENTIAL	3749	3706	4009	4257	4469	4783	5003	5127	5266	5458	5648	5640	5884	6115	6120	6112
COMMERCIAL	367	278	316	379	396	493	595	700	648	667	499	500	490	495	501	557
PUBLIC	190	176	178	143	232	351	148	160	167	160	276	606	645	465	519	594
AGRICULTURE	2407	2532	2952	2926	3184	3334	3507	3173	3309	3405	3762	3971	4257	4444	4620	4454
TRANSPORTATION	21990	21601	22359	24798	24343	24343	25390	26256	27582	27781	28871	30221	33490	36602	38879	41218
HIGHWAYS	17417	17177	17421	20229	20097	20257	21764	22777	24052	24307	25141	26685	29614	32328	34737	36675
RAILROADS	548	553	572	582	555	583	591	506	509	526	534	400	429	395	321	344
AIRWAYS	1929	1712	1810	1961	1976	1916	2023	1915	2004	1885	1990	2042	2372	2532	2850	3149
WATERWAYS	2096	2159	2556	2026	1715	1587	1012	1058	1017	1063	1206	1094	1075	1347	971	1050
INDUSTRIAL	7771	6851	6839	7460	8330	8344	8489	8257	8209	8682	9023	9315	10182	11336	12006	12239
CEMENT	484	166	104	228	515	566	819	970	897	973	1102	1059	1276	1517	1841	1948
PIG-IRON AND STEEL	583	605	544	523	471	548	493	455	443	478	517	540	451	459	500	469
FERRO-ALLOYS	0	0	0	0	0	0	0	20	9	9	9	2	1	0	0	0
MINING/PELLETIZATION	541	627	626	660	672	693	641	542	522	588	663	741	735	729	699	799
NON-FERROUS/OTHER METALS	658	655	746	744	845	791	742	725	748	764	861	822	1009	1240	1150	1063
CHEMICAL	1961	1981	2122	2244	2343	2352	2335	2318	2301	2341	2196	2354	2574	2959	3294	3307
FOODS AND BEVERAGES	940	711	648	642	806	761	777	766	818	873	888	905	1022	1107	1071	1128
TEXTILES	453	302	298	376	459	430	479	448	420	406	427	347	334	305	326	327
PAPER AND PULP	586	429	372	443	530	477	558	550	626	746	685	726	818	997	922	949
CERAMICS	434	436	391	485	476	475	503	436	430	552	612	616	689	748	834	855
OTHERS	1131	939	988	1115	1213	1251	1142	1027	995	952	1063	1203	1273	1275	1369	1394
UNIDENTIFIED CONSUMPTION	121	0	0	0	101	90	89	303	0	139	0	0	0	0	377	62

(*) Includes non-utilized energy.

CONSUMPTION OF OIL & NATURAL GAS PRODUCTS

10⁶ toe

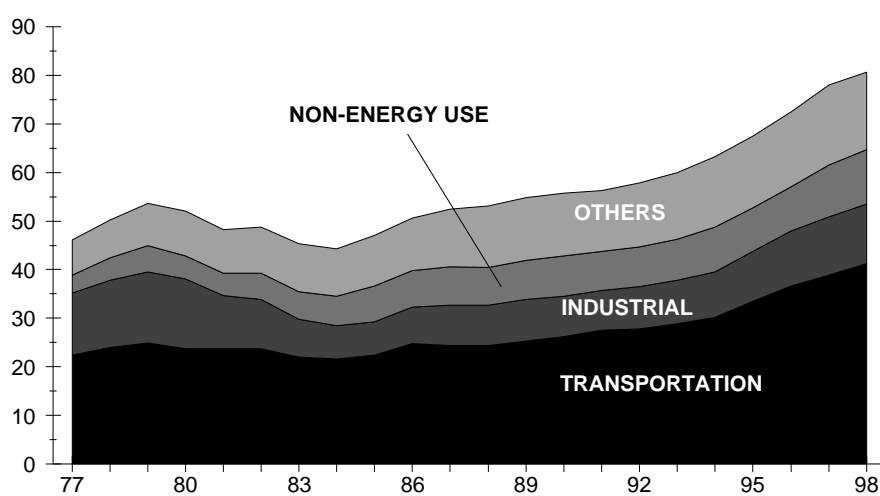


TABLE 2.16

DIESEL OIL

UNIT: 10³ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	19389	20469	20507	22669	24126	24761	24656	24160	23844	24300	23450	26216	25879	26729	27959	29409
IMPORT	271	2	428	814	576	548	973	681	1821	2257	4384	3267	4250	4907	5892	6207
EXPORT	-1164	-1589	-1295	-907	-918	-1057	-664	-255	-185	-294	-790	-940	-653	-409	-598	-540
VAR. INV., LOSSES AND ADJUSTMENTS	-16	40	535	-194	-108	171	21	3	104	4	-48	-439	557	-103	-211	-245
TOTAL CONSUMPTION	18480	18922	20175	22382	23676	24423	24986	24589	25584	26267	26996	28104	30033	31124	33042	34831
TRANSFORMATION (*)	416	411	482	651	1056	1063	743	653	657	817	721	763	1084	1023	1378	1728
FINAL CONSUMPTION	18064	18511	19693	21731	22620	23360	24243	23936	24927	25450	26275	27341	28949	30101	31664	33103
FINAL ENERGY CONSUMPTION	18064	18511	19693	21731	22620	23360	24243	23936	24927	25450	26275	27341	28949	30101	31664	33103
ENERGY SECTOR	431	346	406	434	394	466	441	490	516	576	377	282	169	196	211	245
COMMERCIAL	33	10	12	40	37	36	53	45	48	50	55	80	82	81	80	85
PUBLIC	80	109	98	67	107	170	86	94	100	85	92	210	211	93	173	177
AGRICULTURE	2832	2952	3465	3400	3700	3889	4101	3710	3878	3976	4394	4610	4910	5145	5351	5191
TRANSPORTATION	14365	14789	15416	17475	18046	18429	19206	19232	20040	20394	20914	21618	23014	24063	25269	26796
HIGHWAYS	12775	13184	13655	15937	16823	17218	18135	18266	19050	19389	19898	20795	22143	23160	24604	26045
RAILROADS	643	649	674	680	652	687	697	597	600	620	630	472	505	466	378	406
WATERWAYS	947	956	1087	858	571	524	374	369	390	385	386	351	366	437	287	345
INDUSTRIAL	323	305	296	315	336	370	356	365	345	369	443	541	563	523	580	609
CEMENT	23	22	22	23	26	26	15	12	12	12	15	19	18	18	23	25
PIG-IRON AND STEEL	36	35	36	41	46	45	48	48	47	41	42	46	21	14	38	32
MINING/PELLETIZATION	64	76	80	84	102	129	91	89	85	90	123	154	155	138	170	190
CHEMICAL	17	15	14	14	16	9	27	26	28	30	35	79	86	113	112	94
FOODS AND BEVERAGES	65	60	54	49	37	45	24	22	21	25	28	34	39	40	41	40
TEXTILES	4	2	2	3	7	3	3	3	3	3	4	2	1	4	4	7
PAPER AND PULP	16	13	14	17	17	18	20	21	22	20	25	25	28	29	37	27
CERAMICS	11	8	7	13	12	9	9	7	7	8	11	8	8	8	7	7
OTHERS	87	74	67	71	73	86	119	137	120	140	160	174	207	159	148	187

(*) Input for electricity generation.

DIESEL OIL CONSUMPTION BY SECTOR

%

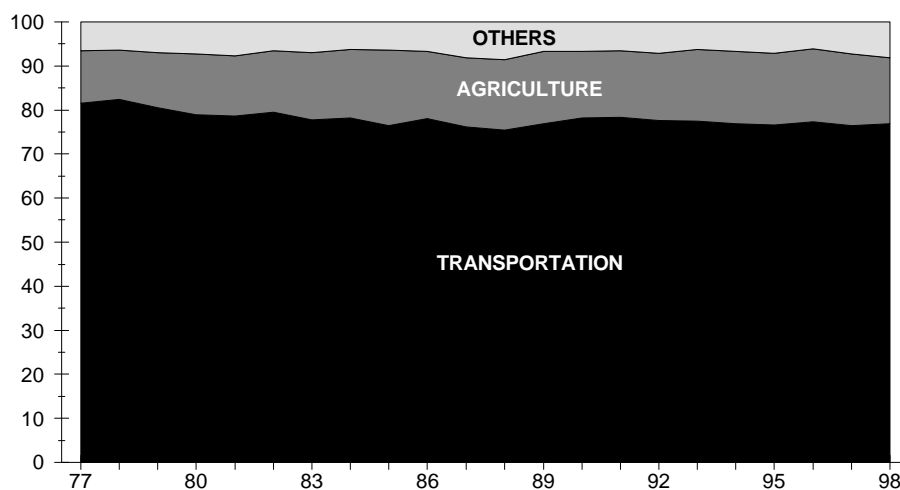


TABLE 2.17

FUEL OIL

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	12888	13156	12430	13295	12690	12162	12651	12563	11983	12666	12314	12534	12373	14180	15775	18085
IMPORT	421	142	234	367	898	1807	1064	656	239	537	5113	2883	734	1724	471	58
EXPORT	-2729	-2991	-2319	-2286	-1989	-2312	-2720	-2581	-2421	-2458	-2679	-2724	-1834	-2225	-2481	-4006
VAR. INV., LOSSES AND ADJUSTMENTS	300	-422	-481	125	32	-146	8	75	187	-45	-3376	-1008	1055	14	113	-352
TOTAL CONSUMPTION	10880	9885	9864	11501	11631	11511	11003	10713	9988	10700	11372	11685	12328	13693	13878	13785
TRANSFORMATION (*)	693	594	650	2193	1383	1248	962	725	790	861	805	859	879	1300	1224	1253
FINAL CONSUMPTION	10187	9291	9214	9308	10248	10263	10041	9988	9198	9839	10567	10826	11449	12393	12654	12532
FINAL ENERGY CONSUMPTION	10187	9291	9214	9308	10248	10263	10041	9988	9198	9839	10567	10826	11449	12393	12654	12532
ENERGY SECTOR	1398	1554	1477	1549	1711	1672	1630	1703	1133	1153	1427	1697	1722	1544	1823	1648
COMMERCIAL	190	111	135	158	152	207	231	296	280	277	290	290	282	288	295	337
PUBLIC	111	71	75	64	116	188	55	56	54	64	168	385	412	315	261	253
AGRICULTURE	27	28	25	26	36	37	30	27	22	33	36	65	97	85	82	47
TRANSPORTATION - TOTAL	1413	1512	1760	1363	1290	1212	747	788	725	780	929	841	810	1032	770	800
RAILROADS	8	2	2	2	0	0	0	0	0	0	0	0	1	0	0	0
WATERWAYS	1405	1510	1758	1361	1290	1212	747	788	725	780	929	841	809	1032	770	800
INDUSTRIAL - TOTAL	6917	6015	5742	6148	6943	6947	7348	6966	6984	7532	7717	7548	8126	9129	9423	9447
CEMENT	501	162	89	217	504	511	860	1010	923	1006	1149	1099	1307	1548	1820	1847
PIG-IRON AND STEEL	547	590	505	471	403	495	441	395	392	442	479	486	402	397	329	279
MINING/PELLETIZATION	509	618	589	607	602	609	595	487	470	530	587	640	633	633	546	620
NON-FERROUS/OTHER METALS	421	370	388	467	487	443	409	403	381	420	483	390	549	724	741	675
CHEMICAL	1561	1547	1656	1608	1720	1742	1760	1634	1710	1814	1577	1462	1516	1794	1991	1967
FOODS AND BEVERAGES	910	696	609	591	764	709	763	750	800	860	877	888	1004	1094	1054	1106
TEXTILES	472	324	304	376	461	438	497	458	431	415	444	360	348	317	338	331
PAPER AND PULP	609	461	378	442	533	480	572	556	634	765	695	710	785	972	924	957
CERAMICS	415	446	389	468	453	450	488	414	393	490	539	502	521	547	563	598
OTHERS	972	801	835	901	1016	1070	963	859	850	790	887	1011	1061	1103	1117	1067
UNIDENTIFIED CONSUMPTION	131	0	0	0	0	0	0	152	0	0	0	0	0	0	0	0

(*) Input for electricity generation.

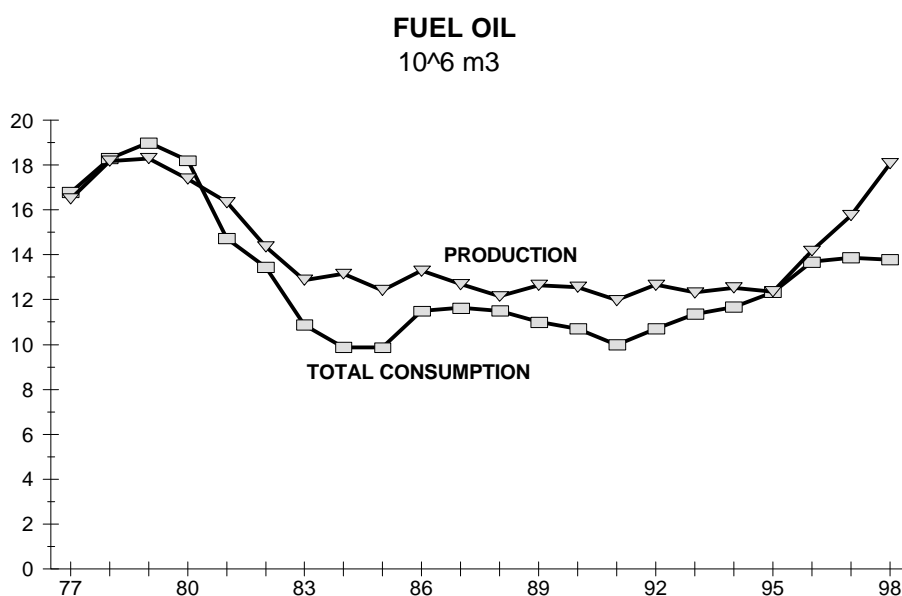


TABLE 2.18

GASOLINE

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	10768	12139	12036	12309	12798	12658	12361	11971	11899	12453	14859	15202	15007	16405	18241	20203
IMPORT	89	83	211	128	11	7	3	5	10	0	0	30	914	951	392	210
EXPORT	-2048	-4230	-4752	-3662	-5137	-5180	-3895	-2213	-1508	-2018	-3876	-3002	-1039	-604	-656	-1721
VAR. INV., LOSSES AND ADJUSTMENTS	-27	-101	201	-90	-52	-85	-112	-247	-99	-186	-203	-424	-763	-228	94	311
TOTAL CONSUMPTION	8782	7891	7696	8685	7620	7400	8357	9516	10302	10249	10780	11806	14119	16524	18071	19003
FINAL CONSUMPTION	8782	7891	7696	8685	7620	7400	8357	9516	10302	10249	10780	11806	14119	16524	18071	19003
FINAL ENERGY CONSUMPTION	8782	7891	7696	8685	7620	7400	8357	9516	10302	10249	10780	11806	14119	16524	18071	19003
TRANSPORTATION	8782	7891	7696	8685	7620	7400	8357	9516	10302	10249	10780	11806	14119	16524	18071	19003
HIGHWAYS	8700	7812	7621	8595	7536	7319	8272	9453	10244	10199	10724	11739	14056	16457	17995	18922
AIRWAYS	82	79	75	90	84	81	85	63	58	50	56	67	63	67	76	81

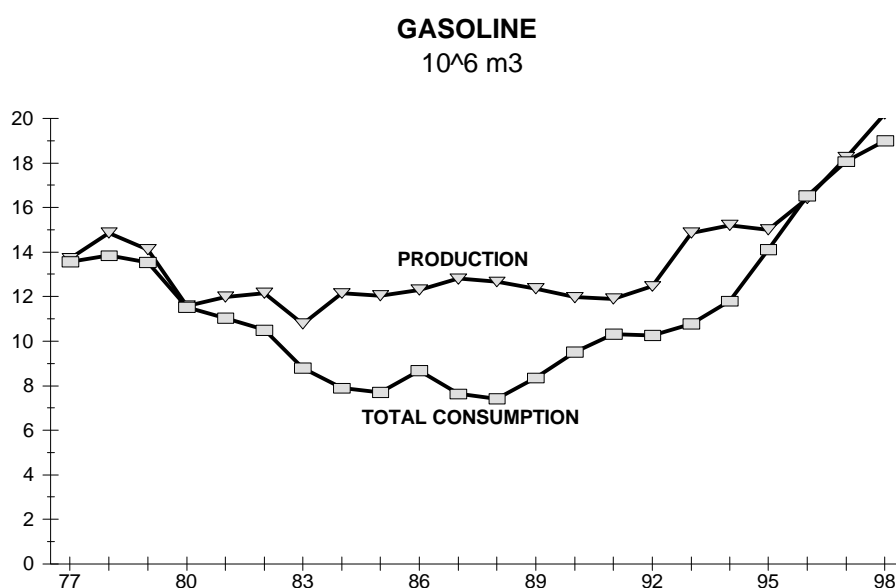


TABLE 2.19

LPG

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	5481	5910	6282	6382	6865	6290	6604	7016	6612	7012	7354	7375	6974	6758	6690	6793
IMPORT	874	446	873	1093	1391	2400	2298	2338	2756	2764	3056	3120	4236	4451	4665	5025
EXPORT	-81	-76	-75	-35	-76	-69	-51	-9	0	-5	-11	0	0	0	-6	-6
VAR. INV., LOSSES AND ADJUSTMENTS	-116	-184	-459	-256	-306	-235	-31	-119	-203	-89	-659	-562	-692	-111	194	29
TOTAL CONSUMPTION	6158	6096	6621	7184	7874	8386	8820	9226	9165	9682	9740	9933	10518	11098	11543	11841
FINAL CONSUMPTION	6158	6096	6621	7184	7874	8386	8820	9226	9165	9682	9740	9933	10518	11098	11543	11841
FINAL ENERGY CONSUMPTION	6158	6096	6621	7184	7874	8386	8820	9226	9165	9682	9740	9933	10518	11098	11543	11841
ENERGY SECTOR	20	9	21	26	24	23	47	33	39	30	40	25	16	16	27	31
RESIDENTIAL	5637	5590	6093	6588	6940	7453	7827	8091	8323	8695	9036	9104	9550	9966	10019	10010
COMMERCIAL	202	213	223	243	281	360	467	548	475	520	212	210	208	213	226	244
PUBLIC	23	25	30	30	38	36	25	27	36	32	52	70	91	109	202	336
AGRICULTURE	0	0	0	0	0	1	1	1	1	2	1	1	2	2	6	13
INDUSTRIAL	276	259	254	297	422	363	306	262	291	361	399	523	651	792	1063	1207
PIG-IRON AND STEEL	42	52	43	45	58	47	42	38	35	32	36	49	53	95	113	144
MINING/PELLETIZATION	8	5	6	6	4	3	3	3	3	12	1	1	1	2	7	17
NON-FERROUS/OTHER METALS	22	7	18	20	38	29	27	25	20	18	24	33	35	64	76	96
CHEMICAL	11	11	11	24	64	37	17	15	15	14	13	23	23	23	28	30
FOODS AND BEVERAGES	23	22	22	27	31	29	28	30	39	35	37	44	54	56	62	75
TEXTILES	7	7	8	9	9	9	6	6	5	8	4	5	5	4	5	13
PAPER AND PULP	6	5	7	8	9	9	6	7	6	7	9	14	16	20	25	33
CERAMICS	56	41	25	30	42	52	49	51	77	133	152	220	312	355	490	470
OTHERS	101	109	114	128	167	148	128	87	91	102	123	134	152	173	257	329
UNIDENTIFIED CONSUMPTION	0	0	0	0	169	150	147	264	0	42	0	0	0	0	0	0

TABLE 2.20

NAPHTHA

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	6056	6237	7224	7710	8076	7904	8226	8229	7304	7009	7077	7253	6809	6548	7302	7365
IMPORT	5	5	45	4	45	97	161	246	704	1483	2800	3362	3558	3398	4852	4982
EXPORT	0	0	0	0	0	0	0	0	-5	-48	0	-276	0	0	0	-5
VAR.INV.,LOSSES AND ADJUSTMENTS	177	288	298	-248	-131	6	-23	-17	-50	-63	-1049	-368	-383	-94	-238	-412
TOTAL CONSUMPTION	6238	6530	7567	7466	7990	8007	8364	8458	7953	8381	8828	9971	9984	9852	11916	11930
TRANSFORMATION (*)	2104	2228	2237	2132	1960	1987	1953	1962	1630	1485	1706	1927	2158	2269	2567	2567
FINAL CONSUMPTION	4134	4302	5330	5334	6030	6020	6411	6496	6323	6896	7122	8044	7826	7583	9349	9363
FINAL NON-ENERGY CONSUMPTION	4132	4286	5330	5334	6030	6020	6411	6496	6323	6896	7122	8038	7787	7569	9344	9358
FINAL ENERGY CONSUMPTION	2	16	0	0	0	0	0	0	0	0	0	6	39	14	5	5
ENERGY SECTOR	0	14	0	0	0	0	0	0	0	0	0	6	39	14	5	5
INDUSTRIAL	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PIG-IRON AND STEEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHEMICAL	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(*) Input for gas works gas production and oil derivatives produced from chemical industry.

TABLE 2.21

COAL COKE

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	4715	6357	7216	7320	7619	8114	8041	7635	8086	8160	8503	8265	8331	8357	8156	7911
IMPORT	224	60	97	93	724	849	1251	574	1073	988	1159	1480	1777	1716	1708	1516
VAR.INV.,LOSSES AND ADJUSTMENTS	-41	20	-149	-242	-303	106	-348	-768	-239	-103	-98	6	-237	-204	-157	-31
TOTAL CONSUMPTION	4898	6437	7164	7171	8040	9069	8944	7441	8920	9045	9564	9751	9871	9869	9707	9396
FINAL CONSUMPTION	4898	6437	7164	7171	8040	9069	8944	7441	8920	9045	9564	9751	9871	9869	9707	9396
FINAL ENERGY CONSUMPTION	4898	6437	7164	7171	8040	9069	8944	7441	8920	9045	9564	9751	9871	9869	9707	9396
ENERGY SECTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDUSTRIAL	4898	6437	7164	7171	8040	9069	8944	7441	8920	9045	9564	9751	9871	9869	9707	9396
CEMENT	0	0	0	0	0	0	0	0	22	0	0	0	0	14	13	98
PIG-IRON AND STEEL	4857	6389	7106	7108	7990	8988	8754	7157	8622	8732	9098	9365	9576	9543	9528	9079
FERRO-ALLOYS	33	38	40	45	40	42	48	37	38	63	61	57	51	57	49	39
MINING/PELLETIZATION	0	0	3	0	0	27	127	143	140	159	151	202	0	15	0	0
NON-FERROUS/OTHER METALS	8	10	15	18	10	12	15	104	98	91	254	127	244	240	117	109

TABLE 2.22

KEROSENE

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	3502	4171	3903	3609	3690	3597	3625	3288	3249	3096	3087	2998	3292	3597	3523	3833
IMPORT	0	0	45	46	0	35	35	28	147	144	459	410	643	694	868	1003
EXPORT	-704	-1468	-947	-534	-830	-685	-550	-588	-680	-638	-721	-818	-874	-978	-1068	-1068
VAR.INV.,LOSSES AND ADJUSTMENTS	23	-207	-455	-347	-44	-207	-276	-99	19	-53	-182	50	-32	-113	228	137
TOTAL CONSUMPTION	2821	2496	2546	2774	2816	2740	2834	2629	2735	2549	2643	2640	3029	3200	3551	3905
FINAL CONSUMPTION	2821	2496	2546	2774	2816	2740	2834	2629	2735	2549	2643	2640	3029	3200	3551	3905
FINAL NON-ENERGY CONSUMPTION	108	79	68	102	145	128	133	98	96	79	75	38	41	45	33	31
FINAL ENERGY CONSUMPTION	2713	2417	2478	2672	2671	2612	2701	2531	2639	2470	2568	2602	2988	3155	3518	3874
ENERGY SECTOR	0	20	0	1	1	0	0	4	5	17	15	6	1	3	1	1
RESIDENTIAL	262	243	227	216	200	197	180	154	150	123	110	94	85	64	37	35
PUBLIC	2	1	1	1	1	1	1	1	1	1	1	2	1	1	0	0
AGRICULTURE	0	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0
TRANSPORTATION	2317	2036	2150	2350	2375	2314	2430	2302	2417	2277	2401	2455	2865	3059	3442	3806
AIRWAYS	2317	2036	2150	2350	2375	2314	2430	2302	2417	2277	2401	2455	2865	3059	3442	3806
INDUSTRIAL	132	116	99	103	93	100	90	70	66	51	40	45	36	28	38	32
CEMENT	3	2	2	2	2	3	2	2	2	2	2	1	1	1	1	1
PIG-IRON AND STEEL	23	19	16	13	13	15	16	13	14	8	8	12	12	10	7	5
MINING/PELLETIZATION	13	12	9	9	7	5	6	5	4	5	4	2	2	2	2	4
CHEMICAL	2	1	1	1	1	0	0	0	0	0	0	0	0	0	15	12
FOODS AND BEVERAGES	16	15	9	9	9	19	16	10	10	11	8	11	7	5	3	2
TEXTILES	9	6	6	8	8	8	7	6	5	4	3	1	1	0	0	0
PAPER AND PULP	4	4	4	5	4	4	4	3	2	3	2	2	2	2	2	1
CERAMICS	1	1	1	1	2	2	2	1	1	1	1	3	2	1	1	1
OTHERS	61	56	51	55	47	44	37	30	28	17	12	13	9	7	7	6

TABLE 2.23

GASWORKS GAS

UNIT: 10⁶ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	728	748	765	811	828	839	827	735	721	655	613	426	378	360	318	331
VAR. INV., LOSSES AND ADJUSTMENTS	-60	-69	-57	-67	-54	-63	-72	-52	-60	-75	-85	-68	-71	-67	-34	-39
TOTAL CONSUMPTION	668	679	708	744	774	776	755	683	661	580	528	358	307	293	284	292
FINAL CONSUMPTION	668	679	708	744	774	776	755	683	661	580	528	358	307	293	284	292
FINAL ENERGY CONSUMPTION	668	679	708	744	774	776	755	683	661	580	528	358	307	293	284	292
ENERGY SECTOR	0	1	1	0	1	0	1	1	0	0	2	0	2	1	29	40
RESIDENTIAL	363	359	381	367	378	381	382	358	367	343	330	244	209	204	188	188
COMMERCIAL	106	108	112	122	129	128	135	132	142	126	127	80	71	66	51	52
PUBLIC	11	12	15	17	18	19	19	19	21	20	19	14	12	14	11	9
INDUSTRIAL	188	199	199	238	248	248	218	173	131	91	50	20	13	8	5	3
PIG-IRON AND STEEL	9	9	10	10	11	9	9	16	0	0	0	0	0	3	2	0
NON-FERROUS/OTHER METALS	37	42	38	43	51	50	31	0	26	12	5	4	3	0	0	0
CHEMICAL	0	0	1	2	1	1	10	3	2	1	0	1	1	0	1	1
FOODS AND BEVERAGES	36	32	33	35	50	54	43	33	33	21	12	4	2	1	0	2
TEXTILES	6	6	7	9	9	7	8	6	5	6	1	0	0	0	0	0
PAPER AND PULP	2	2	2	2	2	3	3	1	2	0	1	1	0	0	0	0
CERAMICS	15	12	16	22	19	23	22	15	11	2	0	1	0	0	0	0
OTHERS	83	96	92	115	105	101	92	99	52	49	31	9	7	4	2	0

TABLE 2.24

GAS COKE

UNIT: 10⁶ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	2031	2680	2988	3050	3463	3724	3752	3180	3393	3435	3580	3512	3545	3599	3455	3392
VAR. INV., LOSSES AND ADJUSTMENTS	-104	-69	-70	-80	-34	-35	-107	-100	-98	-63	-70	-114	-83	-93	-29	-38
TOTAL CONSUMPTION	1927	2611	2918	2970	3429	3689	3645	3080	3295	3372	3510	3398	3462	3506	3426	3354
TRANSFORMATION (*)	142	276	265	244	167	203	263	220	272	368	387	189	182	225	210	282
FINAL CONSUMPTION	1785	2335	2653	2726	3262	3486	3382	2860	3023	3004	3123	3209	3280	3281	3216	3072
FINAL ENERGY CONSUMPTION	1785	2335	2653	2726	3262	3486	3382	2860	3023	3004	3123	3209	3280	3281	3216	3072
ENERGY SECTOR	480	676	839	830	816	847	820	790	869	916	947	898	845	868	808	751
INDUSTRIAL	1305	1659	1814	1896	2446	2639	2562	2070	2154	2088	2176	2311	2435	2413	2408	2321
PIG-IRON AND STEEL	1305	1659	1814	1896	2446	2639	2562	2070	2154	2088	2176	2311	2435	2413	2408	2321

(*) Input for electricity generation.

TABLE 2.25

ELECTRICITY

UNIT: 10³ MWh

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	162492	179388	193682	202128	203331	214952	221738	222820	234366	241731	251973	260041	275601	291244	307980	321588
PUBL. UTIL. POWER PLANTS	152816	169798	184356	191473	192275	203781	210775	210913	221934	228711	237938	245875	260678	273300	288845	301198
AUTO-GENERATION	9676	9590	9326	10655	11056	11171	10963	11907	12432	13020	14035	14166	14923	17944	19135	20390
IMPORT	2	15	1918	10301	16813	17951	23615	26545	27088	24022	27561	31767	35352	36566	40478	39412
EXPORT	-245	-101	-5	-9	-10	-8	-1509	-7	-8	-8	-11	0	0	-8	-8	-8
VAR. INV., LOSSES AND ADJUSTMENTS	-18336	-19302	-22031	-25351	-27379	-28992	-31463	-31701	-36074	-35273	-38356	-42015	-46148	-50117	-53761	-54003
TOTAL CONSUMPTION	143913	160000	173564	187069	192755	203903	212381	217657	225372	230472	241167	249793	264805	277685	294689	306989
FINAL CONSUMPTION	143913	160000	173564	187069	192755	203903	212381	217657	225372	230472	241167	249793	264805	277685	294689	306989
FINAL ENERGY CONSUMPTION	143913	160000	173564	187069	192755	203903	212381	217657	225372	230472	241167	249793	264805	277685	294689	306989
ENERGY SECTOR	5033	5708	6224	6354	6377	6552	6673	6837	7776	7870	7938	7754	8299	9022	9144	9627
RESIDENTIAL	29736	30926	32634	35755	38379	40534	43728	48666	51037	51865	53629	55952	63581	69056	74071	79358
COMMERCIAL	16741	17683	18473	19588	20460	21341	22495	23822	24363	25938	27403	28881	32291	34775	38180	41573
PUBLIC	12820	13548	14377	14849	15572	16601	17292	18133	18755	19483	20530	21463	23079	24075	25834	27259
AGRICULTURE	3220	3834	4477	5004	5875	6223	6357	6666	7319	7538	8005	8390	9173	9852	10799	11614
TRANSPORTATION	1059	1112	1146	1158	1181	1200	1293	1194	1081	1192	1200	1176	1211	1150	1140	1170
RAILROADS	1059	1112	1146	1158	1181	1200	1293	1194	1081	1192	1200	1176	1211	1150	1140	1170
INDUSTRIAL	75304	87189	96233	104361	104911	111452	114543	112339	115041	116586	122462	126177	127171	129755	135521	136388
CEMENT	2442	2320	2455	3005	2798	2787	2819	2938	3084	2850	2964	3050	3264	3656	4312	4514
PIG-IRON AND STEEL	9307	11311	12349	13256	13519	14347	14959	12775	12909	13408	14432	14966	14360	14271	14322	13938
FERRO-ALLOYS	3305	3793	4165	4962	5095	5808	6469	6211	6206	7511	7196	6350	6296	6896	6290	5264
MINING/PELLETIZATION	4281	5086	5467	5842	5937	5811	5613	5955	5716	5887	6005	6432	6311	5849	6459	7189
NON-FERROUS/OTHER METALS	11901	14378	17169	20651	21535	23806	24689	25543	28023	27951	28505	28600	28544	28685	27819	27749
CHEMICAL	10021	11291	13142	13036	12498	13048	12935	13315	12999	13487	14566	14946	14871	15121	15829	15924
FOODS AND BEVERAGES	7491	9160	9703	9785	9186	9679	9539	10335	10719	11045	11688	12006	12725	13630	14429	15143
TEXTILES	4446	5121	5593	5887	5610	6085	6237	6266	6125	6145	6569	6741	6430	5980	6134	6115
PAPER AND PULP	5704	5919	6626	6870	6812	7215	7800	7688	8487	8976	9630	9728	9801	9954	10611	10927
CERAMICS	1700	1717	1879	2234	2128	2076	2162	1838	1750	1736	1805	1879	2011	2172	2580	2683
OTHERS	14706	17093	17685	18833	19793	20790	21321	19475	19023	17590	19102	21479	22558	23541	26736	26942

ELECTRICITY CONSUMPTION

10⁶ MWh

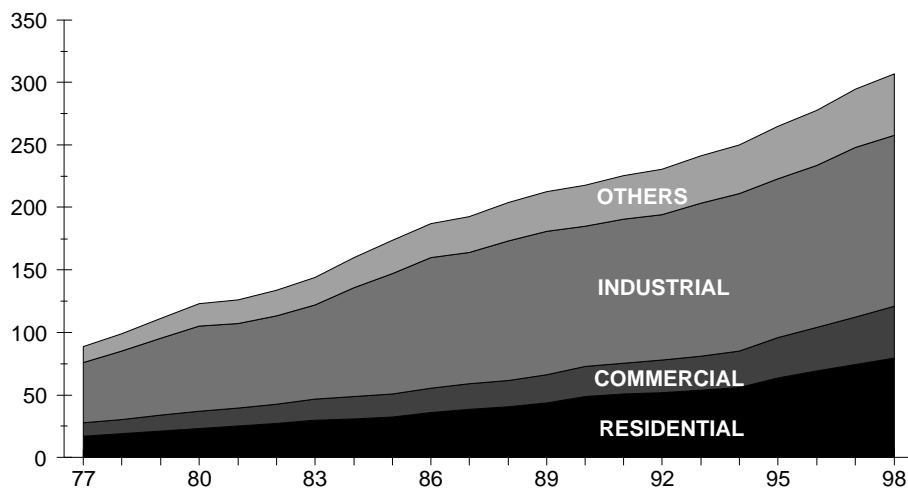


TABLE 2.26
CHARCOAL

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	7782	9627	10075	10634	10346	11018	12268	10016	8784	8066	8489	8593	7909	7292	7013	6725
IMPORTS	0	0	0	0	0	0	0	0	0	0	2	6	16	8	11	11
EXPORTS	0	0	0	0	0	0	0	0	0	0	-18	-11	-10	0	-5	-10
VAR.INV.,LOSSES AND ADJUSTMENTS	-466	-487	-502	-531	-517	-551	-613	-512	-418	-384	-334	-330	-304	-247	-237	-227
TOTAL CONSUMPTION	7316	9140	9573	10103	9829	10467	11655	9504	8366	7682	8139	8258	7611	7053	6782	6499
FINAL CONSUMPTION	7316	9140	9573	10103	9829	10467	11655	9504	8366	7682	8139	8258	7611	7053	6782	6499
FINAL ENERGY CONSUMPTION	7316	9140	9573	10103	9829	10467	11655	9504	8366	7682	8139	8258	7611	7053	6782	6499
RESIDENTIAL	1354	1395	1328	1244	1210	1166	1092	990	950	863	823	797	672	611	613	614
COMMERCIAL	106	106	105	100	90	80	85	82	85	93	90	90	87	92	95	93
PUBLIC	11	11	10	10	8	6	5	5	5	5	4	4	3	2	0	0
AGRICULTURE	15	14	14	12	20	18	20	18	20	14	12	9	11	12	10	9
INDUSTRIAL	5830	7614	8116	8737	8501	9197	10453	8409	7306	6707	7210	7358	6838	6336	6064	5783
CEMENT	635	907	1126	1045	795	763	634	542	387	318	353	401	438	565	373	331
PIG-IRON AND STEEL	4374	5752	5915	6704	6575	7063	8249	6760	5700	5314	5825	6012	5517	4786	5012	4885
FERRO-ALLOYS	463	542	653	686	697	850	1027	560	755	640	775	677	590	895	600	501
MINING/PELLETIZATION	83	81	89	63	65	59	23	53	55	48	5	4	0	0	0	0
NON-FERROUS/OTHER METALS	158	184	190	112	266	340	398	394	316	318	175	190	226	48	40	34
CHEMICAL	54	58	58	52	45	70	60	50	45	41	44	46	37	20	10	8
TEXTILES	14	14	13	10	8	7	7	5	5	3	3	2	1	2	2	2
CERAMICS	22	27	27	25	20	18	25	20	18	11	13	8	9	12	15	0
OTHERS	27	49	45	40	30	27	30	25	25	14	17	18	20	8	12	22

TABLE 2.27

ETHYL ALCOHOL (*)

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	7951	9201	11563	9983	12340	11523	11809	11518	12862	11766	11395	12513	12745	14134	15494	14121
IMPORT	0	0	0	0	0	0	0	1156	1084	550	1456	1866	2425	1321	882	156
EXPORT	-434	-966	-424	-318	-40	-91	0	0	0	0	-170	-293	-403	-218	-176	-141
VAR.INV.,LOSSES AND ADJUSTMENTS	-1611	-889	-2120	1933	-541	966	1617	-284	-1360	-5	314	-150	-255	-272	-1855	28
TOTAL CONSUMPTION	5906	7346	9019	11598	11759	12398	13426	12390	12586	12311	12995	13936	14512	14965	14345	14164
FINAL CONSUMPTION	5906	7346	9019	11598	11759	12398	13426	12390	12586	12311	12995	13936	14512	14965	14345	14164
FINAL NON-ENERGY CONSUMPTION	759	689	810	759	704	672	736	960	688	698	890	1050	1194	1126	1026	1179
FINAL ENERGY CONSUMPTION	5147	6657	8209	10839	11055	11726	12690	11430	11898	11613	12105	12886	13318	13839	13319	12985
TRANSPORTATION	5147	6657	8209	10839	11055	11726	12690	11430	11898	11613	12105	12886	13318	13839	13319	12985
HIGHWAYS	5147	6657	8209	10839	11055	11726	12690	11430	11898	11613	12105	12886	13318	13839	13319	12985

(*) Includes methanol

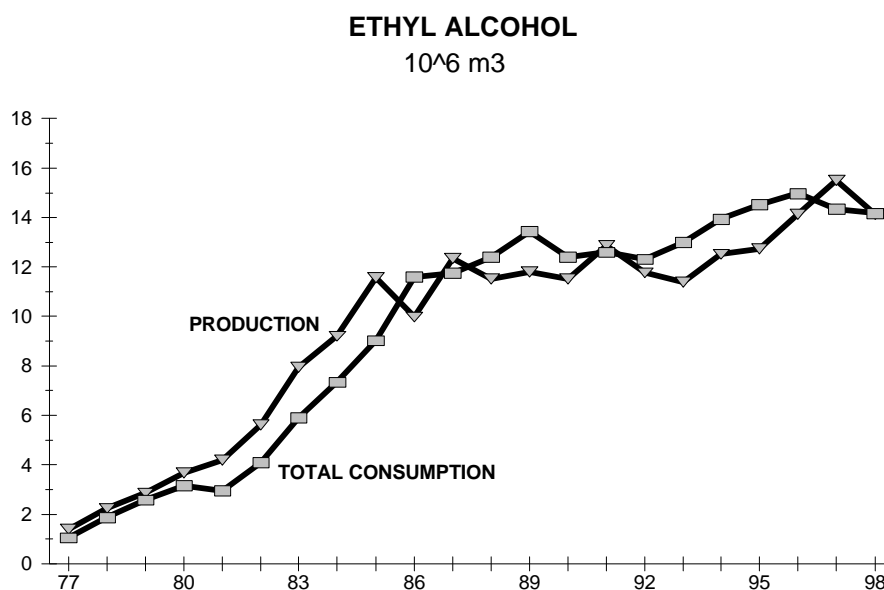


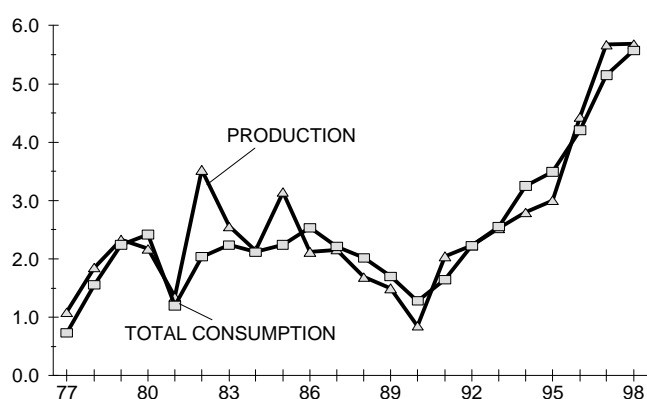
TABLE 2.28

ANHYDROUS ALCOHOL

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	2556	2142	3144	2120	2155	1686	1494	849	2044	2226	2526	2798	3003	4433	5671	5683
IMPORT	0	0	0	0	0	0	0	438	191	0	0	406	487	0	352	143
EXPORT	-299	-670	-207	-103	-5	-6	0	0	0	0	0	0	0	0	0	0
VAR. INV., LOSSES AND ADJUSTMENTS	-21	645	-697	519	63	337	208	-9	-588	0	24	47	1	-228	-874	-254
TOTAL CONSUMPTION	2236	2117	2240	2536	2213	2017	1702	1278	1647	2226	2550	3251	3491	4205	5149	5572
FINAL CONSUMPTION	2236	2117	2240	2536	2213	2017	1702	1278	1647	2226	2550	3251	3491	4205	5149	5572
FINAL NON-ENERGY CONSUMPTION	39	35	119	94	77	51	80	60	0	0	120	125	119	151	135	235
FINAL ENERGY CONSUMPTION	2197	2082	2121	2442	2136	1966	1622	1218	1647	2226	2430	3126	3372	4054	5014	5337
TRANSPORTATION	2197	2082	2121	2442	2136	1966	1622	1218	1647	2226	2430	3126	3372	4054	5014	5337
HIGHWAYS	2197	2082	2121	2442	2136	1966	1622	1218	1647	2226	2430	3126	3372	4054	5014	5337

ANHYDROUS ALCOHOL

10⁶ m3

HYDRATED ALCOHOL

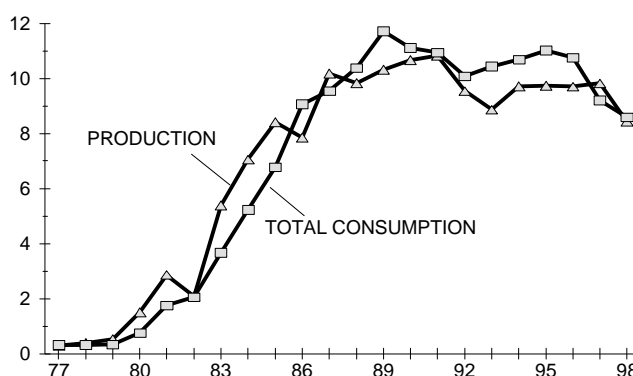
10⁶ m3

TABLE 2.29

HYDRATED ALCOHOL

UNIT: 10³ m3

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	5395	7059	8419	7863	10185	9837	10315	10669	10818	9540	8869	9715	9742	9701	9823	8438
IMPORT	0	0	0	0	0	0	0	718	893	550	1456	1460	1938	1321	530	13
EXPORT	-135	-296	-217	-215	-35	-85	0	0	0	-170	-293	-403	-218	-176	-141	-141
VAR. INV., LOSSES AND ADJUSTMENTS	-1590	-1534	-1423	1414	-604	629	1409	-275	-772	-5	290	-197	-256	-44	-981	282
TOTAL CONSUMPTION	3670	5229	6779	9062	9546	10381	11724	11112	10939	10085	10445	10685	11021	10760	9196	8592
FINAL CONSUMPTION	3670	5229	6779	9062	9546	10381	11724	11112	10939	10085	10445	10685	11021	10760	9196	8592
FINAL NON-ENERGY CONSUMPTION	720	654	691	665	627	621	656	900	688	698	770	925	1075	975	891	944
FINAL ENERGY CONSUMPTION	2950	4575	6088	8397	8919	9760	11068	10212	10251	9387	9675	9760	9946	9785	8305	7648
TRANSPORTATION	2950	4575	6088	8397	8919	9760	11068	10212	10251	9387	9675	9760	9946	9785	8305	7648
HIGHWAYS	2950	4575	6088	8397	8919	9760	11068	10212	10251	9387	9675	9760	9946	9785	8305	7648

TABLE 2.30

OTHER PETROLEUM SECONDARIES

UNIT: 10³ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	3503	3726	3848	4081	4314	4261	4541	4496	4201	4575	4717	5376	5600	6017	7030	6862
IMPORT	11	98	83	15	0	0	0	0	0	0	0	0	0	128	470	5
EXPORT	0	0	0	0	0	0	-30	0	0	0	0	0	0	-111	-246	-19
VAR. INV., LOSSES AND ADJUSTMENTS	-302	-145	-520	-252	-41	5	-329	-531	-12	-122	-119	-223	-198	-51	-196	-11
TOTAL CONSUMPTION	3212	3679	3411	3844	4273	4266	4182	3965	4189	4453	4598	5153	5402	5983	7058	6837
TRANSFORMATION	14	14	9	10	15	26	24	24	24	261	228	244	252	301	333	316
FINAL CONSUMPTION	3198	3665	3402	3834	4258	4240	4158	3941	4165	4192	4370	4909	5150	5682	6725	6521
FINAL NON-ENERGY CONSUMPTION	184	377	275	547	643	486	347	376	339	253	310	332	445	140	175	187
FINAL ENERGY CONSUMPTION	3014	3288	3127	3287	3615	3754	3811	3565	3826	3939	4060	4577	4705	5542	6550	6334
ENERGY SECTOR	2136	2241	2024	2098	2382	2446	2602	2260	2589	2655	2790	2918	2783	3437	3819	3844
TRANSPORTATION	0	0	0	0	0	0	0	4	0	0	0	21	19	20	0	0
WATERWAYS	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
INDUSTRIAL	878	1047	1103	1189	1231	1308	1209	1301	1237	1154	1270	1638	1903	2085	2289	2418
CEMENT	0	0	0	0	15	73	4	4	15	12	0	3	29	44	119	217
MINING/PELLETIZATION	0	0	0	0	5	5	4	0	0	0	0	3	3	12	40	46
NON-FERROUS/OTHER METALS	277	349	438	330	410	407	404	401	447	431	474	526	547	596	492	447
CHEMICAL	583	685	660	826	797	821	795	894	775	711	796	1067	1243	1352	1506	1569
OTHERS	18	13	5	33	4	2	2	2	0	0	0	39	81	81	132	139
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	130	0	0	0	0	442	72

TABLE 2.31

COAL BITUMEN

UNIT: 10³ t

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	256	322	318	340	328	348	341	315	358	343	357	344	324	310	336	318
VAR. INV., LOSSES AND ADJUSTMENTS	0	0	0	0	0	0	-3	-20	0	0	0	0	0	0	36	0
TOTAL CONSUMPTION	256	322	318	340	328	348	338	295	358	343	357	344	324	310	372	318
TRANSFORMATION (*)	0	0	0	0	19	38	37	32	36	35	35	21	28	28	0	28
FINAL CONSUMPTION	256	322	318	340	309	310	301	263	322	308	322	323	296	282	372	290
FINAL NON-ENERGY CONSUMPTION	198	256	251	265	147	79	78	128	139	57	65	89	78	195	259	222
FINAL ENERGY CONSUMPTION	58	66	67	75	162	231	223	135	183	251	257	234	218	87	113	68
ENERGY SECTOR	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0
INDUSTRIAL	58	66	67	75	162	231	223	135	183	251	257	234	216	85	113	68
CEMENT	0	0	0	0	0	0	0	0	8	9	5	5	16	16	20	0
PIG-IRON AND STEEL	58	66	67	75	162	231	223	135	175	242	252	229	200	69	93	68

(*) Input for electricity generation.

TABLE 2.32

NON-ENERGY PRODUCTS OF PETROLEUM

UNIT: 10³ m³

FLOW	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PRODUCTION	3071	3474	3548	3914	3589	3572	3340	3743	3351	3591	3028	3498	3125	3669	4155	4550
IMPORT	102	64	154	62	75	95	131	114	87	13	56	124	339	337	239	215
EXPORT	-210	-244	-216	-135	-152	-161	-92	-58	-135	-241	-183	-183	-102	-202	-144	-200
VAR. INV., LOSSES AND ADJUSTMENTS	71	-125	414	-170	-182	-67	-21	-262	12	-121	336	16	-76	-5	-142	69
TOTAL CONSUMPTION	3034	3169	3900	3671	3330	3439	3358	3537	3315	3242	3237	3467	3304	3815	4108	4634
TRANSFORMATION (*)	198	206	156	80	1	5	0	0	0	0	0	6	9	8	0	0
FINAL CONSUMPTION	2836	2963	3744	3591	3329	3434	3358	3537	3315	3242	3237	3461	3295	3807	4108	4634
FINAL NON-ENERGY CONSUMPTION	2836	2963	3744	3591	3329	3434	3358	3537	3315	3242	3237	3461	3295	3807	4108	4634

(*) Input for oil derivatives produced from chemical industry.

**ENERGY
CONSUMPTION
BY SECTOR
1983/1998**

3

White page

TABLE 3.1.a

ENERGY SECTOR

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	419	538	781	900	910	848	819	793	690	766	933	885	875	1085	1160	1261
SUGAR CANE BAGASSE	4374	5246	6587	5766	7184	6722	6966	6584	7387	6980	6721	7393	7039	7490	8448	7578
DIESEL OIL	362	294	343	370	335	395	374	416	438	488	320	239	143	166	179	208
FUEL OIL	1293	1386	1377	1473	1627	1577	1518	1611	1072	1090	1350	1605	1629	1461	1724	1559
LIQUEFIED PETROLEUM GAS	12	5	13	16	14	14	28	20	23	18	24	15	10	10	16	19
NAPHTHA	0	10	0	0	0	0	0	0	0	0	0	4	29	10	4	4
KEROSENE	0	16	0	1	1	0	0	3	4	14	12	5	1	2	1	1
GAS COKE	200	282	350	346	340	353	342	329	362	382	395	374	352	362	337	313
GASWORKS GAS	0	0	0	0	0	0	0	0	0	0	1	0	1	0	11	14
COAL COKE/COAL BETUMEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELECTRICITY	1460	1655	1805	1843	1849	1900	1935	1983	2255	2282	2302	2249	2407	2616	2652	2792
OTHER SECONDARY OF PETROLEUM	1358	1426	1291	1335	1514	1557	1659	1442	1647	1688	1782	1856	1770	2189	2435	2445
TOTAL	9478	10858	12547	12050	13774	13366	13641	13181	13878	13708	13840	14625	14256	15391	16967	16194

TABLE 3.1.b

ENERGY SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	4.4	5.0	6.2	7.5	6.6	6.3	6.0	6.0	5.0	5.6	6.7	6.1	6.1	7.0	6.8	7.8
SUGAR CANE BAGASSE	46.1	48.3	52.5	47.9	52.2	50.3	51.1	50.0	53.2	50.9	48.6	50.6	49.4	48.7	49.8	46.8
DIESEL OIL	3.8	2.7	2.7	3.1	2.4	3.0	2.7	3.2	3.2	3.6	2.3	1.6	1.0	1.1	1.1	1.3
FUEL OIL	13.6	12.8	11.0	12.2	11.8	11.8	11.1	12.2	7.7	8.0	9.8	11.0	11.4	9.5	10.2	9.6
GAS COKE	2.1	2.6	2.8	2.9	2.5	2.6	2.5	2.5	2.6	2.8	2.9	2.6	2.5	2.4	2.0	1.9
ELECTRICITY	15.4	15.2	14.4	15.3	13.4	14.2	14.2	15.0	16.2	16.6	16.6	15.4	16.9	17.0	15.6	17.2
OTHER SECONDARY OF PETROLEUM	14.3	13.1	10.3	11.1	11.0	11.6	12.2	10.9	11.9	12.3	12.9	12.7	12.4	14.2	14.4	15.1
OTHERS	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.1	0.2	0.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

ENERGY SECTOR CONSUMPTION

%

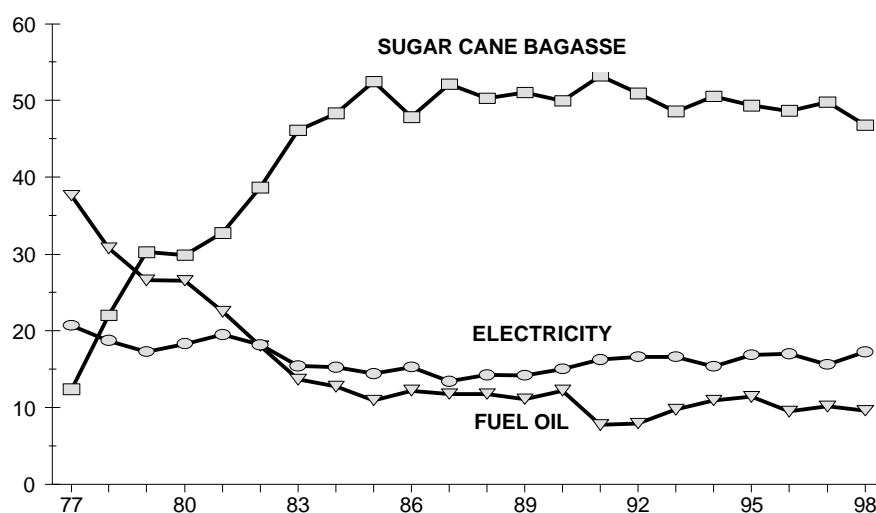


TABLE 3.2.a

COMMERCIAL SECTORUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	0	0	0	1	2	2	9	13	26	37	71	97
FIREWOOD	171	171	159	165	150	135	113	113	107	100	98	90	88	93	90	85
DIESEL OIL	28	8	10	34	31	31	45	38	41	42	47	68	70	69	68	72
FUEL OIL	176	99	126	150	145	195	215	280	265	262	274	274	267	272	279	319
LIQUEFIED PETROLEUM GAS	122	128	135	146	169	216	281	329	285	313	127	126	125	128	136	147
GASWORKS GAS	41	43	45	49	51	51	54	53	57	50	51	30	27	25	18	19
ELECTRICITY	4855	5128	5357	5680	5933	6189	6524	6908	7065	7522	7947	8376	9364	10085	11072	12056
CHARCOAL	67	67	66	63	57	50	54	52	54	59	57	57	55	58	60	59
OTHER SOURCES OF PETROLEUM	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0
TOTAL	5460	5644	5898	6287	6536	6867	7286	7774	7876	8350	8610	9036	10023	10768	11794	12854

TABLE 3.2.b

COMMERCIAL SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	3.1	3.0	2.7	2.6	2.3	2.0	1.6	1.5	1.4	1.2	1.1	1.0	0.9	0.9	0.8	0.7
FUEL OIL	3.2	1.8	2.1	2.4	2.2	2.8	3.0	3.6	3.4	3.1	3.2	3.0	2.7	2.5	2.4	2.5
LIQUEFIED PETROLEUM GAS	2.2	2.3	2.3	2.3	2.6	3.1	3.9	4.2	3.6	3.7	1.5	1.4	1.2	1.2	1.2	1.1
ELECTRICITY	88.9	90.9	90.8	90.3	90.8	90.1	89.5	88.9	89.7	90.1	92.3	92.7	93.4	93.7	93.9	93.8
OTHERS	2.5	2.1	2.1	2.3	2.1	1.9	2.1	1.9	2.0	1.8	1.9	1.9	1.8	1.8	1.8	1.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.3.a

PUBLIC SECTORUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	1	0	1	2	2	1	3	3	5	5	8	10
FIREWOOD	6	5	4	4	3	2	2	2	2	1	1	1	1	0	0	0
DIESEL OIL	67	93	83	57	91	144	73	80	85	72	78	178	179	79	147	150
FUEL OIL	103	63	70	61	110	177	51	53	51	60	159	364	390	298	247	239
LIQUEFIED PETROLEUM GAS	14	15	18	18	23	22	15	16	22	19	31	42	55	66	121	202
KEROSENE	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
GASWORKS GAS	4	4	6	6	7	7	8	7	8	8	7	5	5	6	4	3
ELECTRICITY	3718	3929	4169	4306	4516	4814	5015	5259	5439	5650	5954	6224	6693	6982	7492	7905
CHARCOAL	7	7	6	6	5	4	3	3	3	3	3	3	2	1	0	0
OTHER SOURCES OF PETROLEUM	0	0	0	0	0	0	0	3	0	0	0	17	16	16	0	0
TOTAL	3921	4117	4357	4459	4757	5171	5169	5426	5613	5815	6237	6837	7346	7453	8019	8509

TABLE 3.3.b

PUBLIC SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
DIESEL OIL	1.7	2.3	1.9	1.3	1.9	2.8	1.4	1.5	1.5	1.2	1.3	2.6	2.4	1.1	1.8	1.8
FUEL OIL	2.6	1.5	1.6	1.4	2.3	3.4	1.0	1.0	0.9	1.0	2.5	5.3	5.3	4.0	3.1	2.8
ELECTRICITY	94.8	95.4	95.7	96.6	94.9	93.1	97.0	96.9	96.9	97.2	95.5	91.0	91.1	93.7	93.4	92.9
OTHERS	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.7	0.6	0.7	1.0	1.1	1.3	1.7	2.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.4.a

RESIDENTIAL SECTORUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	1	0	2	4	5	5	17	26	45	62	69	75
FIREWOOD	11440	11657	10629	9547	10052	9441	8793	7862	7828	7847	6855	6658	6031	5912	5986	6161
LIQUEFIED PETROLEUM GAS	3399	3372	3680	3945	4164	4479	4712	4863	5002	5226	5431	5472	5739	5989	6022	6016
KEROSENE	211	197	185	172	160	158	145	125	122	100	89	76	69	52	30	28
GASWORKS GAS	139	137	144	140	145	146	146	139	142	132	128	92	76	74	68	68
ELECTRICITY	8623	8969	9464	10369	11130	11755	12681	14113	14801	15041	15552	16226	18438	20026	21480	23014
CHARCOAL	853	879	837	784	762	735	688	624	598	544	518	502	423	385	386	387
TOTAL	24665	25211	24939	24957	26414	26714	27167	27730	28498	28895	28590	29052	30821	32500	34041	35749

TABLE 3.4.b

RESIDENTIAL SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
FIREWOOD	46.4	46.2	42.6	38.3	38.1	35.3	32.4	28.4	27.5	27.2	24.0	22.9	19.6	18.2	17.6	17.2
LIQUEFIED PETROLEUM GAS	13.8	13.4	14.8	15.8	15.8	16.8	17.3	17.5	17.6	18.1	19.0	18.8	18.6	18.4	17.7	16.8
KEROSENE	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.1
GASWORKS GAS	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2
ELECTRICITY	35.0	35.6	37.9	41.5	42.1	44.0	46.7	50.9	51.9	52.1	54.4	55.9	59.8	61.6	63.1	64.4
CHARCOAL	3.5	3.5	3.4	3.1	2.9	2.8	2.5	2.3	2.1	1.9	1.8	1.7	1.4	1.2	1.1	1.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

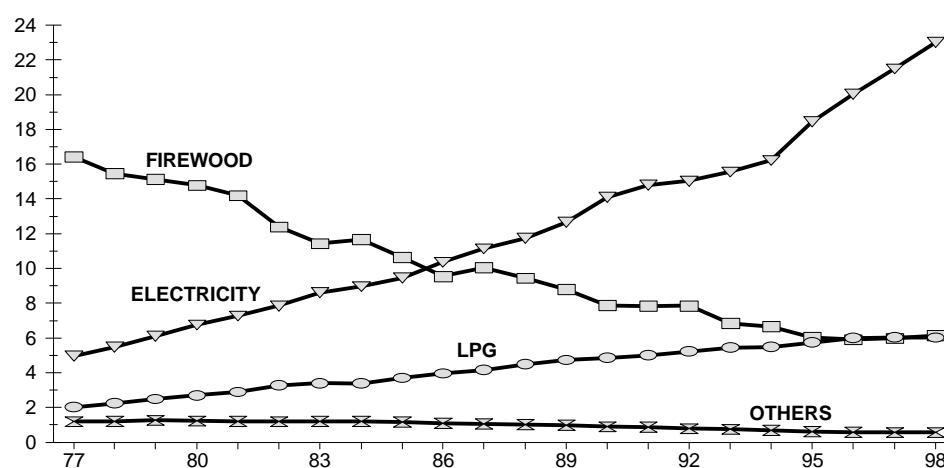
RESIDENTIAL ENERGY CONSUMPTION10⁶ toe

TABLE 3.5.a

AGRICULTURAL SECTOR

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	3111	2765	2601	2479	2571	2463	2326	2142	2081	1897	1851	1824	1861	1846	1828	1755
DIESEL OIL	2382	2506	2928	2900	3149	3298	3478	3146	3287	3372	3726	3909	4164	4363	4538	4402
FUEL OIL	25	25	23	25	34	35	28	26	21	31	34	61	92	80	78	44
LIQUEFIED PETROLEUM GAS	0	0	0	0	0	1	1	1	1	1	1	1	1	1	4	8
KEROSENE	0	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0
ELECTRICITY	934	1112	1298	1451	1704	1805	1844	1933	2123	2186	2321	2433	2660	2857	3132	3368
CHARCOAL	9	9	9	8	13	11	13	11	13	9	8	6	7	8	6	6
TOTAL	6461	6418	6860	6864	7472	7613	7690	7259	7526	7497	7942	8234	8785	9155	9586	9583

AGRICULTURE ENERGY CONSUMPTION

%

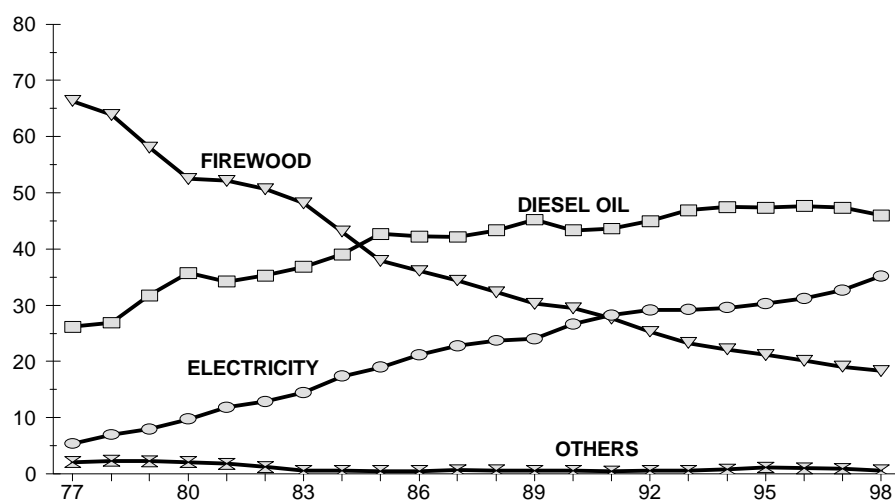


TABLE 3.5.b

AGRICULTURAL SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	48.2	43.1	37.9	36.1	34.4	32.4	30.2	29.5	27.7	25.3	23.3	22.2	21.2	20.2	19.1	18.3
DIESEL OIL	36.9	39.0	42.7	42.2	42.1	43.3	45.2	43.3	43.7	45.0	46.9	47.5	47.4	47.7	47.3	45.9
ELECTRICITY	14.5	17.3	18.9	21.1	22.8	23.7	24.0	26.6	28.2	29.2	29.2	29.5	30.3	31.2	32.7	35.1
OTHERS	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.8	1.1	1.0	0.9	0.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.6.a

TRANSPORTATION SECTOR

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	0	3	2	2	2	0	21	39	42	31	40	68
STEAM COAL	24	23	13	7	6	7	7	5	2	0	0	0	0	0	0	0
FIREWOOD	3	3	3	2	2	2	2	2	2	0	0	0	0	0	0	0
DIESEL OIL	12081	12556	13026	14906	15358	15627	16286	16308	16994	17295	17734	18332	19515	20405	21427	22723
FUEL OIL	1307	1349	1640	1296	1227	1143	695	745	686	737	879	796	766	976	728	757
MOTOR GASOLINE	6673	5984	5883	6635	5780	5657	6386	7288	7898	7864	8268	9051	10837	12689	13874	14589
AVIATION GASOLINE	61	59	56	67	62	60	62	48	44	38	43	51	48	51	58	62
KEROSENE	1868	1653	1754	1894	1914	1856	1961	1867	1960	1847	1947	1991	2324	2481	2792	3087
ELECTRICITY	307	322	332	336	342	348	375	346	313	346	348	341	351	334	331	339
ETHYL ALCOHOL	2606	3352	4122	5435	5535	5863	6333	5700	5942	5814	6063	6467	6686	6961	6726	6568
ANHYDROUS ALCOHOL	1143	1083	1103	1270	1111	1022	843	634	857	1158	1264	1626	1753	2108	2607	2775
HYDRATED ALCOHOL	1463	2269	3019	4165	4424	4841	5490	5066	5085	4656	4799	4841	4933	4853	4119	3793
OTHER SECONDARY OF PETROLEUM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
TOTAL	24930	25301	26829	30578	30228	30566	32109	32311	33843	33941	35303	37068	40569	43928	45976	48193

TRANSPORTATION ENERGY CONSUMPTION

%

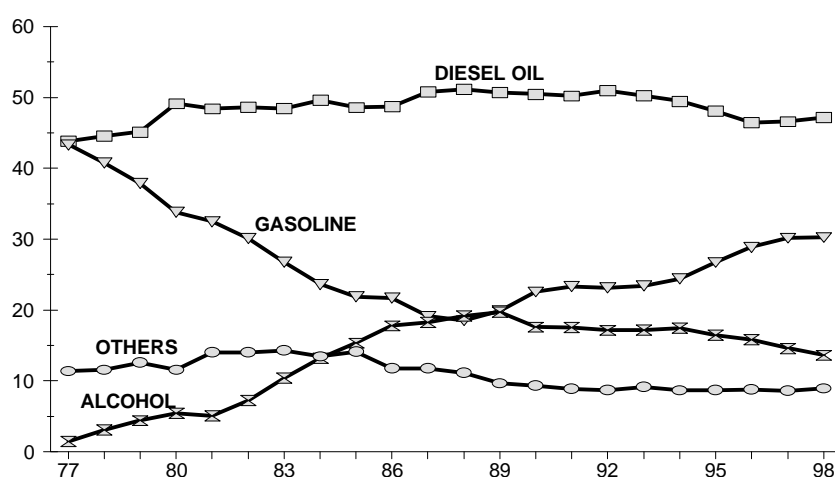


TABLE 3.6.b

TRANSPORTATION SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
DIESEL OIL	48.5	49.6	48.6	48.7	50.8	51.1	50.7	50.5	50.2	51.0	50.2	49.5	48.1	46.5	46.6	47.2
FUEL OIL	5.2	5.3	6.1	4.2	4.1	3.7	2.2	2.3	2.0	2.2	2.5	2.1	1.9	2.2	1.6	1.6
MOTOR GASOLINE	26.8	23.7	21.9	21.7	19.1	18.5	19.9	22.6	23.3	23.2	23.4	24.4	26.7	28.9	30.2	30.3
KEROSENE	7.5	6.5	6.5	6.2	6.3	6.1	6.1	5.8	5.8	5.4	5.5	5.4	5.7	5.6	6.1	6.4
ETHYL ALCOHOL	10.5	13.2	15.4	17.8	18.3	19.2	19.7	17.6	17.6	17.1	17.2	17.4	16.5	15.8	14.6	13.6
OTHERS	1.6	1.6	1.5	1.3	1.4	1.4	1.4	1.2	1.1	1.1	1.2	1.2	1.1	0.9	0.9	1.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.6.1.a

HIGHWAYSUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	0	3	2	2	2	0	21	39	42	31	40	68
DIESEL OIL	10744	11193	11538	13594	14317	14600	15378	15489	16154	16443	16873	17634	18777	19639	20863	22086
MOTOR GASOLINE	6673	5984	5883	6635	5780	5657	6386	7288	7898	7864	8268	9051	10837	12689	13874	14589
ANHYDROUS ALCOHOL	1143	1083	1103	1270	1111	1022	843	634	857	1158	1264	1626	1753	2108	2607	2775
HYDRATED ALCOHOL	1463	2269	3019	4165	4424	4841	5490	5066	5085	4656	4799	4841	4933	4853	4119	3793
TOTAL	20023	20529	21543	25664	25632	26123	28099	28479	29996	30121	31225	33191	36342	39320	41503	43311

TABLE 3.6.1.b

HIGHWAYS

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
DIESEL OIL	53.7	54.5	53.6	53.0	55.9	55.9	54.7	54.4	53.9	54.6	54.0	53.1	51.7	49.9	50.3	51.0
MOTOR GASOLINE	33.3	29.1	27.3	25.9	22.5	21.7	22.7	25.6	26.3	26.1	26.5	27.3	29.8	32.3	33.4	33.7
ANHYDROUS ALCOHOL	5.7	5.3	5.1	4.9	4.3	3.9	3.0	2.2	2.9	3.8	4.0	4.9	4.8	5.4	6.3	6.4
HYDRATED ALCOHOL	7.3	11.1	14.0	16.2	17.3	18.5	19.5	17.8	17.0	15.5	15.4	14.6	13.6	12.3	9.9	8.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.6.2

RAILROADSUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
STEAM COAL	24	23	13	7	6	7	7	5	2	0	0	0	0	0	0	0
FIREWOOD	3	3	3	2	2	2	2	2	2	0	0	0	0	0	0	0
DIESEL OIL	541	551	570	580	555	583	591	506	509	526	534	400	428	395	321	344
FUEL OIL	7	2	2	2	0	0	0	0	0	0	0	0	1	0	0	0
ELECTRICITY	307	322	332	336	342	348	375	346	313	346	348	341	351	334	331	339
TOTAL	882	901	920	927	905	940	975	859	826	872	882	741	780	729	652	683

TABLE 3.6.3

AIRWAYSUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
AVIATION GASOLINE	61	59	56	67	62	60	62	48	44	38	43	51	48	51	58	62
JET FUEL	1868	1653	1754	1894	1914	1856	1961	1867	1960	1847	1947	1991	2324	2481	2792	3087
TOTAL	1929	1712	1810	1961	1976	1916	2023	1915	2004	1885	1990	2042	2372	2532	2850	3149

TABLE 3.6.4

WATERWAYSUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIESEL OIL	796	812	918	732	486	444	317	313	331	326	327	298	310	371	243	293
FUEL OIL	1300	1347	1638	1294	1227	1143	695	745	686	737	879	796	765	976	728	757
OTHER SOURCES OF PETROLEUM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2096	2159	2556	2026	1715	1587	1012	1058	1017	1063	1206	1094	1075	1347	971	1050

TABLE 3.7.a

INDUSTRIAL SECTOR

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	385	445	583	746	969	1042	1083	1341	1411	1548	1668	1735	2017	2450	2742	2682
STEAM COAL	1432	1362	1481	1672	1673	1448	1145	967	1268	911	946	1098	1255	1731	2078	2256
FIREWOOD	5225	6083	6276	6597	6371	6077	5736	5320	5162	4622	4824	5019	4901	4883	4854	4950
SUGAR CANE BAGASSE	5465	5302	4924	4885	5500	4856	4210	4477	4485	5566	5534	6888	7044	7180	7922	9253
OTHER RENEWABLE PRIMARY SOURCES	831	928	1151	1302	1338	1474	1491	1475	1598	1917	2114	2178	2107	2258	2349	2475
DIESEL OIL	272	259	250	269	286	314	302	310	293	313	376	459	477	444	492	516
FUEL OIL	6398	5365	5351	5847	6603	6551	6841	6589	6606	7118	7300	7141	7687	8637	8914	8937
LIQUEFIED PETROLEUM GAS	166	156	153	178	253	218	184	157	175	217	240	314	391	476	639	725
NAPHTHA	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KEROSENE	107	94	81	82	75	80	72	57	53	41	32	36	29	23	31	26
GAS COKE	545	692	756	791	1020	1100	1068	863	899	871	907	964	1016	1006	1004	968
GASWORKS GAS	78	83	83	99	104	103	90	70	53	37	21	7	5	3	2	1
COAL COKE	3311	4351	4843	4847	5435	6131	6046	5030	6030	6114	6465	6591	6673	6671	6562	6352
ELECTRICITY	21838	25285	27909	30265	30425	32321	33217	32579	33362	33810	35514	36591	36880	37629	39301	39553
CHARCOAL	3673	4796	5113	5504	5355	5794	6585	5297	4603	4225	4542	4635	4308	3991	3821	3643
OTHER SOURCES OF PETROLEUM	749	892	921	985	1009	1078	1000	1074	1029	956	1054	1358	1593	1753	1928	2034
COAL BITUMEN	48	55	56	62	135	192	186	112	152	209	214	195	180	70	94	57
TOTAL	50524	56150	59931	64131	66551	68779	69256	65718	67179	68475	71751	75209	76563	79205	82733	84428

ENERGY CONSUMPTION BY INDUSTRY

%

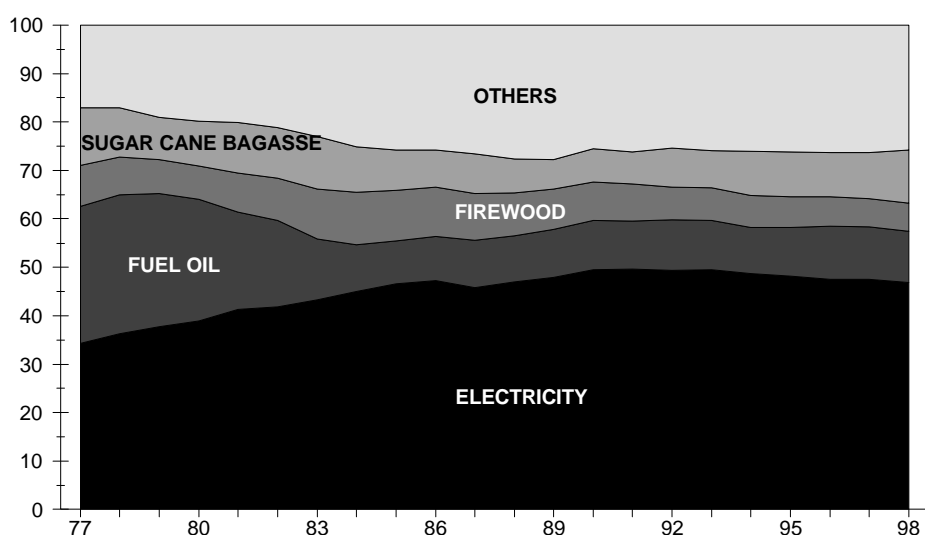


TABLE 3.7.b

INDUSTRIAL SECTOR

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0.8	0.8	1.0	1.2	1.5	1.5	1.6	2.0	2.1	2.3	2.3	2.3	2.6	3.1	3.3	3.2
STEAM COAL	2.8	2.4	2.5	2.6	2.5	2.1	1.7	1.5	1.9	1.3	1.3	1.5	1.6	2.2	2.5	2.7
FIREWOOD	10.3	10.8	10.5	10.3	9.6	8.8	8.3	8.1	7.7	6.7	6.7	6.7	6.4	6.2	5.9	5.9
SUGAR CANE BAGASSE	10.8	9.4	8.2	7.6	8.3	7.1	6.1	6.8	6.7	8.1	7.7	9.2	9.2	9.1	9.6	11.0
OTHER RENEWABLE PRIMARY SOURCES	1.6	1.7	1.9	2.0	2.0	2.1	2.2	2.2	2.4	2.8	2.9	2.9	2.8	2.9	2.8	2.9
FUEL OIL	12.7	9.6	8.9	9.1	9.9	9.5	9.9	10.0	9.8	10.4	10.2	9.5	10.0	10.9	10.8	10.6
GAS COKE	1.1	1.2	1.3	1.2	1.5	1.6	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.1
COAL COKE	6.6	7.7	8.1	7.6	8.2	8.9	8.7	7.7	9.0	8.9	9.0	8.8	8.7	8.4	7.9	7.5
ELECTRICITY	43.2	45.0	46.6	47.2	45.7	47.0	48.0	49.6	49.7	49.4	49.5	48.7	48.2	47.5	47.5	46.8
CHARCOAL	7.3	8.5	8.5	8.6	8.0	8.4	9.5	8.1	6.9	6.2	6.3	6.2	5.6	5.0	4.6	4.3
OTHERS	2.8	2.7	2.6	2.6	2.8	2.9	2.6	2.7	2.6	2.6	2.7	3.1	3.5	3.5	3.9	4.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.1.a

CEMENT

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	21	10	6	18	21	23	32	39	39	34	5	5	23	27	32	45
STEAM COAL	907	840	985	1145	1028	906	626	573	792	404	326	343	400	471	523	492
FIREWOOD	0	8	8	7	12	10	3	2	0	1	1	1	2	4	1	8
DIESEL OIL	19	19	19	20	22	22	13	10	10	10	13	16	15	15	20	21
FUEL OIL	463	145	83	206	479	482	801	955	873	951	1087	1040	1236	1464	1722	1747
ELECTRICITY	708	673	712	871	811	808	817	852	894	828	860	884	947	1060	1250	1309
CHARCOAL	400	571	709	658	501	481	399	341	244	200	222	253	276	356	235	209
OTHERS	49	37	40	45	59	116	52	47	90	68	46	48	75	89	185	298
TOTAL	2567	2303	2562	2970	2933	2848	2743	2819	2942	2496	2560	2590	2974	3486	3968	4129

TABLE 3.7.1.b

CEMENT

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MINERAL COAL	35.3	36.5	38.4	38.6	35.0	31.8	22.8	20.3	26.9	16.2	12.7	13.2	13.4	13.5	13.2	11.9
FUEL OIL	18.0	6.3	3.2	6.9	16.3	16.9	29.2	33.9	29.7	38.1	42.5	40.2	41.6	42.0	43.4	42.3
ELECTRICITY	27.6	29.2	27.8	29.3	27.7	28.4	29.8	30.2	30.4	33.2	33.6	34.1	31.8	30.4	31.5	31.7
CHARCOAL	15.6	24.8	27.7	22.2	17.1	16.9	14.5	12.1	8.3	8.0	8.7	9.8	9.3	10.2	5.9	5.1
OTHERS	3.5	3.2	2.8	3.0	3.9	6.0	3.6	3.5	4.7	4.5	2.5	2.7	3.9	3.9	6.0	9.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

ENERGY CONSUMPTION BY CEMENT

%

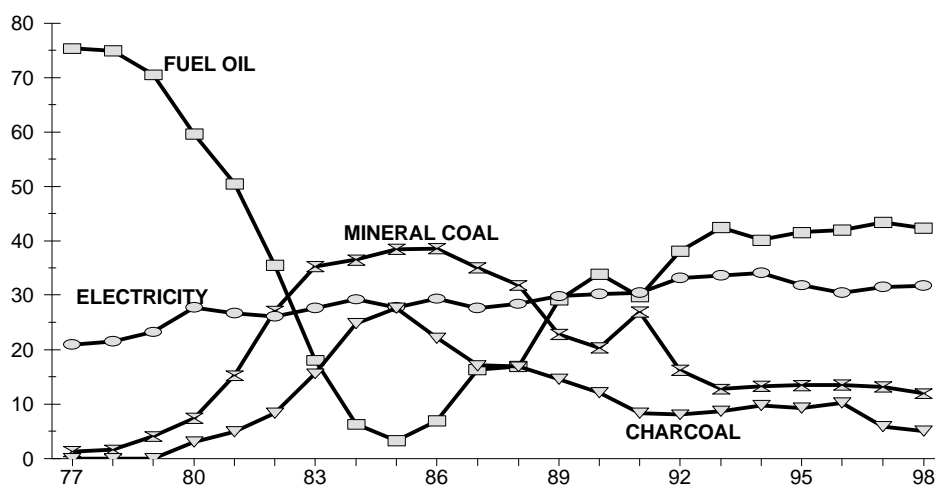


TABLE 3.7.2.a

PIG-IRON AND STEEL

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	103	98	192	276	351	318	348	324	351	377	373	433	585	721	689	681
STEAM COAL	18	29	30	32	49	27	68	19	14	5	179	268	274	495	838	1142
DIESEL OIL	30	30	30	35	39	38	41	41	40	35	36	39	18	12	32	27
FUEL OIL	506	526	471	448	383	467	411	374	371	418	453	460	380	376	311	264
LIQUEFIED PETROLEUM GAS	25	31	26	27	35	28	25	23	21	19	22	29	32	57	68	86
NAPHTHA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KEROSENE	19	15	13	10	10	12	13	11	11	6	6	10	8	8	5	4
GAS COKE	545	692	756	791	1020	1100	1068	863	899	871	907	964	1016	1006	1004	968
GASWORKS GAS	3	3	4	3	4	3	3	6	0	0	0	0	0	1	1	0
COAL COKE	3284	4318	4804	4805	5401	6077	5918	4838	5828	5902	6150	6329	6474	6451	6441	6138
ELECTRICITY	2699	3280	3581	3844	3921	4161	4338	3705	3744	3888	4185	4340	4164	4139	4153	4042
CHARCOAL	2755	3623	3727	4223	4141	4450	5197	4259	3591	3348	3670	3786	3475	3014	3159	3077
COAL BITUMEN/OTHER OIL PROD.	48	55	56	62	135	192	186	112	145	202	210	193	180	62	160	145
TOTAL	10035	12700	13690	14556	15489	16873	17616	14575	15015	15071	16191	16851	16606	16342	16861	16574

TABLE 3.7.2.b

PIG-IRON AND STEEL

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	1.0	0.8	1.4	1.9	2.3	1.9	2.0	2.2	2.3	2.5	2.3	2.6	3.5	4.4	4.1	4.1
FUEL OIL	5.0	4.1	3.4	3.1	2.5	2.8	2.3	2.6	2.5	2.8	2.8	2.7	2.3	2.3	1.8	1.6
GAS COKE	5.4	5.4	5.5	5.4	6.6	6.5	6.1	5.9	6.0	5.8	5.6	5.7	6.1	6.2	6.0	5.8
COAL COKE	32.7	34.0	35.1	33.0	34.9	36.0	33.6	33.2	38.8	39.2	38.0	37.6	39.0	39.5	38.2	37.0
ELECTRICITY	26.9	25.8	26.2	26.4	25.3	24.7	24.6	25.4	24.9	25.8	25.8	25.8	25.1	25.3	24.6	24.4
CHARCOAL	27.5	28.5	27.2	29.0	26.7	26.4	29.5	29.2	23.9	22.2	22.7	22.5	20.9	18.4	18.7	18.6
OTHERS	1.4	1.3	1.2	1.2	1.8	1.8	1.9	1.5	1.5	1.8	2.8	3.2	3.1	3.9	6.5	8.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

PIG-IRON & STEEL ENERGY CONSUMPTION

%

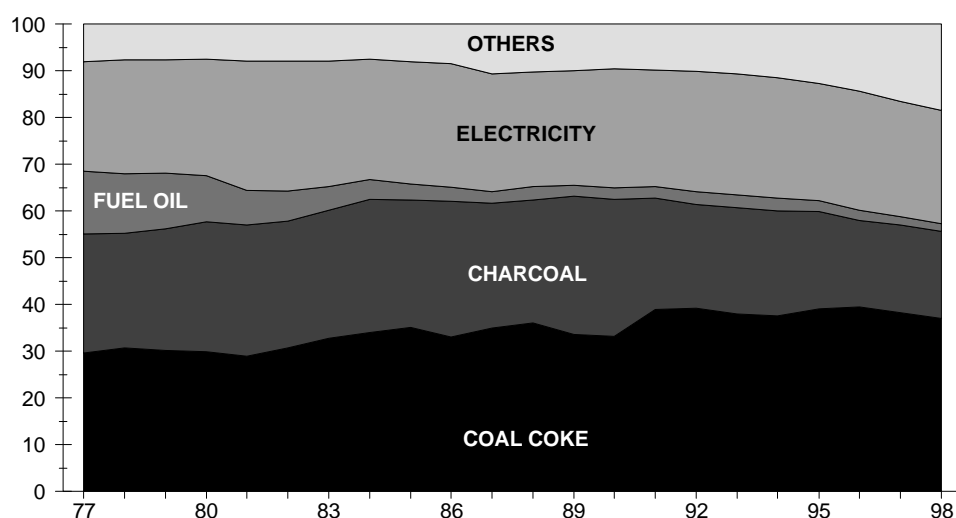


TABLE 3.7.3

FERRO-ALLOYS

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	0	0	0	3	7	13	25	26	0	0	0	0
MINERAL COAL	13	0	0	0	0	0	0	0	0	0	0	10	14	15	4	0
GASWORKS GAS	0	0	0	0	0	0	0	20	9	9	9	2	1	0	0	0
COAL COKE	22	26	27	30	27	28	32	25	26	43	41	39	34	39	33	26
ELECTRICITY	958	1100	1208	1439	1478	1684	1876	1801	1800	2178	2087	1842	1826	2000	1824	1527
CHARCOAL AND FIREWOOD	292	341	411	432	439	536	647	353	476	403	500	427	372	583	416	354
TOTAL	1285	1467	1646	1901	1944	2248	2555	2202	2318	2646	2662	2346	2247	2637	2277	1907

TABLE 3.7.4.a

MINING/PELLETIZATION

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	50	56	61	42	62	86	85	89	63	71	75	78	107	150	104
MINERAL COAL / COAL COKE	26	41	20	29	32	49	86	97	106	129	102	137	171	305	272	259
FIREWOOD	15	18	22	21	20	18	0	0	0	0	0	0	0	0	0	0
DIESEL OIL	54	63	66	72	87	109	77	75	72	76	104	131	131	117	144	161
FUEL OIL	471	551	549	577	573	574	554	461	445	501	555	605	599	599	516	587
LIQUEFIED PETROLEUM GAS	5	3	4	4	2	2	2	2	2	7	1	1	1	1	4	10
KEROSENE	11	10	7	7	6	4	5	4	3	4	3	2	2	2	2	3
ELECTRICITY	1243	1475	1586	1694	1722	1685	1628	1727	1658	1707	1741	1865	1830	1696	1873	2085
CHARCOAL	52	51	56	40	41	37	14	33	35	30	3	3	0	0	0	0
PETROLEUM COKE	0	0	0	0	4	4	3	0	0	0	0	2	2	10	33	38
TOTAL	1877	2262	2366	2505	2529	2544	2455	2484	2410	2517	2580	2821	2814	2837	2994	3247

TABLE 3.7.4.b

MINING/PELLETIZATION

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FUEL OIL	25.1	24.4	23.2	23.0	22.7	22.6	22.6	18.6	18.5	19.9	21.5	21.4	21.3	21.1	17.2	18.1
ELECTRICITY	66.2	65.2	67.0	67.6	68.1	66.2	66.3	69.5	68.8	67.8	67.5	66.1	65.0	59.8	62.6	64.2
OTHERS	8.7	10.4	9.8	9.3	9.3	11.2	11.1	11.9	12.7	12.3	11.0	12.4	13.7	19.1	20.2	17.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.5.a

CHEMICALUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	249	261	258	274	280	259	290	315	343	393	412	439	497	588	934	948
STEAM COAL	141	153	165	169	191	173	113	93	129	134	125	121	127	114	110	96
FIREWOOD	263	321	297	251	324	260	248	216	208	165	174	179	144	115	103	96
SUGAR CANE BAGASSE	13	35	36	38	40	38	44	40	39	41	44	50	46	0	0	0
DIESEL OIL	14	13	12	12	14	8	23	22	24	25	30	67	73	96	95	80
FUEL OIL	1444	1380	1543	1530	1636	1642	1637	1546	1616	1714	1492	1383	1434	1697	1883	1861
LIQUEFIED PETROLEUM GAS	7	7	7	14	39	22	10	9	9	8	8	14	14	14	17	18
NAPHTHA	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KEROSENE	2	1	1	1	1	0	0	0	0	0	0	0	0	0	12	9
GASWORKS GAS	0	0	0	1	0	0	4	1	1	0	0	0	0	0	0	0
ELECTRICITY	2906	3274	3811	3781	3624	3784	3751	3861	3770	3911	4224	4334	4313	4385	4590	4618
CHARCOAL	34	37	37	33	28	44	38	31	28	26	28	29	23	13	6	5
OTHER SOURCES OF PETROLEUM	493	578	559	686	653	680	661	740	651	594	666	890	1053	1152	1287	1339
TOTAL	5567	6062	6726	6790	6830	6910	6819	6874	6818	7011	7203	7506	7724	8174	9037	9070

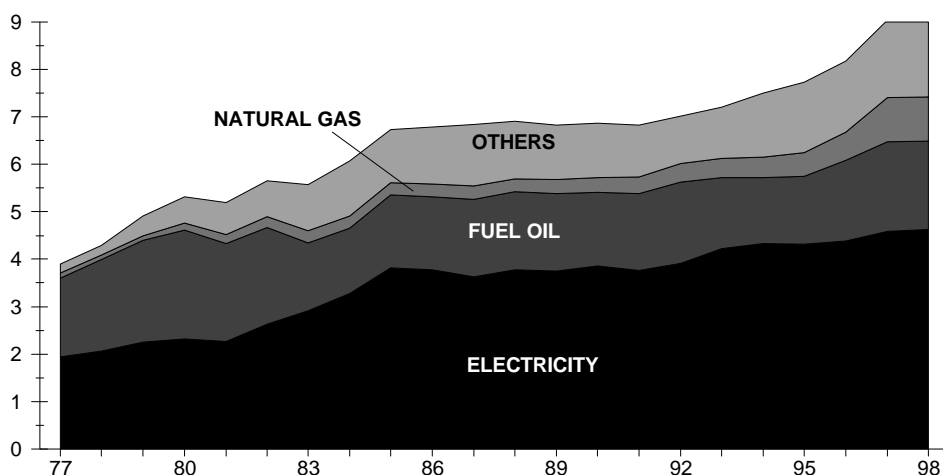
CHEMICAL ENERGY CONSUMPTION10⁶ toe

TABLE 3.7.5.b

CHEMICAL

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	4.5	4.3	3.8	4.0	4.1	3.7	4.3	4.6	5.0	5.6	5.7	5.8	6.4	7.2	10.3	10.5
STEAM COAL	2.5	2.5	2.5	2.5	2.8	2.5	1.7	1.4	1.9	1.9	1.7	1.6	1.6	1.4	1.2	1.1
FIREWOOD	4.7	5.3	4.4	3.7	4.7	3.8	3.6	3.1	3.1	2.4	2.4	2.4	1.9	1.4	1.1	1.1
FUEL OIL	25.9	22.8	22.9	22.5	24.0	23.8	24.0	22.5	23.7	24.4	20.7	18.4	18.6	20.8	20.8	20.5
ELECTRICITY	52.2	54.0	56.7	55.7	53.1	54.8	55.0	56.2	55.3	55.8	58.6	57.7	55.8	53.6	50.8	50.9
OTHERS	10.1	11.1	9.7	11.6	11.3	11.5	11.4	12.3	11.0	9.9	10.8	14.0	15.7	15.6	15.7	16.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.6.a

NON-FERROUS AND OTHER METALSUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	0	10	57	21	27	28	30	42	34	16	25	35	24
FIREWOOD	7	11	16	13	25	21	17	37	27	34	35	36	40	2	2	2
FUEL OIL	389	330	362	444	463	418	381	381	360	397	457	369	519	685	701	639
LIQUEFIED PETROLEUM GAS	13	4	11	12	23	19	16	15	12	11	14	20	41	67	46	58
GASWORKS GAS	16	18	15	18	22	22	14	0	10	4	2	1	1	0	0	0
COAL COKE/MINERAL COAL	5	7	10	12	7	8	10	70	66	62	172	153	179	258	187	180
ELECTRICITY	3451	4170	4979	5989	6245	6904	7160	7408	8127	8106	8266	8294	8278	8318	8068	8047
CHARCOAL	100	116	120	71	168	214	251	248	199	200	110	120	142	30	25	21
OTHER SOURCES OF PETROLEUM	240	303	358	270	337	332	331	329	366	352	388	432	448	488	403	366
TOTAL	4221	4959	5871	6829	7300	7995	8201	8515	9195	9196	9486	9459	9664	9873	9467	9337

TABLE 3.7.6.b

NON-FERROUS AND OTHER METALS

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FUEL OIL	9.2	6.7	6.2	6.5	6.3	5.2	4.6	4.5	3.9	4.3	4.8	3.9	5.4	6.9	7.4	6.8
ELECTRICITY	81.8	84.1	84.8	87.7	85.5	86.4	87.3	87.0	88.4	88.1	87.1	87.7	85.7	84.2	85.2	86.2
OTHER SECONDARY OF PETROLEUM	5.7	6.1	6.1	4.0	4.6	4.2	4.0	3.9	4.0	3.8	4.1	4.6	4.6	4.9	4.3	3.9
OTHERS	3.3	3.1	2.9	1.8	3.5	4.3	4.0	4.7	3.7	3.7	4.0	3.8	4.3	3.9	3.1	3.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.7.a

TEXTILESUNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	0	4	6	30	26	51	59	69	74	78	92	181	69	59
STEAM COAL	11	7	5	5	6	5	3	4	3	3	3	4	3	2	2	0
FIREWOOD	138	174	229	245	223	190	174	153	145	95	100	103	102	104	99	96
DIESEL OIL	3	2	2	3	6	3	3	3	3	3	3	2	1	3	3	6
FUEL OIL	437	289	283	358	438	413	463	433	408	392	420	341	329	300	320	313
LIQUEFIED PETROLEUM GAS	4	4	5	5	5	5	4	4	3	5	2	3	3	2	3	8
KEROSENE	7	5	5	6	6	6	6	5	4	3	2	1	1	0	0	0
GASWORKS GAS	2	2	3	4	4	3	3	3	2	3	0	0	0	0	0	0
ELECTRICITY	1289	1485	1622	1707	1627	1765	1809	1817	1776	1782	1905	1955	1865	1734	1779	1773
CHARCOAL	9	9	8	6	5	4	4	3	3	2	2	1	1	1	1	1
TOTAL	1900	1977	2162	2343	2326	2424	2495	2476	2406	2357	2511	2488	2397	2327	2276	2256

TABLE 3.7.7.b

TEXTILES

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	7.3	8.8	10.6	10.5	9.6	7.8	7.0	6.2	6.0	4.0	4.0	4.1	4.3	4.5	4.3	4.3
FUEL OIL	23.0	14.6	13.1	15.3	18.8	17.0	18.6	17.5	17.0	16.6	16.7	13.7	13.7	12.9	14.1	13.9
ELECTRICITY	67.8	75.1	75.0	72.9	69.9	72.8	72.5	73.4	73.8	75.6	75.9	78.6	77.8	74.5	78.2	78.6
OTHERS	1.9	1.5	1.3	1.4	1.6	2.3	2.0	2.9	3.2	3.7	3.4	3.6	4.2	8.1	3.4	3.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.8.a

FOODS AND BEVERAGE

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	0	9	25	58	62	56	128	121	163	168	154	159	247	145	135
STEAM COAL	166	146	107	107	142	97	108	105	70	75	79	78	87	82	65	46
FIREWOOD	1825	2038	2151	2234	2179	2127	2002	1940	1979	1750	1767	1778	1742	1777	1742	1777
SUGAR CANE BAGASSE	5451	5266	4852	4806	5390	4733	4088	4384	4382	5490	5453	6813	6984	7157	7897	9228
DIESEL OIL	55	51	46	42	32	38	20	19	18	21	24	29	33	34	35	34
FUEL OIL	842	621	568	562	727	669	710	709	757	813	830	840	950	1035	997	1046
LIQUEFIED PETROLEUM GAS	14	13	13	16	19	17	17	18	23	21	22	26	32	34	37	45
KEROSENE	13	12	7	7	7	15	13	8	8	9	6	9	6	4	2	2
GASWORKS GAS	16	14	14	15	21	22	17	12	12	9	6	1	1	0	0	1
ELECTRICITY	2172	2656	2814	2838	2664	2807	2766	2997	3108	3203	3390	3482	3690	3953	4184	4392
TOTAL	10554	10817	10581	10652	11239	10587	9797	10320	10478	11554	11745	13210	13684	14323	15104	16706

TABLE 3.7.8.b

FOODS AND BEVERAGE

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
STEAM COAL	1.6	1.3	1.0	1.0	1.3	0.9	1.1	1.0	0.7	0.6	0.7	0.6	0.6	0.6	0.4	0.3
FIREWOOD	17.3	18.8	20.3	21.0	19.4	20.1	20.4	18.8	18.9	15.1	15.0	13.5	12.7	12.4	11.5	10.6
SUGAR CANE BAGASSE	51.6	48.7	45.9	45.1	48.0	44.7	41.7	42.5	41.8	47.5	46.4	51.6	51.0	50.0	52.3	55.2
FUEL OIL	8.0	5.7	5.4	5.3	6.5	6.3	7.2	6.9	7.2	7.0	7.1	6.4	6.9	7.2	6.6	6.3
ELECTRICITY	20.6	24.6	26.6	26.6	23.7	26.5	28.2	29.0	29.7	27.7	28.9	26.4	27.0	27.6	27.7	26.3
OTHERS	0.9	0.8	0.8	1.0	1.2	1.5	1.3	1.8	1.7	1.9	1.9	1.7	1.7	2.2	1.4	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.9.a

PAPER AND PULP

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	9	8	14	26	30	25	30	54	63	77	86	89	122	139	139	141
STEAM COAL	122	122	131	125	152	142	149	130	129	119	111	83	93	94	89	67
FIREWOOD	757	900	969	905	766	830	725	743	665	728	754	881	897	743	711	765
SUGAR CANE BAGASSE	0	0	34	39	67	81	73	49	59	30	30	17	5	23	24	25
BLACK LIQUOR	770	862	949	989	1023	1124	1030	1068	1179	1410	1649	1733	1649	1837	1913	2034
OTHER WASTES	0	0	84	199	194	221	341	309	315	415	378	359	373	337	340	351
DIESEL OIL	15	11	12	13	14	15	17	18	19	17	21	21	24	25	31	23
FUEL OIL	563	411	352	420	507	453	533	526	600	723	657	672	743	920	874	905
LIQUEFIED PETROLEUM GAS	4	3	4	5	5	5	4	4	4	4	5	8	10	12	15	20
OTHER SOURCES OF PETROLEUM	3	3	3	4	3	3	3	2	2	2	2	25	41	40	2	1
GASWORKS GAS	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0
ELECTRICITY	1654	1717	1922	1992	1976	2092	2262	2230	2461	2603	2793	2821	2842	2887	3077	3169
TOTAL	3898	4038	4475	4718	4738	4992	5168	5133	5497	6128	6486	6709	6799	7057	7215	7501

TABLE 3.7.9.b

PAPER AND PULP

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
STEAM COAL	3.1	3.0	2.9	2.6	3.2	2.8	2.9	2.5	2.3	1.9	1.7	1.2	1.4	1.3	1.2	0.9
FIREWOOD	19.4	22.3	21.7	19.2	16.2	16.6	14.0	14.5	12.1	11.9	11.6	13.1	13.2	10.5	9.9	10.2
BLACK LIQUOR	19.8	21.3	21.2	21.0	21.6	22.5	19.9	20.8	21.4	23.0	25.4	25.8	24.3	26.0	26.5	27.1
FUEL OIL	14.4	10.2	7.9	8.9	10.7	9.1	10.3	10.2	10.9	11.8	10.1	10.0	10.9	13.0	12.1	12.1
ELECTRICITY	42.4	42.5	42.9	42.2	41.7	41.9	43.8	43.4	44.8	42.5	43.1	42.0	41.8	40.9	42.6	42.2
OTHERS	0.8	0.6	3.4	6.1	6.6	7.0	9.1	8.5	8.4	8.9	8.0	7.7	8.5	8.2	7.6	7.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.10.a

CERAMICS

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	3	9	21	23	30	45	59	60	58	86	96	101	111	87	99	105
STEAM COAL	17	9	16	29	51	44	70	34	66	65	73	82	67	60	65	46
FIREWOOD	1665	1822	1758	1972	1919	1810	1802	1541	1463	1336	1443	1476	1387	1525	1571	1587
OTHER WASTES	14	31	80	71	76	75	73	56	50	43	47	45	48	54	35	38
DIESEL OIL	9	7	6	11	10	8	8	6	6	7	9	7	7	7	6	6
FUEL OIL	384	398	362	445	431	424	454	392	372	463	510	475	493	517	533	566
LIQUEFIED PETROLEUM GAS	34	25	15	18	25	31	29	30	46	80	92	132	187	214	294	282
OTHER SOURCES OF PETROLEUM	1	1	1	1	2	2	2	1	1	1	1	2	2	10	1	1
GASWORKS GAS	6	5	7	10	8	10	10	7	5	1	0	0	0	0	0	0
ELECTRICITY	493	498	545	648	617	602	627	533	507	503	523	545	583	630	748	778
CHARCOAL	14	17	17	16	13	11	16	13	11	7	8	5	6	8	9	0
TOTAL	2640	2822	2828	3244	3182	3062	3150	2673	2585	2592	2802	2870	2891	3112	3361	3409

TABLE 3.7.10.b

CERAMICS

UNIT: %

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FIREWOOD	63.1	64.6	62.2	60.8	60.3	59.1	57.2	57.7	56.6	51.5	51.5	51.4	48.0	49.0	46.7	46.6
FUEL OIL	14.5	14.1	12.8	13.7	13.5	13.8	14.4	14.7	14.4	17.9	18.2	16.6	17.1	16.6	15.9	16.6
ELECTRICITY	18.7	17.6	19.3	20.0	19.4	19.7	19.9	19.9	19.6	19.4	18.7	19.0	20.2	20.2	22.3	22.8
OTHERS	3.7	3.7	5.8	5.5	6.8	7.4	8.5	7.7	9.4	11.2	11.6	13.0	14.8	14.1	15.1	14.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7.11

OTHER INDUSTRIES

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	0	9	27	39	141	161	135	255	253	243	316	301	334	328	450	440
STEAM COAL	11	15	24	31	22	23	8	9	54	84	50	42	5	7	2	2
FIREWOOD	555	791	826	949	903	811	765	688	675	513	538	565	587	594	587	581
SUGAR CANE BAGASSE	1	1	2	2	3	4	5	4	5	5	7	8	9	0	0	0
DIESEL OIL	73	63	57	61	62	73	100	116	101	119	136	147	155	106	126	158
FUEL OIL	899	714	778	857	966	1009	897	812	804	746	839	956	1004	1044	1057	1009
LIQUEFIED PETROLEUM GAS	60	66	68	77	100	89	77	52	55	62	74	81	91	103	154	197
KEROSENE	49	45	42	44	38	36	28	24	22	14	10	9	7	5	6	5
GASWORKS GAS	34	40	39	47	44	42	38	21	13	11	4	3	2	2	1	0
ELECTRICITY	4265	4957	5129	5462	5740	6029	6183	5648	5517	5101	5540	6229	6542	6827	7755	7813
CHARCOAL	17	31	28	25	19	17	19	16	16	9	11	11	13	5	8	6
OTHER SOURCES OF PETROLEUM	16	11	4	29	3	2	2	2	0	0	0	7	14	15	25	25
TOTAL	5980	6743	7024	7623	8041	8296	8257	7647	7515	6907	7525	8359	8763	9036	10171	10236

**ENERGY
IMPORT AND
EXPORT
1983/1998**

4

White page

TABLE 4.1

EXTERNAL DEPENDENCE ON ENERGY

UNIT: 10³ toe

SPECIFICATION		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL ENERGY DEMAND	(a)	146809	157847	168528	176235	183426	188288	192260	189253	193901	196537	203335	213679	221398	232026	245719	253402
FINAL CONSUMPTION		132495	141038	150190	158285	165146	168439	171921	169418	173667	176296	182040	190858	198825	208977	221595	228288
LOSSES (*)		14314	16809	18338	17950	18280	19849	20339	19835	20234	20241	21295	22821	22573	23049	24124	25114
PRIMARY ENERGY PRODUCTION	(b)	115812	131746	141618	141718	146376	147486	150787	148074	151329	152238	155931	162532	165310	175032	185214	196162
EXTERNAL DEPENDENCE	(c)=(a)-(b)	30997	26101	26910	34517	37050	40802	41473	41179	42572	44299	47404	51147	56088	56994	60505	57240
EXTERNAL DEPENDENCE	(c)/(a) %	21.1	16.5	16.0	19.6	20.2	21.7	21.6	21.8	22.0	22.5	23.3	23.9	25.3	24.6	24.6	22.6

(*) Losses in transformation, distribution and storage, including non-utilized and re-injected energy.

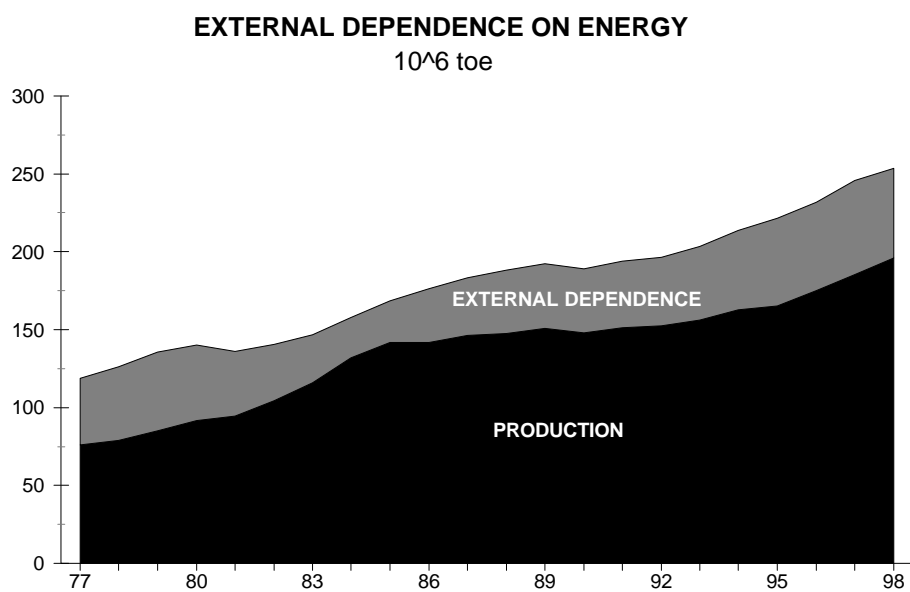


TABLE 4.2

EXTERNAL DEPENDENCE ON PETROLEUM

UNIT: 10³ toe

SPECIFICATION	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM DERIVATIVES DEMAND (a)	47380	46311	49279	53901	55008	56397	57180	57876	58197	60946	62971	66845	70373	75548	81693	84740
FINAL CONSUMPTION	45326	44313	47080	50628	52437	53127	54794	55728	56246	57781	59948	63217	67512	72393	78053	80656
ELECTRICITY GENERATION	1003	890	1021	2650	2227	2101	1546	1261	1326	1709	1536	1634	1937	2319	2573	2878
LOSSES (*)	1051	1108	1178	623	344	1169	840	887	625	1456	1487	1994	924	836	1067	1206
TOTAL PRODUCTION OF PETROLEUM (b)	17022	23835	28178	29628	29488	28836	30796	32904	32523	32996	33609	34926	36043	40761	43872	50755
PETROLEUM	16595	23216	27493	28784	28463	27853	29845	31906	31518	31861	32551	33804	34907	39720	42777	49571
NGL	427	619	685	844	1025	983	951	998	1005	1135	1058	1122	1136	1041	1095	1184
DEFICIT - 10 ³ toe	(a)-(b)	30358	22476	21101	24273	25520	27561	26384	24972	25674	27950	29362	31919	34330	37821	33985
DEFICIT - 10 ³ boe/day		607	450	422	485	510	551	528	499	513	559	587	638	687	756	680
DEFICIT - %	(a-b)/(a)	64.1	48.5	42.8	45.0	46.4	48.9	46.1	43.1	44.1	45.9	46.6	47.8	48.8	46.0	40.1

(*) Losses in transformation, distribution and storage, including non-utilized and re-injected energy.

EXTERNAL DEPENDENCE ON PETROLEUM

10⁶ toe

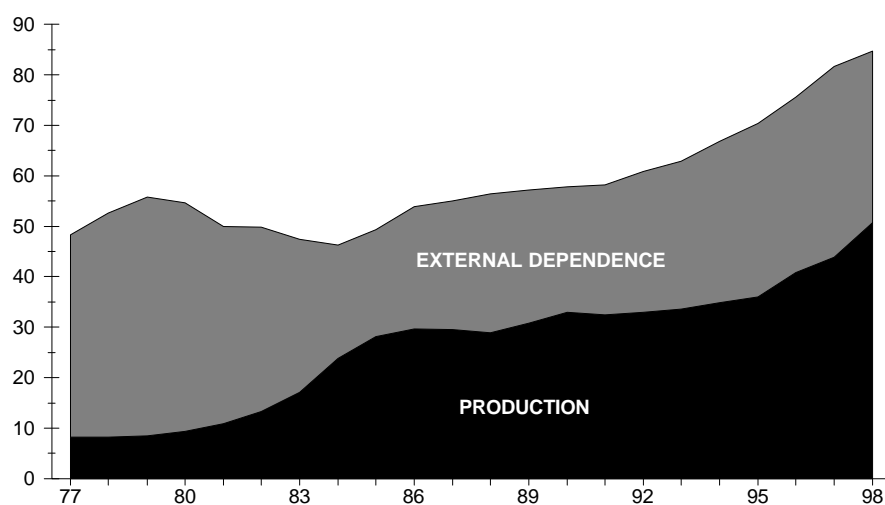


TABLE 4.3

IMPORTS OF ENERGY

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM	36692	32689	27422	30234	31109	32110	29667	28882	26605	26812	25713	27957	25353	28826	29207	27973
METALLURGICAL COAL/STEAM COAL	4002	5553	5900	6188	7081	6804	7002	7437	7886	7622	8044	8278	8642	9417	9444	9502
COAL COKE	152	41	66	63	490	574	846	388	726	668	783	1000	1201	1160	1155	1025
URANIUM	0	0	0	0	0	0	0	0	0	0	0	0	0	1383	8229	5312
ELECTRICITY	1	4	556	2988	4876	5206	6849	7698	7855	6966	7992	9212	10252	10604	11738	11429
ETHYL ALCOHOL (*)	0	0	0	0	0	0	0	584	542	272	722	935	1215	655	446	80
FIREWOOD/CHARCOAL	0	0	0	0	0	0	0	0	0	0	1	4	11	7	8	11
TOTAL PETROLEUM DERIVATIVES	1312	603	1542	1901	2285	3796	3458	2909	4149	5301	12874	10306	10983	12664	13436	13170
DIESEL OIL	228	2	362	694	490	465	825	577	1545	1914	3718	2770	3604	4161	4996	5264
FUEL OIL	389	127	218	349	854	1704	991	620	226	507	4837	2728	694	1631	446	55
GASOLINE	67	62	163	98	8	5	2	4	8	0	0	23	704	733	302	162
MOTOR GASOLINE	0	0	157	84	1	1	0	0	0	0	0	23	704	729	302	157
AVIATION GASOLINE	67	62	6	14	7	4	2	4	8	0	0	0	0	4	0	5
LIQUEFIED PETROLEUM GAS	527	269	527	654	835	1442	1384	1405	1656	1661	1837	1875	2546	2675	2804	3020
NAPHTHA	4	4	33	3	33	72	120	181	519	1091	2061	2474	2619	2501	3572	3666
KEROSENE	0	0	37	37	0	28	28	23	119	117	372	333	521	563	704	813
OTHER SOURCES OF PETROLEUM	9	84	68	12	0	0	0	0	0	0	0	0	0	111	406	4
NON-ENERGY PRODUCTS OF PETROL.	88	55	134	54	65	80	108	99	76	11	49	103	295	289	206	186
TOTAL	42159	38890	35486	41374	45841	48490	47822	47898	47763	47641	56129	57692	57657	64716	73663	68502

(*) Including methanol

ENERGY IMPORTS

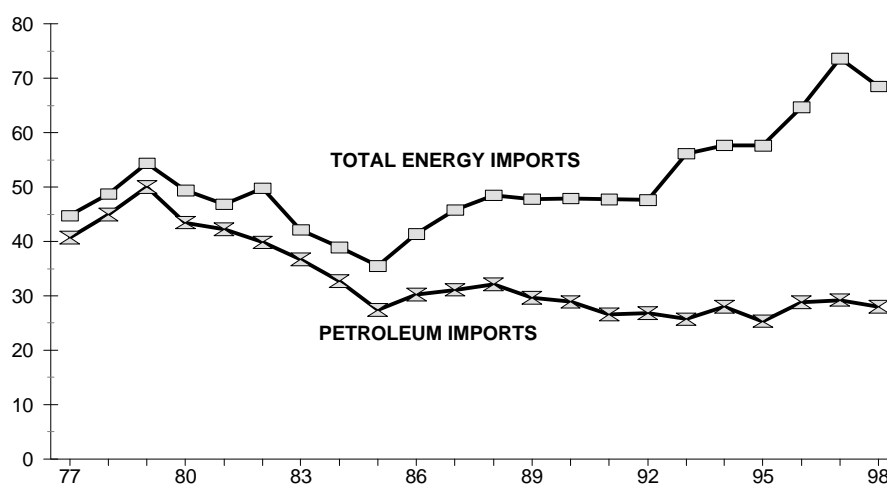
10⁶ toe

TABLE 4.4

EXPORTS OF ENERGY

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM	-51	0	0	0	0	-187	0	0	0	0	0	0	-677	-105	-130	0
STEAM COAL	0	0	0	-51	0	0	0	0	0	0	0	0	0	0	0	0
ELECTRICITY	-71	-29	-1	-3	-3	-2	-438	-2	-2	-2	-3	0	0	-2	-2	-2
ETHYL ALCOHOL	-223	-496	-216	-161	-20	-45	0	0	0	0	-84	-145	-200	-108	-87	-70
ANHYDROUS ALCOHOL	-156	-349	-108	-54	-3	-3	0	0	0	0	0	0	0	0	0	0
HYDRATED ALCOHOL	-67	-147	-108	-107	-17	-42	0	0	0	0	-84	-145	-200	-108	-87	-70
CHARCOAL	0	0	0	0	0	0	0	0	0	0	-11	-7	-6	0	-3	-6
TOTAL PETROLEUM DERIVATIVES	-5872	-8704	-7929	-6341	-7459	-7811	-6677	-4897	-4285	-4890	-6946	-6718	-3888	-3983	-4565	-6638
DIESEL OIL	-979	-1349	-1095	-774	-781	-897	-563	-216	-157	-249	-670	-797	-554	-347	-507	-458
FUEL OIL	-2524	-2668	-2162	-2174	-1891	-2180	-2532	-2442	-2290	-2322	-2534	-2577	-1735	-2105	-2347	-3789
MOTOR GASOLINE	-1560	-3228	-3658	-2817	-3928	-3999	-3004	-1704	-1160	-1552	-2974	-2289	-774	-454	-483	-1323
AVIATION GASOLINE	-11	-11	-10	-9	-12	-5	-3	-2	-3	-3	-14	-26	-26	-11	-22	-4
LIQUEFIED PETROLEUM GAS	-49	-46	-45	-21	-46	-41	-31	-5	0	-3	-7	0	0	0	-4	-4
NAPHTHA	0	0	0	0	0	0	0	0	-4	-35	0	-203	0	0	0	-4
KEROSENE	-567	-1191	-772	-429	-669	-549	-444	-477	-552	-517	-584	-664	-708	-793	-865	-866
LIGHTING KEROSENE	-199	-184	-82	-61	-29	-94	0	0	0	0	-48	-31	-3	0	-5	-6
JET FUEL	-368	-1007	-690	-368	-640	-455	-444	-477	-552	-517	-536	-633	-705	-793	-860	-860
OTHER SOURCES OF PETROLEUM	0	0	0	0	0	0	-24	0	0	0	0	0	0	-96	-212	-16
NON-ENERGY PRODUCTS OF PETROL.	-182	-211	-187	-117	-132	-140	-76	-51	-119	-209	-163	-162	-91	-177	-125	-174
TOTAL	-6217	-9229	-8146	-6556	-7482	-8045	-7115	-4899	-4287	-4892	-7044	-6870	-4771	-4198	-4787	-6716

TABLE 4.5

NET EXPORTS AND/OR IMPORTS

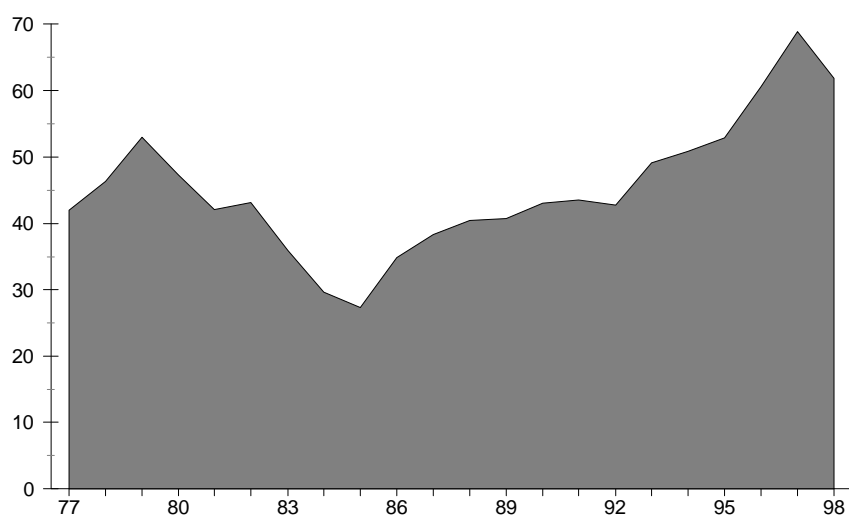
UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM	36641	32689	27422	30234	31109	31923	29667	28882	26605	26812	25713	27957	24676	28721	29077	27973
METALLURGICAL COAL/STEAM COAL	4002	5553	5900	6137	7081	6804	7002	7437	7886	7622	8044	8278	8642	9417	9444	9502
COAL COKE	152	41	66	63	490	574	846	388	726	668	783	1000	1201	1160	1155	1025
URANIUM	0	0	0	0	0	0	0	0	0	0	0	0	0	1383	8229	5312
ELECTRICITY	-70	-25	555	2985	4873	5204	6411	7696	7853	6964	7989	9212	10252	10602	11736	11427
ETHYL ALCOHOL	-223	-496	-216	-161	-20	-45	0	584	542	272	638	790	1015	547	359	10
FIREWOOD/CHARCOAL	0	0	0	0	0	0	0	0	0	0	-10	-3	5	7	5	5
TOTAL PETROLEUM DERIVATIVES	-4560	-8101	-6387	-4440	-5174	-4015	-3219	-1988	-136	411	5928	3588	7095	8681	8871	6532
DIESEL OIL	-751	-1347	-733	-80	-291	-432	262	361	1388	1665	3048	1973	3050	3814	4489	4806
FUEL OIL	-2135	-2541	-1944	-1825	-1037	-476	-1541	-1822	-2064	-1815	2303	151	-1041	-474	-1901	-3734
GASOLINE	-1504	-3177	-3505	-2728	-3932	-3999	-3005	-1702	-1155	-1555	-2988	-2292	-96	268	-203	-1165
LIQUEFIED PETROLEUM GAS	478	223	482	633	789	1401	1353	1400	1656	1658	1830	1875	2546	2675	2800	3016
NAPHTHA	4	4	33	3	33	72	120	181	515	1056	2061	2271	2619	2501	3572	3662
KEROSENE	-567	-1191	-735	-392	-669	-521	-416	-454	-433	-400	-212	-331	-187	-230	-161	-53
OTHER SOURCES OF PETROLEUM	9	84	68	12	0	0	-24	0	0	0	0	0	0	15	194	-12
NON-ENERGY PRODUCTS OF PETROL.	-94	-156	-53	-63	-67	-60	32	48	-43	-198	-114	-59	204	112	81	12
TOTAL	35942	29661	27340	34818	38359	40445	40707	42999	43476	42749	49085	50822	52886	60518	68876	61786

Note: Quantities without signs correspond to net imports.

Negative quantities correspond to net exports.

NET IMPORTS OF ENERGY

10⁶ toe

**TRANSFORMATION
CENTERS
BALANCES
1983/1998**

5

White page

TABLE 5.1

PETROLEUM REFINERIES

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM AND NGL	-50905	-54124	-54580	-58081	-59460	-59838	-59891	-59512	-57774	-60168	-60781	-64235	-62345	-67095	-72197	-77732
DIESEL OIL	16256	17307	17243	19256	20455	20914	20815	20408	20151	20521	19800	22213	21902	22667	23677	24877
FUEL OIL	11921	11734	11585	12644	12068	11469	11777	11885	11336	11969	11648	11856	11706	13413	14923	17109
GASOLINE	7818	8804	8722	8987	9268	9257	9054	8790	8751	9438	11204	11325	11205	12243	13788	15270
MOTOR GASOLINE	7818	8804	8655	8915	9207	9191	8985	8734	8705	9407	11136	11246	11136	12178	13730	15187
AVIATION GASOLINE	0	0	67	72	61	66	69	56	46	31	68	79	69	65	58	83
LIQUEFIED PETROLEUM GAS	2687	2935	3090	3052	3233	3022	3237	3390	3282	3539	3773	3910	3715	3654	3522	3574
NAPHTHA	4437	4570	5294	5651	5975	5813	6110	6053	5372	5107	5150	5338	5012	4819	5239	5282
KEROSENE	2824	3386	3184	2904	2973	2884	2924	2667	2635	2511	2503	2432	2670	2917	2857	3109
LIGHTING KEROSENE	575	495	415	396	414	410	306	198	176	150	207	131	127	109	68	55
JET FUEL	2249	2891	2769	2508	2559	2474	2618	2469	2459	2361	2296	2301	2543	2808	2789	3054
OTHER SOURCES OF PETROLEUM	1917	1979	2068	2163	2386	2316	2536	2488	2328	2635	2671	2928	2933	3113	3698	3529
NON-ENERGY PRODUCTS OF PETROL.	2663	3012	3076	3390	3112	3115	2876	3339	2962	3189	2690	3116	2788	3285	3689	4069
TOTAL	-382	-397	-318	-34	10	-1048	-562	-492	-957	-1259	-1342	-1117	-414	-984	-804	-913

TABLE 5.2

GASIFICATION PLANTS

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
NATURAL GAS	-82	-157	-146	-157	-169	-151	-179	-165	-138	-163	-137	-133	-130	-87	-82	-133
STEAM COAL	0	0	-9	-1	0	0	0	0	0	0	0	0	0	0	0	0
METALLURGICAL COAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NAPHTHA	-204	-158	-182	-173	-181	-196	-166	-158	-148	-110	-115	-77	-66	-49	-49	0
GASWORKS GAS	285	293	300	320	327	331	326	289	283	256	240	159	139	132	115	119
COAL COKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-1	-22	-37	-11	-23	-16	-19	-34	-3	-17	-12	-51	-57	-4	-16	-14

TABLE 5.3

PUBLIC UTILITY POWER PLANTS

SOURCES	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
INPUT - TOTAL	10 ³ toe	-1233	-2173	-2528	-3406	-3057	-2571	-2650	-2236	-2282	-2436	-1971	-2033	-3326	-3523	-4290	-4879
NATURAL GAS		0	0	0	0	0	-2	-68	-5	-1	-1	-5	-8	-6	-8	-27	-43
STEAM COAL		-689	-793	-948	-1224	-991	-765	-1053	-925	-1094	-1073	-971	-1026	-1224	-1249	-1513	-1425
FIREWOOD		0	-2	-23	-29	-45	-31	-7	0	0	0	0	0	0	0	0	0
DIESEL OIL		-279	-268	-324	-463	-805	-805	-534	-443	-447	-593	-510	-544	-811	-699	-977	-1230
FUEL OIL		-265	-269	-334	-1654	-955	-809	-524	-276	-341	-428	-347	-433	-407	-798	-736	-759
URANIUM CONTAINED IN UO2		0	-841	-899	-36	-261	-159	-464	-587	-399	-341	-138	-22	-878	-769	-1037	-1422
ELECTRICITY GENERATION (1)	10 ³ toe	12225	13584	14748	15318	15382	16302	16862	16873	17755	18297	19035	19670	20854	21864	23108	24096
HYDRO PLANTS		11880	13084	14027	14319	14568	15644	16088	16287	17169	17647	18536	19157	20036	20916	21967	22911
THERMAL PLANTS		345	500	722	998	814	658	774	586	586	650	499	513	818	948	1141	1185
LOSSES - THERMAL PLANTS	10 ³ toe	-888	-1673	-1806	-2408	-2243	-1913	-1876	-1650	-1696	-1786	-1472	-1520	-2508	-2575	-3149	-3694
EFFICIENCY - THERMAL P.	(%)	28.0	23.0	28.5	29.3	26.6	25.6	29.2	26.2	25.7	26.7	25.3	25.2	24.6	26.9	26.6	24.3
ELECTRICITY GENERATION	GWh	152816	169798	184356	191473	192275	203781	210775	210913	221934	228711	237938	245875	260678	273300	288845	301198
NATURAL GAS		0	0	0	0	0	5	215	12	4	3	0	0	0	0	0	0
STEAM COAL		2509	2759	3336	4471	3553	2695	3769	2711	3323	3122	2897	3105	3668	4052	5268	4635
FIREWOOD		1	1	20	32	34	25	7	0	0	0	0	0	0	0	0	0
DIESEL OIL		907	902	1134	1461	2441	2319	1950	1511	1543	1945	1760	1847	2698	2403	3246	4156
FUEL OIL		896	941	1151	6374	3169	2582	1900	848	1013	1299	1144	1401	1337	2971	2576	2751
URANIUM CONTAINED IN UO2		0	1643	3381	144	973	608	1830	2237	1442	1759	442	55	2519	2429	3169	3265
HYDRAULIC		148503	163552	175334	178991	182105	195547	201104	203594	214609	220583	231695	239467	250456	261445	274586	286391

(1) 860 kcal/kWh

TABLE 5.4

AUTO-GENERATION

SOURCES	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
INPUT	10 ³ toe	-1321	-1376	-1342	-1562	-1612	-1648	-1575	-1845	-1985	-2377	-2436	-2296	-2443	-2826	-3029	-3215
NATURAL GAS		0	0	0	0	0	0	0	-69	-79	-150	-149	-146	-177	-220	-226	-289
STEAM COAL		-18	-20	-21	-27	-27	-27	-19	-20	-21	-38	-45	-56	-60	-62	-47	-52
FIREWOOD		-86	-107	-113	-124	-126	-113	-104	-119	-117	-148	-169	-127	-123	-128	-139	-138
SUGAR CANE BAGASSE		-378	-344	-374	-360	-410	-405	-388	-387	-417	-413	-403	-463	-515	-719	-776	-796
BLACK LIQUOR		-125	-138	-140	-146	-166	-144	-156	-223	-280	-335	-326	-413	-423	-439	-473	-480
OTHER WASTES		-196	-299	-220	-270	-330	-355	-279	-366	-390	-423	-475	-338	-327	-319	-420	-430
DIESEL OIL		-71	-81	-83	-92	-94	-97	-96	-111	-110	-100	-102	-103	-109	-169	-192	-236
FUEL OIL		-376	-260	-272	-432	-360	-368	-371	-410	-407	-386	-414	-379	-425	-431	-422	-427
GAS COKE		-59	-115	-111	-102	-70	-85	-110	-92	-113	-153	-161	-79	-76	-94	-88	-118
OTHER SECONDARY		-12	-12	-8	-9	-29	-54	-52	-48	-51	-231	-192	-192	-208	-245	-246	-249
ELECTRICITY GENERATION (1)	10 ³ toe	774	767	746	852	884	894	877	953	994	1042	1123	1133	1194	1436	1531	1631
HYDRO PLANTS		238	243	243	274	280	284	287	249	254	221	270	259	276	346	351	398
THERMAL PLANTS		536	524	503	578	605	610	590	703	741	821	853	874	918	1090	1180	1233
LOSSES - THERMAL PLANTS	10 ³ toe	-785	-852	-839	-984	-1007	-1038	-985	-1142	-1244	-1556	-1583	-1422	-1525	-1736	-1849	-1982
EFFICIENCY - THERMAL PLANTS	(%)	40.6	38.1	37.5	37.0	37.5	37.0	37.5	38.1	37.3	34.5	35.0	38.1	37.6	38.6	39.0	38.3
ELECTRICITY GENERATION	GWh	9676	9590	9326	10655	11056	11171	10963	11907	12432	13020	14035	14166	14923	17944	19135	20390
NATURAL GAS		0	0	0	0	0	0	0	654	739	387	388	479	560	973	1107	1171
STEAM COAL		95	99	102	128	135	132	108	103	108	200	229	287	276	322	247	267
FIREWOOD		451	527	549	589	616	545	520	612	571	790	864	666	646	669	727	687
SUGAR CANE BAGASSE		1872	1645	1740	1700	1928	1878	1784	1744	1876	2066	2017	2314	2574	3593	3880	3979
BLACK LIQUOR		661	679	682	692	811	691	782	1003	999	1798	1679	2165	2195	2273	2509	2526
OTHER WASTES		1029	1458	1059	1283	1568	1686	1360	1650	1901	1443	1662	1516	1373	1406	1745	1947
DIESEL OIL		265	275	283	319	323	330	323	389	386	345	352	356	378	709	853	1055
FUEL OIL		1948	1253	1303	1986	1703	1687	1718	1946	1881	1863	2024	1869	2103	2130	2070	2112
GAS COKE		311	547	525	483	331	402	521	438	525	487	515	305	304	429	317	440
OTHER SECONDARY SOURCES		74	67	43	48	146	274	260	256	273	881	936	970	1065	1115	1294	1226
HYDRAULIC		2972	3041	3041	3428	3495	3546	3586	3114	3173	2760	3370	3238	3449	4324	4386	4980

(1) 860 kcal/kWh

TABLE 5.5

COKING PLANTS

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
METALLURGICAL COAL	-4475	-6008	-6800	-6955	-7251	-7638	-7586	-7468	-7672	-7916	-8203	-7976	-8041	-8032	-7733	-7497
NATIONAL	-751	-769	-896	-871	-663	-622	-606	-443	-127	-79	-37	-75	-67	-82	-57	-13
IMPORTED	-3724	-5239	-5904	-6084	-6588	-7016	-6980	-7025	-7545	-7837	-8166	-7901	-7974	-7950	-7676	-7484
GAS COKE	847	1118	1246	1272	1444	1553	1565	1326	1415	1432	1492	1465	1479	1501	1441	1415
COAL COKE	3187	4297	4878	4948	5150	5485	5436	5161	5466	5516	5748	5587	5632	5649	5514	5348
COAL BITUMEN	213	268	265	283	273	290	284	263	298	286	297	286	270	258	280	265
TOTAL	-228	-325	-411	-452	-384	-310	-301	-718	-493	-682	-666	-638	-660	-624	-498	-469

TABLE 5.6

DISTILLERIES

UNIT: 10³ toe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
SUGAR CANE PRODUCTS	-4839	-5450	-6691	-5770	-7103	-6523	-6402	-6489	-7235	-6564	-6201	-6593	-6618	-7401	-8115	-7339
CANE LIQUOR	-3912	-4704	-5865	-5113	-6248	-5721	-5645	-5687	-6422	-5663	-5360	-5543	-5444	-6021	-6742	-5736
MELASSES	-927	-746	-826	-657	-855	-802	-757	-802	-813	-901	-841	-1050	-1174	-1380	-1373	-1603
OTHER RENEWABLE PRIMARY SOURCES	-27	-43	-53	-32	-7	-6	-51	-40	-45	-40	-35	-38	-30	-32	0	0
ETHYL ALCOHOL	4005	4615	5811	5003	6173	5757	5893	5734	6429	5890	5713	6274	6393	7117	7821	7140
ANHYDROUS	1329	1114	1635	1103	1121	877	777	442	1063	1158	1314	1455	1561	2305	2949	2955
HYDRATED	2676	3501	4176	3900	5052	4880	5116	5292	5366	4732	4399	4819	4832	4812	4872	4185
TOTAL	-861	-878	-933	-799	-937	-772	-560	-795	-851	-714	-523	-357	-255	-316	-294	-199

**ENERGY
RESOURCES
AND RESERVES
1972/1998**

6

White page

The basic criteria for the estimation of energy reserves and resources are the following:

PETROLEUM AND NATURAL GAS

Estimates of the volume of oil or gas are measured under the basic atmospheric conditions, multiplying the recovery factors (checked by engineering studies of reservoirs) by the original proven volume of oil or gas discounting the volume produced up to the date of reference.

a) Recovery Factor is the index that measures the technical efficiency of the technology for extracting the natural energy as well as the additional external energy introduced into the reservoir, so as to obtain a certain quantity of oil or gas or of the volume originally proved.

b) Original volume of oil or gas is the volume of oil or gas checked in basic conditions, originally existing in the reservoir.

c) Cumulative production of oil and/or gas is the volume of oil or gas measured under basic condition, extracted from the reservoir up to the time of evaluation.

d) Pressure and temperature basic conditions

Absolute pressure: 1 atm = 14.7 psi

Temperature: 20° C.

OIL SHALE

Concepts of resources and reserves for shale are those adopted by the Código de Mineração Brasileiro (Brazilian Mining Code):

- **Resources** - concentration of solid, liquid or gaseous materials occurring naturally in the interior or on the surface of earth's crust where economic extraction is usually or potentially feasible.

- **Identified Resources** - specific deposits or bodies of solid, liquid, or gaseous materials whose location, quality and quantity are known through geological evidence or prospection in a greater or lesser degree of detail.

- **Reserve** - that portion of an identified resource from which a useful mineral or energy can be economically and legally extracted, at the time of its identification.

The definition of the terms "measured", "indicated" and "inferred" are applicable to both reserves and identified resources, depending on the degree of details of the research work performed.

Measured - refers to materials for which the estimates of quantity and quality have been computed with a margin of error of less than 20%, through detailed geological research and through systematic and representative sampling and analysis;

Indicated - materials for which quality and quantity estimates have been computed both by detailed geological research and representative sampling, and by reasonable geological projections (extrapolation);

Inferred - materials for which the quality and quantity estimates are based only on certain geological evidence and projections.

COAL

Coal reserves have been determined as follows:

a) minimum thickness: 0.5 to 1.0 meters of coal in seam;

b) measured reserve: reserve within a radius of 400 meters, and area of 0.50 km², around the bore hole;

c) indicated reserve: reserve external to the measured reserve within a radius of 1200 meters from the holes covering an area of 4.02 Km².

d) inferred reserve: reserve situated beyond the indicated reserve, up to a maximum distance of 4.8 kilometers from the bore holes.

The reserves given in the table are geological "in situ" data. In determining the recoverable reserves, account must be taken of the losses in mining and beneficiation and problems caused by geological faults like those from diabase intrusions.

HYDRAULIC

Hydraulic potential is the potential which can be technically and economically tapped under existing technological conditions.

Hydro-electric potential is measured in terms of firm electric-energy, meaning the largest power that can be generated during the worst hydrological period.

Inventoried hydro-electric potential includes operating power plants in construction and those for which a basic and feasibility study has been prepared.

URANIUM

In Brazil, uranium reserves follow the conventional geological based on the criteria classification of the Brazilian Mining Code - measured, indicated and inferred.

In table 6.1, the information shows the geological reserves, because of that calculation of oil equivalence is based on the assumption that there are up to 30% losses in mining and benefaction.

The International Atomic Energy Agency, AIEA, has its own classification, which includes the criterion of cut-off for the cost of extraction and benefaction of the uranium.

Correspondence between classifications:

Conventional (Brazil)	AIEA
measured + indicated.....	reasonably assured
inferred.....	additional

TABLE 6.1

BRAZILIAN ENERGY RESOURCES AND RESERVES - As at 12/31/98 (1)

SOURCES	UNIT	RESOURCES AND RESERVES			OIL EQUIVALENT 10 ³ toe (6)
		MEASURED/ INDICATED/ INVENTORIED	INFERRED/ ESTIMATED	TOTAL	
PETROLEUM	10 ³ m ³	1169000	1126900	2295900	1017030
NATURAL GAS	10 ⁶ m ³	225900	183900	409800	218671
SHALE OIL	10 ³ m ³	445100	9402000	9847100	382786
SHALE GAS	10 ⁶ m ³	111000	2353000	2464000	104340
COAL - in situ	10 ⁶ t	10136	22239	32375	2561367 (2)
HYDRAULIC	GW year (3)	92.9	50.5	143.4	236003 /year
NUCLEAR-U308	t	177500	131870	309370	1236000 (4)
PEAT (5)	10 ³ t	129330	357960	487290	40092

(1) Not including other renewable energy resources

(2) Based on several conversion coefficients, 70% recovery in mining

(3) Firm energy

(4) Losses due to mining and benefaction have been considered; recycling of plutonium and residual uranium has not been included

(5) Dried peat

(6) Only measured, indicated and inventoried resources.

TABLE 6.2
PETROLEUM AND NATURAL GAS
RESERVES (*)

YEARS	PETROLEUM 10 ³ m ³	NATURAL GAS 10 ⁶ m ³
1972	126820	26117
1973	123060	25863
1974	119780	26261
1975	120730	25936
1976	135900	34135
1977	173940	39455
1978	178970	44389
1979	198420	45082
1980	209540	52544
1981	234640	60287
1982	273210	72334
1983	294100	81606
1984	320520	83892
1985	344694	92734
1986	374958	95834
1987	405538	105343
1988	447730	108900
1989	438779	116008
1990	439733	114570
1991	475439	123776
1992	576439	136700
1993	594978	137400
1994	658906	146476
1995	766847	154306
1996	771150	157704
1997	1116000	227650
1998	1169000	225900

Note: In 1997, criteria were adopted from both the Society of Petroleum Engineers (SPE) and from the World Petroleum Congress (WPC), which slightly increased the measured reserves in relation to criteria used from previous years.

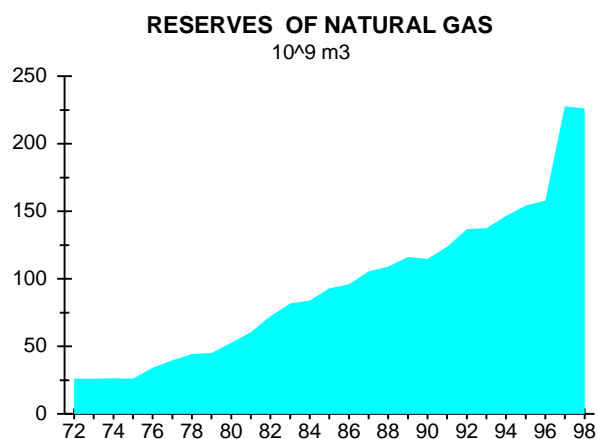
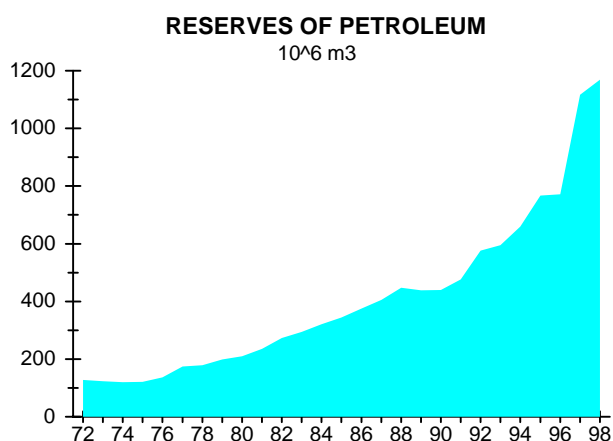


TABLE 6.3
HYDRAULIC RESOURCES (*)

YEAR	INVENTORIED	ESTIMATED	TOTAL	UNIT: MW
1970/79	36977	42370	79347	
1980/85	66470	40100	106570	
1986/90	75766	51778	127543	
1991/92	77200	51800	129000	
1993/94	82686	51800	134486	
1995/98	92880	50500	143380	

(*) Firm energy.

TABLE 6.4

COAL AND PEAT RESERVES (1)

UNIT: 10⁶t

YEAR	MINERAL COAL		TOTAL	PEAT
	STEAM COAL	METTALURG.		
1972	3431	572	4003	4
1973	4347	600	4947	12
1974	4423	660	5083	12
1975	11348	746	12095	12
1976	11362	746	12109	12
1977	19786	1105	20891	12
1978	19842	1406	21248	12
1979	21290	1483	22773	51
1980	21331	1483	22814	132
1981	21331	1483	22814	152
1982	21346	1483	22829	376
1983	21403	1483	22886	487
1984	21470	1483	22953	487
1985	25600	5393	30993	487
1986	26555	5892	32447	487
1987	26555	5873	32428	487
1988	26555	5866	32421	487
1989	26543	5850	32393	487
1990	27265	5150	32415	487
1991	27260	5150	32410	487
1992	27255	5150	32405	487
1993	27251	5150	32401	487
1994	27247	5149	32396	487
1995	27242	5149	32391	487
1996	27237	5149	32386	487
1997	27231	5149	32380	487
1998	27226	5149	32375	487

(1) Includes resources measured, indicated and inferred

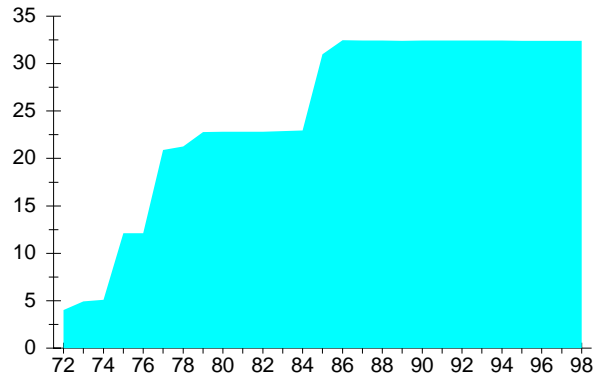
TABLE 6.5

URANIUM RESERVES

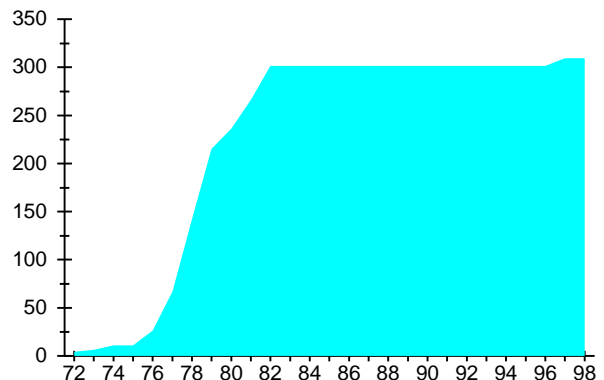
UNIT:t

ANOS	U308
1972	4292
1973	6292
1974	11040
1975	11040
1976	26380
1977	66800
1978	142300
1979	215300
1980	236300
1981	266300
1982	301490
1983	301490
1984	301490
1985	301490
1986	301490
1987	301490
1988	301490
1989	301490
1990	301490
1991	301490
1992	301490
1993	301490
1994	301490
1995	301490
1996	301490
1997	309370
1998	309370

RESERVES OF COAL
10⁹ t



RESERVES OF URANIUM
10³ t



**ENERGY AND
SOCIO-ECONOMICS
1983/1998**

7

White page

TABLE 7.1

DOMESTIC ENERGY SUPPLY / GDP / POPULATION

ESPECIFICATION	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
DOMESTIC EN. SUPPLY-DES	10 ⁶ toe	144.4	155.3	165.6	173.9	181.5	186.3	190.4	187.3	192.6	194.1	200.9	210.8	219.0	230.6	242.9	250.1
GROSS DOM. PRODUCT-GDP	10 ⁹ US\$(98)	506.2	533.6	575.2	618.3	640.0	639.3	659.8	631.4	633.3	628.2	654.6	693.9	723.6	744.7	772.1	773.2
POPULATION-POP	10 ⁶	127.3	130.0	132.7	135.2	137.7	140.1	142.4	144.7	146.8	148.9	151.0	153.0	155.1	157.1	159.1	161.1
DES/GDP	toe/10 ³ US\$	0.285	0.291	0.288	0.281	0.284	0.291	0.289	0.297	0.304	0.309	0.307	0.304	0.303	0.310	0.315	0.323
DES/CAPITA	toe/capita	1.134	1.194	1.248	1.286	1.318	1.330	1.337	1.295	1.312	1.303	1.330	1.377	1.412	1.468	1.527	1.553

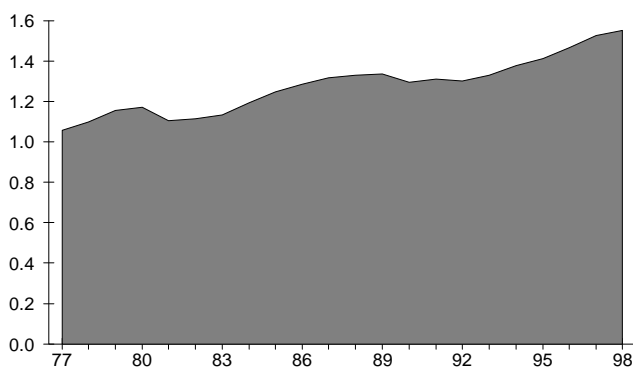
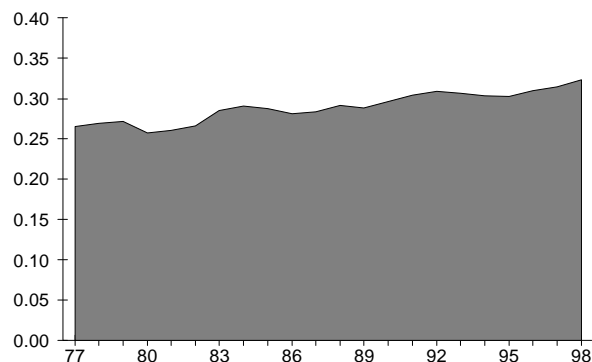
DOMESTIC ENERGY SUPPLY PER CAPITA
toe/popDOMESTIC ENERGY SUPPLY PER GDP
toe/10³ US\$

TABLE 7.2

ENERGY SUPPLY BY SOURCE PER GDP

UNIT: toe / 10³ US\$(98)

ESPECIFICATION	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM AND DERIVATIVES/GDP	0.092	0.085	0.084	0.086	0.084	0.087	0.085	0.090	0.092	0.095	0.094	0.094	0.095	0.102	0.105	0.109
HYDRAULIC AND ELECTRICITY/GDP	0.087	0.090	0.091	0.090	0.092	0.098	0.100	0.107	0.112	0.114	0.116	0.115	0.116	0.118	0.120	0.124
COAL AND DERIVATIVES/GDP	0.013	0.016	0.017	0.016	0.016	0.017	0.016	0.015	0.017	0.017	0.017	0.016	0.016	0.017	0.016	0.016
FIREWOOD AND CHARCOAL/GDP	0.059	0.062	0.057	0.052	0.051	0.050	0.049	0.045	0.042	0.039	0.037	0.035	0.032	0.029	0.028	0.027
SUGAR CANE'S PRODUCTS/GDP	0.028	0.029	0.030	0.029	0.031	0.030	0.029	0.029	0.031	0.032	0.030	0.032	0.031	0.031	0.032	0.032

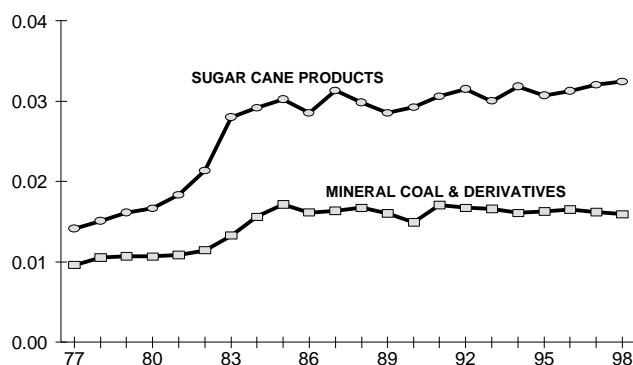
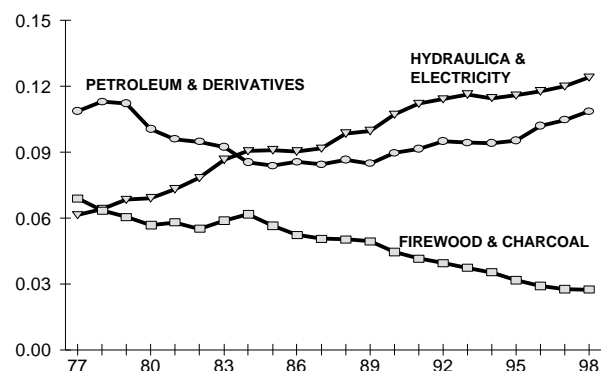
ENERGY SUPPLY PER GDP
toe/10³ US\$ENERGY SUPPLY PER GDP
toe/10³ US\$

TABLE 7.3

FINAL ENERGY CONSUMPTION BY SECTOR

UNIT: 10³ toe

SECTOR	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL ENERGY CONSUMPTION	125560	133699	141361	149326	155833	159166	162407	159702	164413	166820	172273	180061	188365	198402	209493	215572
SERVICES	34311	35062	37084	41324	41521	42604	44564	45511	47332	48106	50150	52941	57938	62149	65789	69556
COMMERCE AND OTHER	9381	9761	10255	10746	11293	12038	12455	13200	13489	14165	14847	15873	17369	18221	19813	21363
TRANSPORTATION	24930	25301	26829	30578	30228	30566	32109	32311	33843	33941	35303	37068	40569	43928	45976	48193
AGRICULTURE	6461	6418	6860	6864	7472	7613	7690	7259	7526	7497	7942	8234	8785	9155	9586	9583
INDUSTRY	50524	56150	59931	64131	66551	68779	69256	65718	67179	68475	71751	75209	76563	79205	82733	84428
MINING	1877	2262	2366	2505	2529	2544	2455	2484	2410	2517	2580	2821	2814	2837	2994	3247
TRANSFORMATION INDUSTRY	48647	53888	57565	61626	64022	66235	66801	63234	64769	65958	69171	72388	73749	76368	79739	81181
NON-METALS	5207	5125	5390	6214	6115	5910	5893	5492	5527	5088	5362	5460	5865	6599	7331	7538
FERROUS AND NON-FERROUS	15541	19126	21207	23286	24733	27116	28372	25292	26528	26913	28339	28656	28517	28852	28605	27818
CHEMICAL	5567	6062	6726	6790	6830	6910	6819	6874	6818	7011	7203	7506	7724	8174	9037	9070
FOODS AND BEVERAGES	10554	10817	10581	10652	11239	10587	9797	10320	10478	11554	11745	13210	13684	14323	15104	16706
TEXTILES	1900	1977	2162	2343	2326	2424	2495	2476	2406	2357	2511	2488	2397	2327	2276	2256
PAPER AND PULP	3898	4038	4475	4718	4738	4992	5168	5133	5497	6128	6486	6709	6799	7057	7215	7557
OTHERS	5980	6743	7024	7623	8041	8296	8257	7647	7515	6907	7525	8359	8763	9036	10171	10236
ENERGY SECTOR	9478	10858	12547	12050	13774	13366	13641	13181	13878	13708	13840	14625	14258	15393	16967	16194
RESIDENTIAL	24665	25211	24939	24957	26414	26714	27167	27730	28498	28895	28590	29052	30821	32500	34041	35749
UNIDENTIFIED CONSUMPTION	121	0	0	0	101	90	89	303	0	139	0	0	0	0	377	62

(1) Includes commerce and public

(3) Includes cement and ceramics

(2) Includes mining and pelletization

(4) Includes pig-iron and steel, ferro-alloys and non-ferrous

TABLE 7.4

GROSS NATIONAL PRODUCT BY SECTOR (*)

UNIT: 10⁶ US\$ (98)

SECTOR	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	506235	533571	575190	618329	639971	639331	659789	631418	633313	628246	654632	693910	723610	744667	772071	773229
SERVICES	256800	269317	287176	310882	321161	327353	337628	334765	338055	338152	349990	366588	388554	401557	408463	411323
COMMERCE AND OTHER	237525	249617	265814	287067	295523	300685	310510	308659	311684	311157	322039	337359	358099	370242	375756	376718
TRANSPORTATION	19275	19700	21362	23815	25638	26669	27118	26106	26371	26995	27951	29229	30455	31314	32708	34605
AGRICULTURE	57074	58920	64579	59201	68150	68844	70063	67058	67831	71836	71012	76571	80504	83011	85244	85551
INDUSTRY	161067	170549	185425	208738	209727	201831	209019	187683	184455	174889	188473	203284	207220	210959	222597	220422
MINING	4569	5811	6320	6509	6469	6525	6646	6724	6660	6855	6894	7387	7355	7569	8084	8246
TRANSFORMATION INDUSTRY	156499	164738	179105	202229	203258	195306	202373	180959	177795	168035	181579	195898	199865	203390	214514	212176
NON-METALS	7066	7110	7691	9039	9223	8812	9095	8120	8168	7561	7965	8354	8625	9113	9448	9590
FERROUS AND NON-FERROUS	14497	16623	17877	20061	20090	19365	20307	17768	17579	17380	19643	21543	21359	22237	23474	22224
CHEMICAL	17002	18566	19472	20109	20794	19865	19730	17506	18156	17977	18769	19949	19872	20450	21203	20885
FOODS AND BEVERAGES	18457	18475	18734	19267	20290	19825	20298	20693	21353	21114	21407	22066	23981	25156	26266	25965
TEXTILES	15894	15843	17515	19454	18552	17293	17590	15499	14562	13934	13946	14337	13531	12748	12935	11983
PAPER AND PULP	4966	5347	5707	6319	6529	6402	6892	6462	6748	6820	7157	7361	7390	7553	7831	7796
OTHER	78617	82774	92108	107980	107780	103744	108461	94912	91230	83250	92692	102288	105107	106134	113356	113734
ENERGY SECTOR	18118	20899	23004	23402	24252	24678	25757	25846	26503	27031	28000	29280	30157	31965	35494	36878
SALES TAXES	13176	13887	15006	16107	16680	16624	17322	16066	16469	16337	17158	18187	17175	17175	20272	19056

(*) Constant prices of 1998

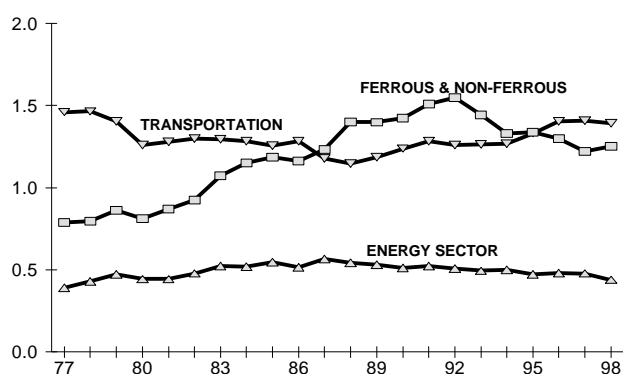
TABLE 7.5

FINAL ENERGY CONSUMPTION PER ADDED VALUE OF THE SECTOR

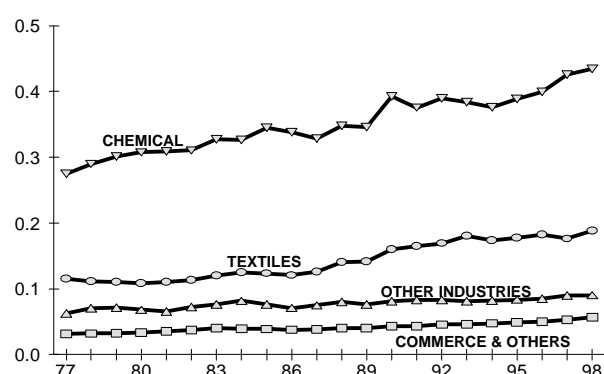
UNIT: toe/10³ US\$(98)

SECTOR	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL ENERGY CONSUMPTION	0.248	0.251	0.246	0.241	0.244	0.249	0.246	0.253	0.260	0.266	0.263	0.259	0.260	0.266	0.271	0.279
SERVICES	0.134	0.130	0.129	0.133	0.129	0.130	0.132	0.136	0.140	0.142	0.143	0.144	0.149	0.155	0.161	0.169
COMMERCE AND OTHER	0.039	0.039	0.039	0.037	0.038	0.040	0.040	0.043	0.043	0.046	0.046	0.047	0.049	0.049	0.053	0.057
TRANSPORTATION	1.293	1.284	1.256	1.284	1.179	1.146	1.184	1.238	1.283	1.257	1.263	1.268	1.332	1.403	1.406	1.393
AGRICULTURE	0.113	0.109	0.106	0.116	0.110	0.111	0.110	0.108	0.111	0.104	0.112	0.108	0.109	0.110	0.112	0.112
INDUSTRY	0.314	0.329	0.323	0.307	0.317	0.341	0.331	0.350	0.364	0.392	0.381	0.370	0.369	0.375	0.372	0.383
MINING	0.411	0.389	0.374	0.385	0.391	0.390	0.369	0.369	0.362	0.367	0.374	0.382	0.383	0.375	0.370	0.394
TRANSFORMATION INDUSTRY	0.311	0.327	0.321	0.305	0.315	0.339	0.330	0.349	0.364	0.393	0.381	0.370	0.369	0.375	0.372	0.383
NON-METALS	0.737	0.721	0.701	0.687	0.663	0.671	0.648	0.676	0.677	0.673	0.673	0.654	0.680	0.724	0.776	0.786
FERROUS AND NON-FERROUS	1.072	1.151	1.186	1.161	1.231	1.400	1.397	1.423	1.509	1.548	1.443	1.330	1.335	1.297	1.219	1.252
CHEMICAL	0.327	0.327	0.345	0.338	0.328	0.348	0.346	0.393	0.376	0.390	0.384	0.376	0.389	0.400	0.426	0.434
FOODS AND BEVERAGES	0.572	0.585	0.565	0.553	0.554	0.534	0.483	0.499	0.491	0.547	0.549	0.599	0.571	0.569	0.575	0.643
TEXTILES	0.120	0.125	0.123	0.120	0.125	0.140	0.142	0.160	0.165	0.169	0.180	0.174	0.177	0.183	0.176	0.188
PAPER AND PULP	0.785	0.755	0.784	0.747	0.726	0.780	0.750	0.794	0.815	0.899	0.906	0.911	0.920	0.934	0.921	0.969
OTHER	0.076	0.081	0.076	0.071	0.075	0.080	0.076	0.081	0.082	0.083	0.081	0.082	0.083	0.085	0.090	0.090
ENERGY SECTOR	0.523	0.520	0.545	0.515	0.568	0.542	0.530	0.510	0.524	0.507	0.494	0.499	0.473	0.482	0.478	0.439

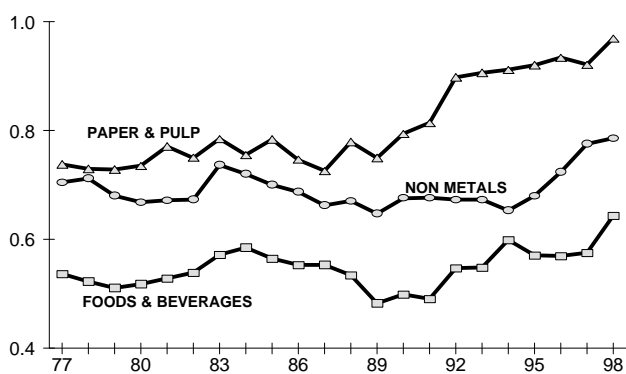
FINAL ENERGY CONSUMPTION / A. VALUE

toe/10³ US\$

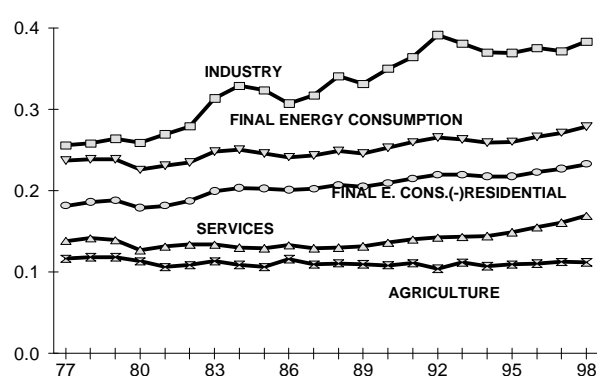
FINAL ENERGY CONSUMPTION / A. VALUE

toe/10³ US\$

FINAL ENERGY CONSUMPTION / A. VALUE

toe/10³ US\$

FINAL ENERGY CONSUMPTION / A. VALUE

toe/10³ US\$

RESIDENTIAL SECTOR - ENERGY/POPULATION

SPECIFICATION	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
FINAL EN. CONSUMPTION	10 ³ toe (1)	24665	25211	24939	24957	26414	26714	27167	27730	28498	28895	28590	29052	30821	32500	34041	35749
ENE. CONS. FOR COOKING	10 ³ toe (2)	15831	16045	15290	14416	15123	14801	14339	13488	13570	13749	12932	12724	12269	12360	12462	12632
ELECTRICITY CONSUMP.	Gwh (3)	29734	30928	32634	35755	38379	40534	43728	48666	51038	51866	53628	55952	63579	69055	74069	79359
TOTAL USABLE EN. CONS.	10 ³ toe (4)	3514	3567	3743	3956	4196	4411	4633	4883	5054	5183	5318	5422	5862	6226	6476	6728
USABLE EN. FOR COOKING	10 ³ toe (5)	2138	2137	2233	2302	2421	2536	2610	2631	2691	2783	2831	2823	2902	3005	3020	3025
(1)/CAPITA	toe/capita	0.194	0.194	0.188	0.185	0.192	0.191	0.191	0.192	0.194	0.194	0.189	0.190	0.199	0.207	0.214	0.222
(2)/CAPITA	toe/capita	0.124	0.123	0.115	0.107	0.110	0.106	0.101	0.093	0.092	0.092	0.086	0.083	0.079	0.079	0.078	0.078
(3)/CAPITA	MWh/capita	0.234	0.238	0.246	0.264	0.279	0.289	0.307	0.336	0.348	0.348	0.355	0.366	0.410	0.440	0.466	0.493
(4)/CAPITA	toe/capita	0.028	0.027	0.028	0.029	0.030	0.031	0.033	0.034	0.034	0.035	0.035	0.035	0.038	0.040	0.041	0.042
(5)/CAPITA	toe/capita	0.017	0.016	0.017	0.017	0.018	0.018	0.018	0.018	0.018	0.019	0.019	0.018	0.019	0.019	0.019	0.019

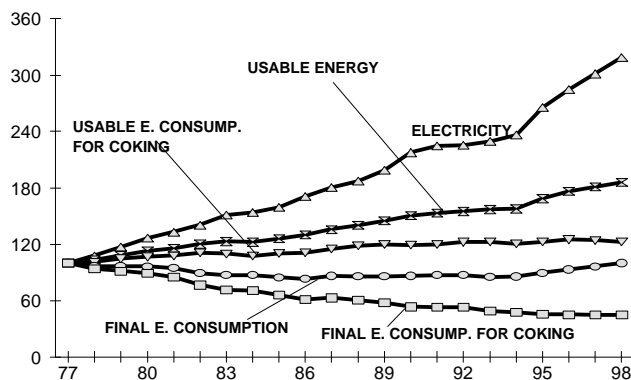
(1) Electricity=3132 kcal/kWh

(4) Electri

(2) LPG, gasworks gas, firewood and charcoal

RESIDENTIAL SECTOR - CONS. PER CAPITA

1977=100



RESIDENTIAL SECTOR

10⁶ toe

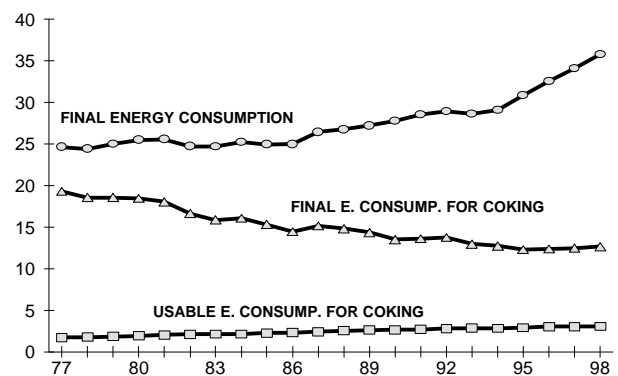


TABLE 7.7

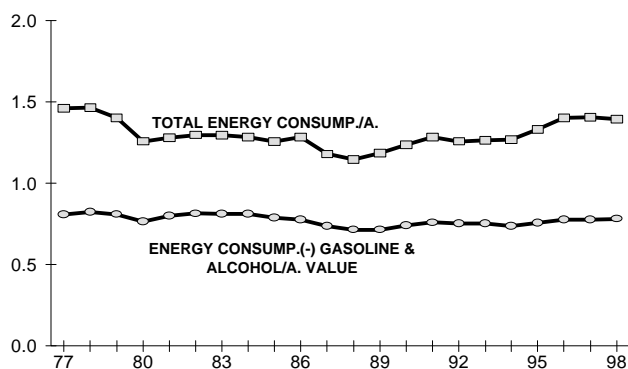
TRANSPORTATION SECTOR - ENERGY/ADDED VALUE

SPECIFICATION	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ENERGY CONSUMP.-TOTAL	10 ³ toe (1)	24930	25301	26829	30578	30228	30566	32109	32311	33843	33941	35303	37068	40569	43928	45976	48193
ENERGY CONSUMPTION (*)	10 ³ toe (2)	15651	15965	16824	18508	18913	19046	19390	19323	20003	20263	20972	21550	23046	24278	25376	27036
ADDED VALUE	10 ⁹ US\$	19.3	19.7	21.4	23.8	25.6	26.7	27.1	26.1	26.4	27.0	28.0	29.2	30.5	31.3	32.7	34.6
(1)/ADDED VALUE	toe/10 ³ US\$	1.29	1.28	1.26	1.28	1.18	1.15	1.18	1.24	1.28	1.26	1.26	1.27	1.33	1.40	1.41	1.39
(2)/ADDED VALUE	toe/10 ³ US\$	0.81	0.81	0.79	0.78	0.74	0.71	0.72	0.74	0.76	0.75	0.75	0.74	0.76	0.78	0.78	0.78
(1)/GDP	toe/10 ³ US\$	0.049	0.047	0.047	0.049	0.047	0.048	0.049	0.051	0.053	0.054	0.054	0.053	0.056	0.059	0.060	0.062

(*) Excluding gasoline and alcohol

TRANSPORTATION SECTOR

toe/10³



TRANSPORTATION SECTOR

10⁶ toe

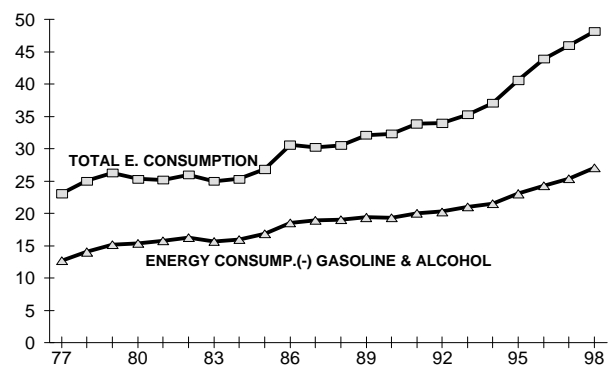


TABLE 7.8

SPECIFIC CONSUMPTION OF ENERGY IN SELECTED SECTORS

SECTOR		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
CEMENT	C	2567	2303	2562	2970	2933	2848	2743	2819	2942	2496	2560	2590	2974	3486	3968	4129
	P	20870	19497	20612	25257	25457	24819	25329	25848	27490	23899	24843	25229	28231	34598	38096	39951
	C/P	0.123	0.118	0.124	0.118	0.115	0.115	0.108	0.109	0.107	0.104	0.103	0.103	0.105	0.101	0.104	0.103
FERROUS AND NON-FERROUS (a)+(b)+(c)	C	15541	19126	21207	23286	24733	27116	28372	25292	26528	26913	28339	28656	28517	28852	28605	27818
	P	17116	21324	23764	25111	26041	28871	29155	24437	26568	27897	29488	30250	29338	29574	30292	29614
	C/P	0.908	0.897	0.892	0.927	0.950	0.939	0.973	1.035	0.998	0.965	0.961	0.947	0.972	0.976	0.944	0.939
a) PIG-IRON AND STEEL (1)	C	10035	12700	13690	14556	15489	16873	17616	14575	15015	15071	16191	16851	16606	16342	16861	16574
	P	14671	18385	20450	21240	22228	24657	25055	20567	22617	23934	25207	25747	25068	25238	26153	25750
	C/P	0.684	0.691	0.669	0.685	0.697	0.684	0.703	0.709	0.664	0.630	0.642	0.654	0.662	0.648	0.645	0.644
b) NON-FERROUS AND OTHER METALS	C	4221	4959	5871	6829	7300	7995	8201	8515	9195	9196	9486	9459	9664	9873	9467	9337
	P	1846	2247	2541	3057	2989	3241	3068	2931	3016	2944	3261	3567	3398	3337	3269	3132
	C/P	2.287	2.207	2.311	2.234	2.442	2.467	2.673	2.905	3.049	3.124	2.909	2.652	2.844	2.959	2.896	2.981
c) FERRO-ALLOYS	C	1285	1467	1646	1901	1944	2248	2555	2202	2318	2646	2662	2346	2247	2637	2277	1907
	P	598.6	691.9	773.3	814.1	823.7	973	1032	939	935	1019	1020	936	872	999	870	732
	C/P	2.147	2.120	2.129	2.335	2.360	2.310	2.476	2.345	2.479	2.597	2.610	2.506	2.577	2.640	2.617	2.605
PAPER AND PULP	C	3898	4038	4475	4718	4738	4992	5168	5133	5497	6128	6486	6709	6799	7057	7215	7501
	P	6682.4	7344	7737.4	8439.3	8766.6	8874.5	9241.6	9066.9	9692.2	10203	10772	11482	11734	12401	12849	13243
	C/P	0.583	0.550	0.578	0.559	0.540	0.563	0.559	0.566	0.567	0.601	0.602	0.584	0.579	0.569	0.562	0.566
ENERGY SECTOR (2)	C	9478	10858	12547	12050	13774	13366	13641	13181	13878	13708	13840	14625	14256	15391	16967	16194
	P	112884	123192	130208	136474	141009	144418	147223	145180	147664	149101	153623	160767	162087	171543	189671	195896
	C/P	0.084	0.088	0.096	0.088	0.098	0.093	0.093	0.091	0.094	0.092	0.090	0.091	0.088	0.090	0.089	0.083
T O T A L	C	31484	36325	40791	43024	46178	48322	49924	46425	48845	49245	51225	52580	52546	54786	56755	55642
	P	156965	170453	181267	194186	200244	206547	210474	204340	210964	209964	217646	226449	230428	247197	269793	277862
	C/P	0.201	0.213	0.225	0.222	0.231	0.234	0.237	0.227	0.232	0.235	0.235	0.232	0.228	0.222	0.210	0.200

C = Energy consumption in 10³ toe and P = Physical production in 10³ t.

(1) Steel production.

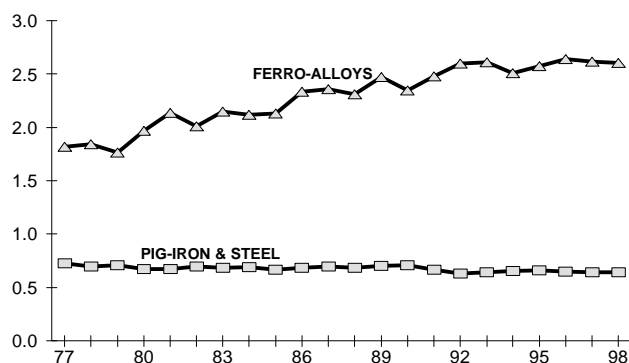
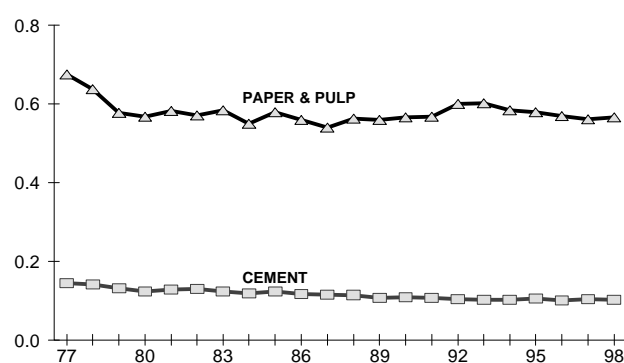
(2) Secondary energy production in 10³ toe.SPECIFIC CONSUMPTION OF ENERGY
toe/tSPECIFIC CONSUMPTION OF ENERGY
toe/t

TABLE 7.9

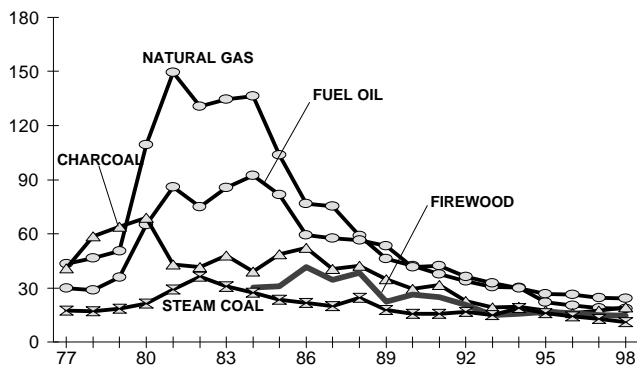
CONSTANT AVERAGE PRICES OF ENERGY SOURCES (*)

UNIT: R\$ of 1998/physical unit

S O U R C E S	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
IMPORTED PETROLEUM	b	37.1	35.8	34.5	17.6	22.5	18.5	21.0	27.0	23.6	21.8	19.0	18.0	19.6	23.6	21.8	13.5
IMPORTED PETROLEUM	m3	233.1	225.4	216.8	110.4	141.7	116.3	131.8	169.6	148.7	137.2	119.3	113.1	123.4	148.2	137.3	85.0
DIESEL OIL	m3	1426.8	1445.5	1270.9	949.2	847.5	932.2	657.8	576.6	534.1	669.6	522.7	493.9	428.5	395.7	405.1	410.0
FUEL OIL	t	694.6	713.2	646.6	477.6	462.9	452.8	421.1	330.5	330.1	283.7	255.5	233.2	208.7	206.5	192.1	188.9
GASOLINE	m3	2216.9	2096.9	1827.6	1748.3	2135.2	1820.3	1252.0	1178.3	1047.5	1031.0	773.0	713.3	629.0	672.8	758.4	863.3
ALCOHOL	m3	1303.3	1312.3	1186.5	1135.9	1391.4	1237.8	939.0	884.7	784.8	809.1	609.4	576.2	507.6	553.4	649.5	725.8
LPG	t	1117.2	1191.0	1024.7	722.6	784.3	662.5	576.7	514.0	568.2	681.1	540.3	521.3	445.2	577.0	638.9	788.5
NATURAL GAS - INDUSTRY	mil m3	970.2	984.3	748.0	553.6	543.0	426.9	334.7	303.4	271.0	241.5	219.1	217.1	157.2	145.6	135.5	133.2
INDUSTRIAL ELECTRICITY	MWh	124.5	122.7	119.8	122.2	153.7	139.7	119.7	108.6	97.0	96.8	72.3	73.1	61.3	64.8	65.1	67.1
RESIDENTIAL ELECTRICITY	MWh	200.7	183.1	166.2	153.8	223.7	176.2	131.4	143.7	167.5	160.3	115.5	119.0	110.1	140.7	146.9	154.7
STEAM COAL	t	102.1	93.3	82.3	75.6	68.6	83.7	62.9	52.9	52.8	56.5	50.0	63.9	53.8	48.6	43.0	36.9
CHARCOAL	m3	63.7	52.2	64.4	69.5	53.7	56.1	46.4	38.9	41.6	30.0	25.3	25.8	22.8	21.0	22.8	25.4
NATIVE FIREWOOD	m3	-	20.0	22.3	27.6	19.6	26.4	15.9	18.5	17.5	14.5	9.1	10.1	13.0	14.8	13.5	13.3
FIREWOOD FROM REFORESTATION	m3	-	30.6	30.8	41.7	34.7	38.7	22.5	26.2	24.8	20.5	14.8	15.8	16.9	16.0	14.8	14.6
INFLATION (1998=100)		1.3E-08	4.1E-08	1.3E-07	3.3E-07	1.1E-06	8.3E-06	1.2E-04	3.4E-03	1.7E-02	2.2E-01	6.1E+00	7.3E+01	8.4E+01	9.1E+01	9.8E+01	1.0E+02

(*) constant prices of 1998 - national money

CONSTANT AVERAGE PRICES
US\$/boe



CONSTANT AVERAGE PRICES
US\$/boe

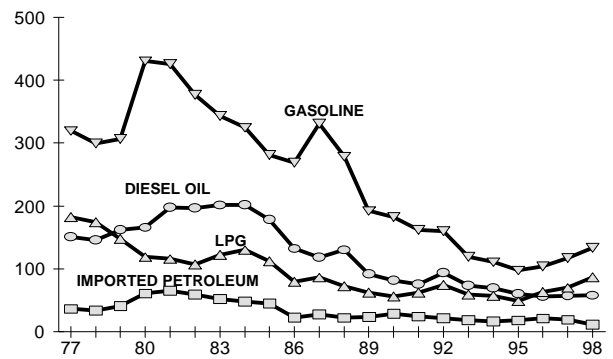


TABLE 7.10

CONSTANT AVERAGE PRICES OF ENERGY SOURCES (1)

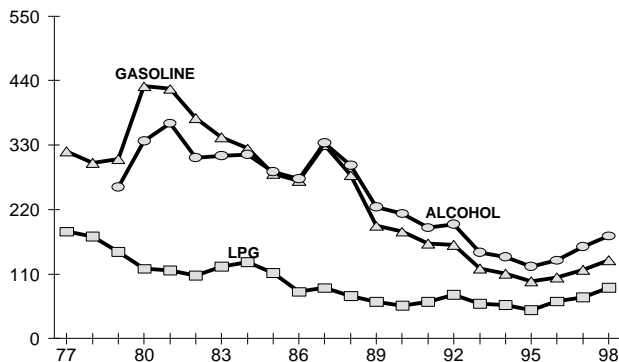
UNIT: US\$ of 1998 / boe

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
IMPORTED PETROLEUM (2)	31.9	30.9	29.7	15.1	19.4	15.9	18.1	23.2	20.4	18.8	16.3	15.5	16.9	20.3	18.8	11.7
IMPORTED PETROLEUM	52.3	48.5	45.0	22.5	27.9	22.0	23.8	29.0	24.4	21.9	18.5	17.1	18.1	21.1	19.1	11.7
DIESEL OIL	201.5	201.8	178.7	132.2	118.3	130.1	91.8	81.2	75.2	94.3	73.6	69.6	60.4	55.7	57.1	57.8
FUEL OIL	85.6	92.5	81.6	59.3	57.5	56.6	53.4	41.7	42.1	36.2	32.6	29.7	26.6	26.3	24.5	24.1
GASOLINE	343.3	324.4	281.2	269.0	330.7	278.8	192.0	182.6	162.3	159.8	119.8	110.5	97.5	104.3	117.5	133.8
ALCOHOL	312.1	313.5	284.2	272.0	333.2	295.4	224.1	213.1	189.0	194.9	146.8	138.8	122.3	133.3	156.4	174.8
LPG	122.8	130.2	112.1	79.5	86.2	72.5	62.4	56.4	62.3	74.7	59.3	57.2	48.8	63.3	70.1	86.5
NATURAL GAS - INDUSTRY	134.5	136.1	103.7	76.7	75.3	59.0	46.2	42.3	37.8	33.7	30.5	30.3	21.9	20.3	18.9	18.6
INDUSTRIAL ELECTRICITY	185.8	182.7	178.7	182.4	229.2	207.7	178.0	162.9	145.6	145.2	108.5	109.7	92.0	97.3	97.7	100.6
RESIDENTIAL ELECTRICITY	299.4	272.4	247.9	229.5	333.7	262.0	195.3	215.6	251.3	240.5	173.3	178.5	165.2	211.1	220.3	232.0
STEAM COAL	30.8	27.1	23.5	21.7	19.9	24.4	17.9	15.6	15.7	16.8	14.8	19.0	16.0	14.4	12.8	11.0
CHARCOAL	48.1	39.3	48.6	52.4	40.5	42.2	34.8	29.5	31.5	22.7	19.2	19.6	17.3	16.0	17.3	19.3
NATIVE FIREWOOD	-	19.9	22.2	27.5	19.5	26.2	15.7	18.5	17.5	14.5	9.1	10.1	13.0	14.8	13.5	13.3
FIREWOOD FROM REFORESTATION	-	30.4	30.7	41.5	34.5	38.4	22.3	26.3	24.9	20.6	14.8	15.9	16.9	16.0	14.9	14.6

(1) Constant prices of 1998

(2) Current prices

CONSTANT AVERAGE PRICES
US\$/boe



CONSTANT AVERAGE PRICES
US\$/boe

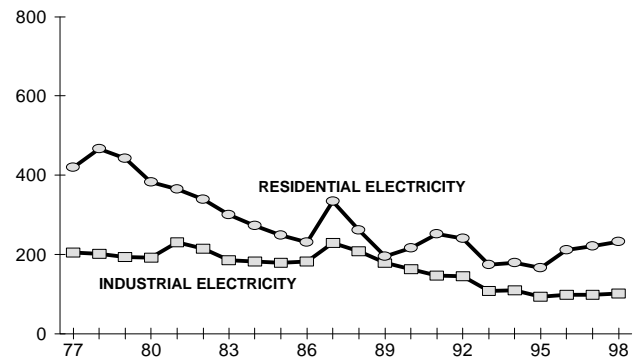


TABLE 7.11

RELATIONS OF PRICES BETWEEN ENERGY SOURCES

SOURCES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
GASOLINE/PETROLEUM	6.6	6.7	6.2	12.0	11.9	12.7	8.1	6.3	6.7	7.3	6.5	6.5	5.4	4.9	6.1	11.5
GASOLINE/DIESEL OIL	1.7	1.6	1.6	2.0	2.8	2.1	2.1	2.2	2.2	1.7	1.6	1.6	1.6	1.9	2.1	2.3
GASOLINE/FUEL OIL	4.0	3.5	3.4	4.5	5.8	4.9	3.6	4.4	3.9	4.4	3.7	3.7	3.7	4.0	4.8	5.6
GASOLINE/LPG	2.8	2.5	2.5	3.4	3.8	3.8	3.1	3.2	2.6	2.1	2.0	1.9	2.0	1.6	1.7	1.5
GASOLINE/ALCOHOL	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
DIESEL OIL/PETROLEUM	3.9	4.2	4.0	5.9	4.2	5.9	3.9	2.8	3.1	4.3	4.0	4.1	3.3	2.6	3.0	5.0
FUEL OIL/STEAM COAL	2.8	3.4	3.5	2.7	2.9	2.3	3.0	2.7	2.7	2.2	2.2	1.6	1.7	1.8	1.9	2.2
IND. ELECTRIC./FUEL OIL	2.2	2.0	2.2	3.1	4.0	3.7	3.3	3.9	3.5	4.0	3.3	3.7	3.5	3.7	4.0	4.2
RESID. ELECTRIC./LPG	2.4	2.1	2.2	2.9	3.9	3.6	3.1	3.8	4.0	3.2	2.9	3.1	3.4	3.3	3.1	2.7
FUEL NATURAL GAS/FUEL OIL	1.6	1.5	1.3	1.3	1.3	1.0	0.9	1.0	0.9	0.9	0.9	1.0	0.8	0.8	0.8	0.8

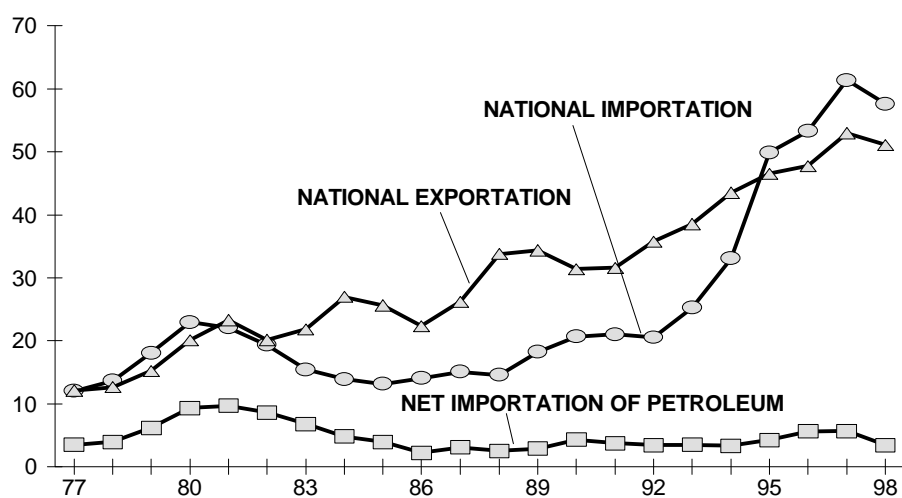
TABLE 7.12

FOREIGN TRADE10⁶ US\$ (FOB)

SPECIFICATION		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM AND DERIVATIVES																	
IMPORT		8146.0	6891.3	5749.3	3020.2	4129.5	3545.8	3779.1	5051.5	4321.2	4096.9	4363.5	4148.2	4759.0	6139.6	6210.4	4000.0
EXPORT		1354.8	2053.3	1833.2	796.6	1065.5	987.0	923.0	759.3	520.8	618.6	862.5	798.6	500.4	474.3	492.2	541.0
NET IMPORT	(a)	6791.2	4838.0	3916.1	2223.6	3064.0	2558.8	2856.1	4292.2	3800.4	3478.3	3501.0	3349.6	4258.6	5665.3	5718.2	3459.0
TOTAL NATIONAL IMPORT	(b)	15429	13916	13153	14044	15052	14605	18263	20661	21041	20554	25256	33079	49858	53286	61358	57600
TOTAL NATIONAL EXPORT	(c)	21899	27005	25639	22349	26224	33789	34383	31414	31620	35793	38563	43545	46506	47747	52986	51100
(a)/(b)	(%)	44.0	34.8	29.8	15.8	20.4	17.5	15.6	20.8	18.1	16.9	13.9	10.1	8.5	10.6	9.3	6.0
(a)/(c)	(%)	31.0	17.9	15.3	9.9	11.7	7.6	8.3	13.7	12.0	9.7	9.1	7.7	9.2	11.9	10.8	6.8

(*) includes alcohol and methanol imported by PETROBRAS

(**) includes foreign navy supplying

FOREIGN TRADE10⁹ US\$(FOB)

**ENERGY DATA
RELATING TO
BRAZILIAN STATES
1983/1998**

8

White page

TABLE 8.1.a

PRIMARY ENERGY PRODUCTION

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	115445	127783	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	2616	2949	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	157	164	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	81	86	87	96	103	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	501	518	532	595	610	624	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	18	20	25	27	28	30	32	34	36	38	40	nd	nd	nd	nd	nd
PARÁ	1804	2104	3799	4874	6053	6944	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	55	57	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	29845	32364	33164	33535	34420	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	858	929	949	886	896	878	912	952	860	920	nd	nd	nd	nd	nd	nd
PIAUÍ	273	292	269	256	251	249	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	1889	2680	2631	2513	2345	2100	2204	2166	2161	2252	1921	1885	1832	nd	nd	nd
RIO GRANDE DO NORTE	2021	2325	2615	3419	3901	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	845	812	904	810	817	774	785	635	682	578	579	440	555	568	nd	nd
PERNAMBUCO	3816	3946	4310	3756	4633	3648	3596	3991	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	5393	5829	6148	6053	6784	5029	5181	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	3302	3554	3611	3597	3507	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	11448	11997	11727	12245	11286	11526	12218	12555	12451	13326	13605	13815	nd	nd	nd	nd
SOUTHEAST	63168	70537	78640	78256	76505	78680	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	21970	23341	24522	25132	21955	24661	24777	21962	23375	22468	22397	23432	24527	33414	nd	nd
ESPÍRITO SANTO	2463	2594	2577	2372	2178	2253	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	11403	16815	21447	22442	22500	21536	22781	25046	25778	25333	26383	27447	28957	33171	36550	nd
SÃO PAULO	27332	27787	30094	28310	29872	30230	30132	28739	32261	31804	32685	32215	33487	34496	36643	nd
SOUTH	15728	17487	16918	19283	22764	22209	24664	26028	23201	24976	nd	nd	nd	nd	nd	nd
PARANÁ	7700	9102	8583	10983	14615	14048	16627	19246	16742	17949	20302	22590	24717	28309	28504	nd
SABTA CATARINA	4059	4335	4308	4179	4002	4174	3945	2818	2808	2893	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	3969	4050	4027	4121	4147	3987	4092	3964	3651	4134	4305	4356	4178	4103	nd	nd
MIDDLE-WEST	4088	4446	4892	4897	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	570	778	921	990	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	369	379	394	557	633	633	688	744	723	662	732	836	nd	nd	nd	nd
GOIAS	3080	3232	3528	3307	2672	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	69	57	49	43	48	54	63	49	51	59	46	52	41	30	50	41

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.1.b

PRIMARY ENERGY PRODUCTION

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	2.3	2.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	25.9	25.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	54.7	55.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	13.6	13.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	3.5	3.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.2.a

FINAL ENERGY CONSUMPTION

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	127986	136004	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	4711	4745	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	415	438	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	116	121	140	162	166	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	1272	1162	1221	1414	1528	1539	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	50	54	65	72	76	86	103	102	114	119	133	nd	nd	nd	nd	nd
PARÁ	2779	2890	3105	3868	4338	4338	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	79	80	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	24523	25848	27613	29171	29619	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	1044	1268	1699	2296	2367	2525	2642	2785	2913	3033	nd	nd	nd	nd	nd	nd
PIAUÍ	496	499	506	598	526	589	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	2158	2208	2355	2582	2693	2560	2815	2862	2927	3073	3120	3210	3427	nd	nd	nd
RIO GRANDE DO NORTE	987	932	1051	1188	1278	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	1190	1148	1201	1272	1222	1212	1213	1311	1354	1273	1347	1300	1511	1607	nd	nd
PERNAMBUCO	4835	4912	5115	5190	5499	4993	5411	5553	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	2800	2875	3158	2960	3317	2704	3321	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	1015	1214	1228	1246	1353	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	9998	10792	11300	11839	11364	13001	13391	12599	13216	14213	14922	14974	nd	nd	nd	nd
SOUTHEAST	75324	80846	86522	91815	93512	97666	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	17563	19087	20977	22591	22614	24578	25303	24465	25302	24953	25942	26632	27643	28175	nd	nd
ESPÍRITO SANTO	2598	4507	4898	5405	5206	5166	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	14498	15028	15950	16924	17172	17488	17964	17661	17699	17471	17613	18238	18885	19407	20264	nd
SÃO PAULO	40665	42224	44697	46895	48520	50434	50918	51110	53114	53351	55712	58415	60674	64208	68271	nd
SOUTH	17672	18194	19528	21076	22004	22072	23485	23281	23592	24651	nd	nd	nd	nd	nd	nd
PARANÁ	7639	7948	8727	9335	9787	9968	10200	10419	10567	10853	11520	12129	12688	13596	14286	nd
SABTA CATARINA	4179	4282	4553	4931	5179	5057	5360	5399	5772	5984	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	5854	5964	6248	6810	7038	7047	7925	7463	7253	7814	8034	8230	8374	8567	nd	nd
MIDDLE-WEST	5756	6371	6889	7885	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	1254	1445	1604	1744	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	1024	1120	1241	1608	1770	1836	2278	2284	2118	2099	2202	2437	nd	nd	nd	nd
GOIAS	2484	2796	2984	3379	3180	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	994	1010	1060	1154	1200	1247	1271	1347	1442	1459	1532	1620	1772	1917	2046	2195

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.2.b

FINAL ENERGY CONSUMPTION

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	3.7	3.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	19.2	19.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	58.9	59.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	13.8	13.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	4.5	4.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.3.a

FINAL ENERGY CONSUMPTION

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	50259	55240	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	723	710	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	50	48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	13	13	17	22	26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	129	116	126	193	207	227	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	4	5	8	8	9	11	11	7	12	12	14	nd	nd	nd	nd	nd
PARÁ	498	502	596	1104	1413	1447	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	29	26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	9226	9876	10256	10956	11086	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	195	393	765	1251	1274	1360	1606	1665	1915	1940	nd	nd	nd	nd	nd	nd
PIAUÍ	59	53	54	61	63	66	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	658	726	783	837	906	757	952	965	1002	1018	959	914	942	nd	nd	nd
RIO GRANDE DO NORTE	245	223	281	338	307	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	266	258	262	259	247	263	332	393	360	360	366	340	395	434	nd	nd
PERNAMBUCO	2131	2349	2300	2168	2346	2051	2245	2259	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	1445	1421	1184	1066	1391	1094	1193	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	264	329	383	392	398	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	3963	4124	4244	4584	4154	4700	4934	4647	4489	4982	5385	5589	nd	nd	nd	nd
SOUTHEAST	33586	37665	40243	42767	43563	46260	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	9591	10788	12157	12894	13291	15047	15596	14555	15012	14577	15150	15463	15647	15584	nd	nd
ESPÍRITO SANTO	1369	3143	3425	3798	3671	3514	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	4821	4994	5417	5868	5954	6108	5937	5598	5811	5896	5896	6200	6192	6071	6120	nd
SÃO PAULO	17805	18740	19244	20207	20647	21591	21409	20922	21774	21817	23028	24239	24763	25021	26570	nd
SOUTH	5784	5931	6566	7268	7611	7486	7745	6541	7485	7886	nd	nd	nd	nd	nd	nd
PARANÁ	2463	2581	2931	3185	3325	3451	3487	2598	3520	3589	3875	4056	4237	4518	4803	nd
SABTA CATARINA	1738	1709	1858	2042	2194	2059	2202	2127	2226	2410	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	1583	1641	1777	2041	2092	1976	2056	1816	1739	1887	2079	2135	2084	2119	nd	nd
MIDDLE-WEST	940	1058	1172	1240	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	153	172	197	192	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	89	91	103	116	106	146	151	177	191	220	281	341	nd	nd	nd	nd
GOIAS	605	701	760	796	785	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	93	94	112	136	147	145	140	144	138	127	145	153	149	173	210	233

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.3.b

FINAL CONSUMPTION OF ENERGY BY INDUSTRY

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	1.4	1.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	18.4	17.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	66.8	68.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	11.5	10.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	1.9	1.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.4.a

FINAL CONSUMPTION OF ENERGY BY TRANSPORT

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	24539	25271	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	954	1023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	100	102	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	12	9	15	33	35	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	258	268	284	360	355	332	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	16	17	15	20	18	24	34	27	32	31	37	nd	nd	nd	nd	nd
PARÁ	551	609	633	742	767	752	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	17	18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	3434	3354	3703	4351	4191	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	242	227	256	338	334	361	476	469	349	402	nd	nd	nd	nd	nd	nd
PIAUÍ	137	143	160	200	169	182	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	418	380	383	480	422	439	472	456	463	600	674	711	764	nd	nd	nd
RIO GRANDE DO NORTE	184	173	180	193	215	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	202	195	209	255	209	213	223	225	253	261	278	282	342	358	nd	nd
PERNAMBUCO	744	657	696	826	815	767	708	862	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	225	224	240	274	278	243	235	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	141	152	202	208	229	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	1141	1203	1377	1577	1520	1547	1580	1596	1667	1595	1681	1737	nd	nd	nd	nd
SOUTHEAST	14065	14383	15314	17199	17373	17928	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	2312	2420	2645	3120	3173	3278	3297	3377	3807	3620	3925	4003	4499	4826	nd	nd
ESPÍRITO SANTO	383	521	564	683	621	679	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	3594	3635	3815	4132	4116	4137	4660	4366	4097	3748	3814	3983	4224	4457	4584	nd
SÃO PAULO	7776	7807	8290	9264	9463	9834	10165	10276	10856	10934	11329	12413	13242	14892	15751	nd
SOUTH	4278	4309	4527	5149	5321	5274	6040	5853	6160	6264	nd	nd	nd	nd	nd	nd
PARANÁ	1724	1806	1947	2153	2254	2238	2323	2363	2540	2547	2786	3038	3186	3421	3621	nd
SABTA CATARINA	843	851	893	1016	1003	1028	1074	1154	1306	1233	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	1711	1652	1687	1980	2064	2008	2643	2336	2314	2484	2496	2566	2719	2936	nd	nd
MIDDLE-WEST	1808	2202	2314	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	325	469	509	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	330	480	520	620	690	702	1003	949	829	718	737	806	nd	nd	nd	nd
GOIAS	747	852	873	1075	1018	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	406	401	412	468	474	500	506	537	601	620	643	679	752	814	857	914

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.4.b

FINAL CONSUMPTION OF ENERGY BY TRANSPORT

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	3.9	4.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	14.0	13.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	57.3	56.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	17.4	17.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	7.4	8.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.5.a

FINAL CONSUMPTION OF ENERGY BY RESIDENCE

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	23211	23525	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	1642	1726	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	177	190	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	65	67	71	76	81	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	255	261	276	304	332	356	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	22	23	28	30	33	35	39	45	48	50	54	nd	nd	nd	nd	nd
PARÁ	1104	1165	1228	1320	1414	1488	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	19	20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	5766	5828	5959	6121	6199	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	402	426	442	419	439	459	293	352	358	380	nd	nd	nd	nd	nd	nd
PIAUÍ	190	175	160	173	135	176	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	729	747	804	828	872	890	921	967	958	955	984	1052	1150	nd	nd	nd
RIO GRANDE DO NORTE	268	273	285	309	323	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	367	346	335	331	310	285	364	378	385	391	430	442	480	512	nd	nd
PERNAMBUCO	1404	1396	1409	1464	1458	1492	1622	1680	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	248	260	256	255	232	236	246	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	207	209	178	171	168	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	2141	2171	2250	2344	2397	3146	3214	3313	3416	3468	3540	3588	nd	nd	nd	nd
SOUTHEAST	11125	11156	11474	11971	12445	12773	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	3702	3653	3661	3715	3774	3803	3917	3970	4062	4084	4191	4272	4546	4589	nd	nd
ESPÍRITO SANTO	488	482	478	483	498	507	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	2224	2253	2274	2435	2518	2560	2662	2855	2846	2808	2856	2907	3199	3344	3582	nd
SÃO PAULO	4711	4768	5061	5338	5655	5903	6207	6551	6914	7023	7233	7470	8122	8851	9167	nd
SOUTH	3380	3456	3549	3630	3750	3855	4008	4164	4279	4355	nd	nd	nd	nd	nd	nd
PARANÁ	1262	1284	1340	1349	1416	1470	1516	1587	1634	1650	1698	1714	1826	1935	1979	nd
SABTA CATARINA	864	896	917	946	990	1020	1068	1116	1157	1191	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	1254	1276	1292	1335	1344	1365	1424	1461	1488	1514	1530	1542	1578	1625	nd	nd
MIDDLE-WEST	1298	1359	1388	1620	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	265	311	331	361	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	327	310	289	430	533	545	615	611	586	555	512	500	nd	nd	nd	nd
GOIAS	500	527	551	604	663	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	206	211	217	225	236	250	263	288	310	316	329	346	387	416	446	469

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.5.b

FINAL CONSUMPTION OF ENERGY BY RESIDENCE

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	7.1	7.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	24.8	24.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	47.9	47.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	14.6	14.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	5.6	5.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.6.a

FINAL CONSUMPTION OF ELECTRICITY BY RESIDENCE

GWh

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	30010	31265	32958	36070	38728	40992	43895	48100	51162	51885	53620	55969	63617	69053	74071	79358
NORTH	920	949	1038	1227	1430	1572	1729	1981	2166	2108	2092	2141	2622	2902	3206	3481
RONDÔNIA	81	94	110	141	172	196	227	253	282	273	265	279	359	388	420	453
ACRE	40	42	45	54	62	67	74	84	89	91	94	101	118	134	154	167
AMAZONAS	300	293	317	375	435	479	504	589	642	604	568	586	710	778	879	961
RORAIMA	22	23	26	33	38	42	48	61	65	66	69	73	89	98	125	139
PARÁ	444	461	501	579	669	681	731	836	908	877	879	873	1053	1145	1230	1301
AMAPÁ	33	36	39	45	54	56	59	66	72	71	79	84	105	149	176	203
TOCANTINS (2)	-	-	-	-	-	51	86	92	108	126	138	145	188	210	222	257
NORTHEAST	3857	4009	4278	4857	4835	5291	5950	6665	7056	7191	7417	7748	8958	9744	10532	11691
MARANHÃO	245	273	294	358	394	427	481	544	575	566	576	614	705	766	850	975
PIAUI	179	169	176	214	217	244	270	323	343	357	375	399	444	487	533	596
CEARÁ	567	581	611	686	659	723	806	925	1015	1035	1098	1141	1322	1482	1647	1883
RIO GRANDE DO NORTE	214	221	238	273	273	310	351	394	436	434	458	488	601	658	689	772
PARAÍBA	245	269	283	310	317	338	386	432	462	521	498	522	622	682	740	821
PERNAMBUCO	903	914	955	1103	1066	1155	1313	1422	1579	1587	1626	1696	1961	2121	2288	2465
ALAGOAS	217	234	262	300	283	324	359	451	413	442	463	467	537	589	615	654
SERGIPE	158	176	185	206	210	235	265	289	311	317	325	345	390	424	453	501
BAHIA	1129	1172	1274	1407	1416	1535	1719	1885	1922	1932	1998	2076	2376	2535	2717	3024
SOUTHEAST	19336	19847	20665	22499	24058	25077	26622	28955	30598	31137	32121	33363	37578	40660	43492	46430
MINAS GERAIS	2673	2718	2884	3202	3516	3707	4006	4373	4717	4885	5125	5444	6195	6738	7268	7746
ESPÍRITO SANTO	404	423	451	517	579	618	653	784	837	863	913	956	1142	1306	1386	1477
RIO DE JANEIRO	5239	5415	5393	5919	6142	6259	6602	7261	7390	7386	7436	7453	8426	8902	9770	10934
SÃO PAULO	11020	11291	11937	12861	13821	14493	15361	16537	17654	18003	18647	19510	21815	23714	25068	26273
SOUTH	4341	4731	5118	5359	5983	6452	6849	7414	8006	8106	8457	8897	9999	10917	11587	12122
PARANÁ	1449	1540	1665	1742	1969	2131	2306	2533	2729	2803	2942	3083	3497	3894	4064	4314
SABTA CATARINA	797	855	926	1003	1161	1249	1393	1575	1731	1708	1803	1921	2221	2422	2593	2722
RIO GRANDE DO SUL	2095	2336	2527	2614	2853	3072	3150	3306	3546	3595	3712	3893	4281	4601	4930	5086
MIDDLE-WEST	1556	1729	1859	2128	2422	2600	2745	3085	3336	3343	3533	3820	4460	4830	5254	5634
MATO GROSSO DO SUL	266	302	343	385	462	495	530	594	647	637	682	723	829	886	939	965
MATO GROSSO	217	281	283	338	407	434	484	559	617	608	643	711	863	936	1054	1176
GOIAS	610	652	721	848	962	1039	1056	1179	1247	1257	1330	1454	1700	1845	2002	2159
DISTRITO FEDERAL	463	494	512	557	591	632	675	753	825	841	878	932	1068	1163	1259	1334

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.6.b

FINAL CONSUMPTION OF ELECTRICITY BY RESIDENCE

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NORTH	3.1	3.0	3.1	3.4	3.7	3.8	3.9	4.1	4.2	4.1	3.9	3.8	4.1	4.2	4.3	4.4
NORTHEAST	12.9	12.8	13.0	13.5	12.5	12.9	13.6	13.9	13.8	13.9	13.8	13.8	14.1	14.1	14.2	14.7
SOUTHEAST	64.4	63.5	62.7	62.4	62.1	61.2	60.6	60.2	59.8	60.0	59.9	59.6	59.1	58.9	58.7	58.5
SOUTH	14.5	15.1	15.5	14.9	15.4	15.7	15.6	15.4	15.6	15.6	15.8	15.9	15.7	15.8	15.6	15.3
MIDDLE-WEST	5.2	5.5	5.6	5.9	6.3	6.3	6.3	6.4	6.5	6.4	6.6	6.8	7.0	7.0	7.1	7.1

TABLE 8.7.a

FINAL CONSUMPTION OF LPG BY RESIDENCE

10³ m3

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	5617	5590	6093	6529	6853	7209	7654	7906	8120	8415	8716	8826	9550	9965	10019	10009
NORTH	191	198	235	271	287	322	336	352	361	373	377	395	429	520	532	540
RONDÔNIA	18	22	27	40	42	47	53	54	52	49	55	58	61	62	65	69
ACRE	10	9	12	12	13	15	16	16	18	20	20	21	23	24	27	27
AMAZONAS	49	49	50	58	60	66	69	75	79	82	83	84	91	96	98	100
RORAIMA	4	4	5	5	5	6	8	9	9	10	10	11	12	12	13	14
PARÁ	104	108	134	149	160	177	179	184	188	196	194	205	225	236	237	234
AMAPÁ	6	6	7	7	7	11	11	14	15	16	15	16	19	20	22	23
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	70	70	74
NORTHEAST	993	988	1132	1338	1449	1629	1735	1797	1883	1954	1997	2071	2217	2327	2306	2265
MARANHÃO	65	66	71	99	103	119	143	154	125	124	132	144	163	173	180	182
PIAUÍ	40	43	53	62	71	85	91	95	93	95	95	104	111	120	121	120
CEARÁ	133	131	153	173	186	211	227	232	241	248	265	293	323	345	360	350
RIO GRANDE DO NORTE	58	58	62	81	98	114	124	132	127	136	136	141	153	158	163	163
PARAÍBA	68	66	68	92	104	119	125	132	133	143	139	150	162	172	179	169
PERNAMBUCO	211	204	227	262	272	291	316	331	340	362	351	369	402	404	439	427
ALAGOAS	60	60	63	78	93	100	104	108	110	112	111	117	127	135	143	138
SERGIPE	42	39	42	52	58	64	71	71	72	74	73	76	86	91	89	90
BAHIA	316	321	393	439	464	526	534	542	642	660	695	677	690	730	631	625
SOUTHEAST	3074	3055	3270	3320	3406	3447	3697	3746	3827	3908	4035	3994	4428	4592	4553	4604
MINAS GERAIS	630	653	675	697	721	748	781	807	838	872	908	947	1002	1028	1050	1053
ESPÍRITO SANTO	130	134	136	137	147	165	172	176	229	240	248	176	187	196	200	196
RIO DE JANEIRO	666	648	688	708	748	764	807	828	801	820	762	847	875	868	880	872
SÃO PAULO	1648	1620	1771	1778	1790	1770	1937	1935	1959	1976	2117	2024	2365	2500	2424	2484
SOUTH	949	927	979	1097	1179	1248	1295	1385	1389	1486	1579	1596	1667	1763	1785	1775
PARANÁ	335	339	379	421	457	489	501	532	538	583	590	602	631	675	679	665
SABTA CATARINA	173	163	183	206	221	230	248	268	261	265	328	324	342	355	362	359
RIO GRANDE DO SUL	441	425	417	470	501	529	546	585	590	638	661	670	695	733	744	751
MIDDLE-WEST	410	422	477	503	532	563	591	627	660	694	728	770	808	763	844	826
MATO GROSSO DO SUL	81	85	92	96	101	106	111	116	122	128	134	140	144	126	147	145
MATO GROSSO	58	68	80	85	91	97	103	110	117	124	132	141	147	131	151	150
GOIAS	194	194	227	241	255	270	287	304	322	341	362	384	404	389	420	403
DISTRITO FEDERAL	77	75	78	81	85	90	91	97	99	101	100	105	113	118	126	127

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.7.b

FINAL CONSUMPTION OF LPG BY RESIDENCE

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NORTH	3.4	3.5	3.9	4.2	4.2	4.5	4.4	4.5	4.4	4.4	4.3	4.5	4.5	5.2	5.3	5.4
NORTHEAST	17.7	17.7	18.6	20.5	21.1	22.6	22.7	22.7	23.2	23.2	22.9	23.5	23.2	23.3	23.0	22.6
SOUTHEAST	54.7	54.7	53.7	50.9	49.7	47.8	48.3	47.4	47.1	46.4	46.3	45.3	46.4	46.1	45.4	46.0
SOUTH	16.9	16.6	16.1	16.8	17.2	17.3	16.9	17.5	17.1	17.7	18.1	18.1	17.5	17.7	17.8	17.7
MIDDLE-WEST	7.3	7.5	7.8	7.7	7.8	7.8	7.7	7.9	8.1	8.3	8.4	8.7	8.5	7.7	8.4	8.3

TABLE 8.8.a

FINAL CONSUMPTION OF GASOLINE AND ALCOHOL

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	9919	10038	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	303	311	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	34	45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	10	11	13	19	17	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	95	90	96	116	111	98	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	7	8	7	10	9	11	15	15	14	12	13	nd	nd	nd	nd	nd
PARÁ	147	148	152	181	173	156	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	10	9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	1337	1407	1484	1831	1527	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	72	59	70	101	70	79	103	101	62	66	nd	nd	nd	nd	nd	nd
PIAUÍ	44	45	47	64	47	61	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	167	167	173	213	188	197	240	218	226	258	314	337	370	nd	nd	nd
RIO GRANDE DO NORTE	83	79	83	108	93	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	110	106	101	128	111	134	121	128	152	158	167	187	221	221	nd	nd
PERNAMBUCO	282	252	279	338	295	289	339	338	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	91	217	214	232	209	152	205	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	59	62	67	86	94	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	429	420	450	561	420	419	497	527	565	505	527	571	nd	nd	nd	nd
SOUTHEAST	5800	5841	6191	7049	6794	6978	7466	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	866	851	941	1176	1102	1116	1164	1198	1354	1320	1420	1468	1704	1871	nd	nd
ESPÍRITO SANTO	180	136	146	192	172	167	135	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	1219	1172	1221	1388	1334	1329	1635	1548	1600	1431	1490	1584	1801	1995	1978	nd
SÃO PAULO	3535	3682	3883	4293	4186	4366	4532	4892	5302	5329	5471	6238	6628	7367	7431	nd
SOUTH	1795	1795	1795	1795	1795	1795	1795	1795	1795	1795	nd	nd	nd	nd	nd	nd
PARANÁ	587	590	647	781	735	757	828	848	912	890	925	1001	1147	1279	1311	nd
SABTA CATARINA	352	333	358	446	427	420	453	564	623	546	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	778	777	812	954	988	890	1161	1063	1108	1146	1193	1258	1393	1532	nd	nd
MIDDLE-WEST	684	684	684	684	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	170	154	166	246	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	124	141	156	210	191	159	218	207	185	170	187	205	nd	nd	nd	nd
GOIAS	161	248	257	339	295	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	187	195	202	231	222	245	249	267	296	321	353	370	421	462	465	456

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.8.b

FINAL CONSUMPTION OF GASOLINE AND ALCOHOL

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	3.1	3.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	13.5	14.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	58.5	58.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	18.1	17.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	6.6	6.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.9.a

FINAL CONSUMPTION OF PETROLEUM DERIVATIVES

10³toe

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	46917	46384	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	1795	1733	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RONDÔNIA	328	367	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
ACRE	58	64	79	52	45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAZONAS	530	367	381	570	509	484	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
RORAIMA	36	39	44	50	52	63	78	74	101	108	119	nd	nd	nd	nd	nd
PARÁ	806	860	851	1012	1091	1063	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
AMAPÁ	37	36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	7411	7617	7957	8565	8690	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MARANHÃO	324	376	380	491	485	518	784	815	741	639	nd	nd	nd	nd	nd	nd
PIAUÍ	168	172	180	225	215	233	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CEARÁ	588	520	553	637	605	602	590	624	641	739	806	880	947	nd	nd	nd
RIO GRANDE DO NORTE	296	264	308	300	341	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
PARAÍBA	280	247	248	308	299	321	322	361	385	405	439	470	508	551	nd	nd
PERNAMBUCO	1087	947	923	1030	1073	1011	1019	1086	nd	nd	nd	nd	nd	nd	nd	nd
ALAGOAS	267	251	255	298	317	297	305	nd	nd	nd	nd	nd	nd	nd	nd	nd
SERGIPE	227	241	249	235	302	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BAHIA	4174	4599	4861	5041	5053	5549	6768	6588	7103	8053	8,802	8,306	nd	nd	nd	nd
SOUTHEAST	26387	25463	26188	29391	29708	30207	30809	nd	nd	nd	nd	nd	nd	nd	nd	nd
MINAS GERAIS	3992	4023	4189	4927	5021	5249	5324	5368	5839	5815	6086	6381	6891	7480	nd	nd
ESPÍRITO SANTO	795	987	1051	1155	1106	1191	1162	nd	nd	nd	nd	nd	nd	nd	nd	nd
RIO DE JANEIRO	5844	5479	5412	6093	5809	5993	6262	6068	5740	5450	5525	5746	6348	6842	7143	nd
SÃO PAULO	15756	14974	15536	17216	17772	17774	18061	17921	18232	18498	19154	20201	21089	23457	28834	nd
SOUTH	8684	8802	9371	10504	10703	10668	11946	11989	11809	12107	nd	nd	nd	nd	nd	nd
PARANÁ	3161	3222	3345	3699	3863	3817	3888	4003	4069	4208	4504	4752	4887	5387	5786	nd
SABTA CATARINA	1237	1193	1243	1382	1418	1441	1444	1546	1718	1686	nd	nd	nd	nd	nd	nd
RIO GRANDE DO SUL	4286	4387	4783	5423	5422	5410	6614	6440	6022	6213	6108	6618	6772	6813	nd	nd
MIDDLE-WEST	2640	2769	2957	3519	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO DO SUL	649	664	702	804	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MATO GROSSO	517	603	672	833	891	1068	1405	1366	1222	1284	1333	1494	nd	nd	nd	nd
GOIAS	1012	1069	1156	1414	1342	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
DISTRITO FEDERAL	462	433	427	468	480	510	541	585	647	644	691	702	764	843	928	1021

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.9.b

FINAL CONSUMPTION OF PETROLEUM DERIVATIVES

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTH	3.8	3.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
NORTHEAST	15.8	16.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTHEAST	56.2	54.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SOUTH	18.5	19.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MIDDLE-WEST	5.6	6.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

TABLE 8.10.a

FINAL CONSUMPTION OF ELECTRICITY

GWh

STATES	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
BRAZIL (1)	142620	158517	172712	186414	192224	204248	212452	216698	227467	232179	241167	249793	264805	277685	294689	306989
NORTH	3161	3288	3768	5705	7127	7496	7583	8674	10844	11227	11762	12126	13223	14725	15231	15567
RONDÔNIA	191	224	264	326	381	438	480	505	554	564	566	593	757	828	912	985
ACRE	95	96	106	133	140	140	156	170	183	191	197	211	242	260	290	314
AMAZONAS	878	969	1054	1162	1349	1512	1551	1687	1800	1734	1710	1835	2150	2383	2560	2713
RORAIMA	58	62	68	79	87	88	99	126	125	134	141	155	183	197	242	264
PARÁ	1812	1806	2138	3858	4996	5147	5136	5992	7937	8365	8570	8716	9169	10248	10351	10320
AMAPÁ	127	131	138	147	174	171	161	194	245	239	275	290	318	352	370	392
TOCANTINS (2)	-	-	-	-	-	nd	nd	nd	nd	nd	303	327	404	457	507	580
NORTHEAST	20292	22599	25684	29151	27549	30200	31881	33414	35734	37412	38192	39315	41415	44298	46812	50099
MARANHÃO	769	1397	2601	4303	4609	4970	5339	5659	7006	7126	7143	7257	7431	7558	7686	7982
PIAUÍ	475	463	489	569	559	633	671	755	794	830	857	910	1005	1080	1185	1307
CEARÁ	1830	1907	2039	2311	2239	2451	2721	2962	3266	3314	3569	3624	4052	4494	4876	5507
RIO GRANDE DO NORTE	807	838	914	1103	1085	1196	1309	1460	1658	1722	1822	1922	2232	2516	2682	2972
PARAÍBA	862	924	966	1048	1069	1132	1275	1430	1527	1569	1676	1746	2005	2161	2392	2658
PERNAMBUCO	3897	4345	4910	5345	4331	4879	5014	5321	5308	5343	5466	5581	6046	6385	6857	7316
ALAGOAS	1745	1907	2079	2083	1872	2124	2270	2707	2985	3267	3215	3270	3270	3371	3580	3746
SERGIPE	820	920	1006	1130	1158	1232	1273	1298	1480	1606	1689	1724	1828	1936	2120	2307
BAHIA	9087	9898	10680	11259	10627	11583	12009	11822	11710	12635	12755	13280	13546	14797	15433	16305
SOUTHEAST	95422	105943	113574	120769	124378	131152	135311	135591	139558	140711	146387	150949	158855	164302	173953	179568
MINAS GERAIS	19593	21455	23681	25445	27057	29341	30571	30518	31381	31777	32865	33844	35156	36571	38473	39313
ESPÍRITO SANTO	2679	3807	4138	4483	4769	4993	5115	4828	5604	5637	5883	6001	6745	7089	7443	8014
RIO DE JANEIRO	20392	21616	22261	23844	24149	24568	25376	25824	25776	26012	26238	26781	28586	29942	32277	34275
SÃO PAULO	52758	59065	63494	66997	68403	72250	74249	74421	76797	77285	81401	84323	88368	90700	95760	97966
SOUTH	18887	21029	23474	24072	25906	27314	29064	29811	31743	32902	34463	36235	38988	41161	44465	46557
PARANÁ	6539	7269	8349	8577	9190	9912	10310	10671	11084	11584	12395	12916	13980	15017	15963	16893
SABTA CATARINA	4498	5055	5563	5831	6263	6572	7110	7138	7514	7738	7728	8205	8821	10094	10996	11547
RIO GRANDE DO SUL	7850	8705	9562	9664	10453	10830	11644	12002	13145	13580	14340	15114	16187	16050	17507	18117
MIDDLE-WEST	4858	5658	6212	6717	7264	8086	8613	9208	9588	9927	10363	11168	12324	13200	14228	15198
MATO GROSSO DO SUL	766	899	1018	1094	1272	1417	1489	1626	1765	1874	2053	2203	2417	2606	2778	2858
MATO GROSSO	531	600	703	845	969	1083	1197	1313	1472	1482	1596	1801	2050	2191	2447	2796
GOIAS	2121	2634	2872	3052	3217	3706	3985	4201	4191	4384	4397	4705	5105	5431	5801	6105
DISTRITO FEDERAL	1440	1525	1619	1726	1806	1880	1942	2068	2160	2187	2317	2459	2753	2972	3202	3439

nd = not available.

(1) The data amounts do not exactly confer with the BEB, since the detailed data source criteria are not always the same specially as regard commercial energy.

(2) Created in 1988, since the division of Goiás State.

TABLE 8.10.b

FINAL CONSUMPTION OF ELECTRICITY

%

REGIONS	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NORTH	2.2	2.1	2.2	3.1	3.7	3.7	3.6	4.0	4.8	4.8	4.9	4.9	5.0	5.3	5.1	5.1
NORTHEAST	14.2	14.3	14.9	15.6	14.3	14.8	15.0	15.4	15.7	16.1	15.8	15.7	15.6	16.0	15.8	15.8
SOUTHEAST	66.9	66.8	65.8	64.8	64.7	64.2	63.7	62.6	61.4	60.6	60.7	60.4	60.0	59.2	59.1	59.1
SOUTH	13.2	13.3	13.6	12.9	13.5	13.4	13.7	13.8	14.0	14.2	14.3	14.5	14.7	14.8	15.1	15.1
MIDDLE-WEST	3.4	3.6	3.6	3.6	3.8	4.0	4.1	4.2	4.2	4.3	4.3	4.5	4.7	4.8	4.8	4.8

TABLE 8.11

PRODUCTION AND CONSUMPTION OF ENERGY - PER CAPITA - YEAR 1984

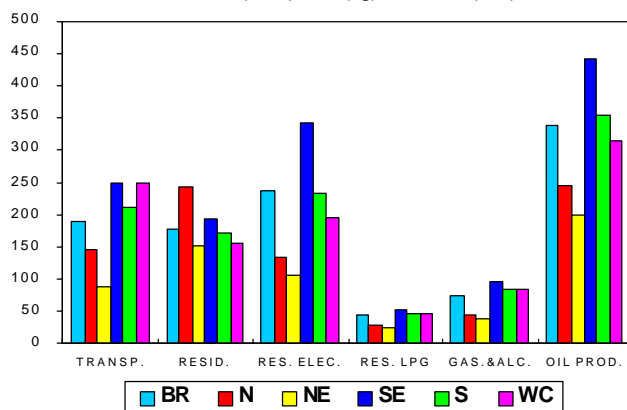
STATES	PRIMARY ENERGY PRODUCTION koe/capita	FINAL ENERGY CONSUMPTION koe/capita	ENERGY CONSUMPTION BY INDUSTRY koe/capita	ENERGY CONSUMPTION BY TRANSPORT koe/capita	ENERGY CONSUMPTION BY RESIDENCE koe/capita	ELECTRIC. CONSUMPTION BY RESIDENCE kWh/capita	LPG CONSUMPTION BY RESIDENCE Kg/capita	CONSUMPTION OF GASOLINE & ALCOHOL koe/capita	CONSUMPTION OF OIL PRODUCTS koe/capita	TOTAL CONSUMPTION OF ELECTRIC. kWh/capita
BRAZIL	964	1026	417	191	177	236	42	76	350	1195
NORTH	417	670	100	144	244	134	28	44	245	464
RONDÔNIA	238	635	70	148	275	136	32	65	532	325
ACRE	246	346	37	26	191	120	26	31	183	274
AMAZONAS	310	696	69	160	156	175	29	54	220	580
RORAIMA	200	540	50	170	230	230	40	80	390	620
PARÁ	518	712	124	150	287	114	27	36	212	445
AMAPÁ	271	381	124	86	95	171	29	43	171	624
TOCANTINS (1)	-	-	-	-	-	-	-	-	-	-
NORTHEAST	843	673	257	87	152	104	26	37	198	589
MARANHÃO	205	280	87	50	94	60	15	13	83	308
PIAUÍ	123	210	22	60	74	71	18	19	72	195
CEARÁ	463	381	125	66	129	100	23	29	90	329
RIO GRANDE DO NORTE	1112	446	107	83	131	106	28	38	126	401
PARAÍBA	273	387	87	66	116	91	22	36	83	311
PERNAMBUCO	592	738	353	99	210	137	31	38	142	652
ALAGOAS	2650	1307	646	102	118	106	27	99	114	867
SERGIPE	2821	963	261	121	166	140	31	49	191	730
BAHIA	1143	1028	393	115	207	112	31	40	438	943
SOUTHEAST	1217	1395	650	248	193	343	53	101	439	1828
MINAS GERAIS	1623	1327	750	168	254	189	45	59	280	1492
ESPÍRITO SANTO	1158	2012	1403	233	215	189	60	61	441	1700
RIO DE JANEIRO	1345	1202	400	291	180	433	52	94	438	1729
SÃO PAULO	964	1465	650	271	165	392	56	128	520	2049
SOUTH	859	894	291	212	170	232	46	88	432	1033
PARANÁ	1139	995	323	226	161	193	42	74	403	910
SABTA CATARINA	1081	1068	426	212	223	213	41	83	298	1261
RIO GRANDE DO SUL	484	713	196	198	153	279	51	93	525	1041
MIDDLE-WEST	503	721	120	249	154	196	48	77	313	640
MATO GROSSO DO SUL	499	926	110	301	199	194	54	99	426	576
MATO GROSSO	267	789	64	338	218	198	48	99	425	423
GOIÁS	743	643	161	196	121	150	45	57	246	606
DISTRITO FEDERAL	38	669	62	266	140	327	50	129	287	1010

kep= kilogram oil equivalent.

(1) Created in 1988, since the division of Goiás State

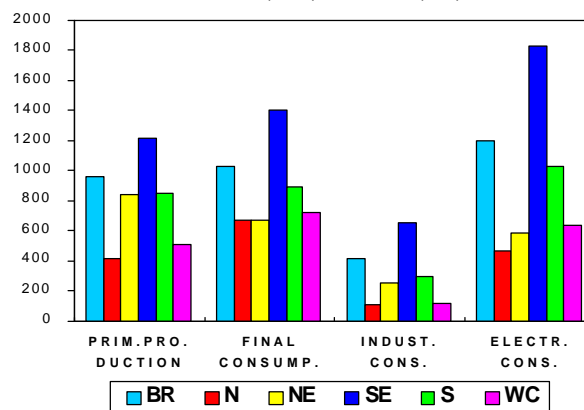
ENERGY CONSUMPTION PER CAPITA - 1984

ELECT.(kWh) LPG(kg) OTHERS(koe)



ENERGY PER CAPITA - 1984

ELECT.(kWh) OTHERS (koe)



White page

White page

APPENDICES

9

White page

A. INSTALLED CAPACITY

A.1 - INSTALLED CAPACITY OF ELECTRICAL GENERATION IN 12/31

UNIT: MW

YEAR	HYDRO PLANTS			THERMAL PLANTS			NUCLEAR PLANTS	TOTAL		
	PUB.(*)	AUTO	TOTAL	PUB.	AUTO	TOTAL		PUB.	AUTO	TOTAL
1982	32542	614	33156	3687	2503	6190	0	36229	3117	39346
1983	33556	622	34178	3641	2547	6188	0	37197	3169	40366
1984	34301	622	34923	3626	2547	6173	0	37927	3169	41096
1985	36453	624	37077	3708	2665	6373	657	40818	3289	44107
1986	37162	624	37786	3845	2665	6510	657	41664	3289	44953
1987	39693	636	40329	3910	2665	6575	657	44260	3301	47561
1988	41583	645	42228	4025	2665	6690	657	46265	3310	49575
1989	44172	624	44796	4007	2665	6672	657	48836	3289	52125
1990	44934	624	45558	4170	2665	6835	657	49761	3289	53050
1991	45992	624	46616	4203	2665	6868	657	50852	3289	54141
1992	47085	624	47709	4018	2665	6683	657	51760	3289	55049
1993	47967	624	48591	4127	2847	6974	657	52751	3471	56222
1994	49297	624	49921	4151	2900	7051	657	54105	3524	57629
1995	50680	687	51367	4197	2900	7097	657	55533	3587	59120
1996	52741	687	53428	4522	2920	7442	657	57920	3607	61527
1997	53987	902	54889	4506	2920	7426	657	59150	3822	62972
1998	55857	902	56759	4798	2995	7793	657	61312	3897	65209

PUB. - Public Utility Power Plants

AUTO - Auto - Generation

(*) Includes half of Itaipu Plant, from 1984.

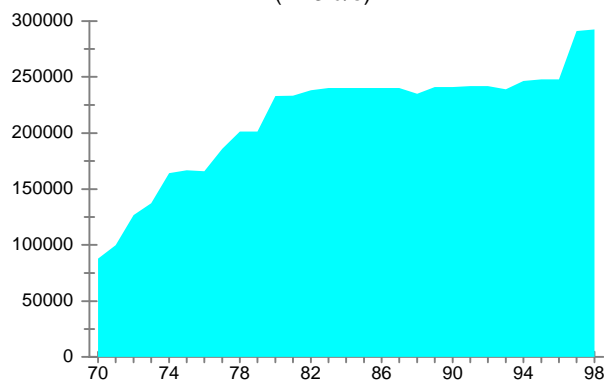
INSTALLED CAPACITY OF ITAIPU (TOTAL)

YEARS	MW
1984	1400
1985	2100
1986	4200
1987	6300
1988	8400
1989	10500
1990	11200
1991/98	12600

A.2 - INSTALLED CAPACITY OF REFINING IN 12/31 (*)

YEARS	m ³ d/o
1983	240100
1984	240100
1985	240100
1986	240100
1987	240100
1988	234890
1989	241040
1990	241040
1991	241750
1992	241680
1993	239080
1994	246580
1995	247880
1996	247880
1997	291100
1998	292615

INSTALLED CAPACITY OF REFINING (m³ d/o)

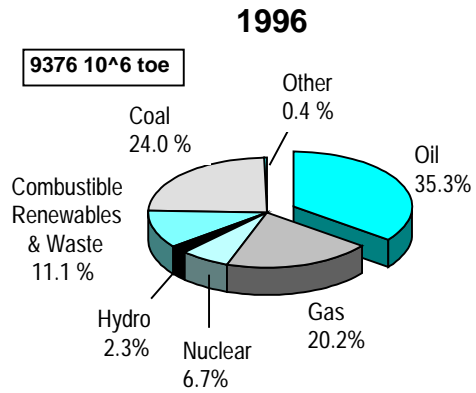
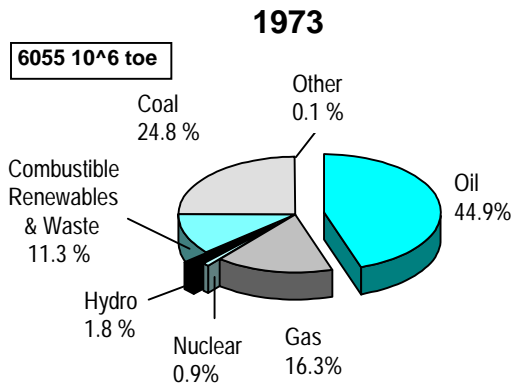


(*) PETROBRAS and privates.

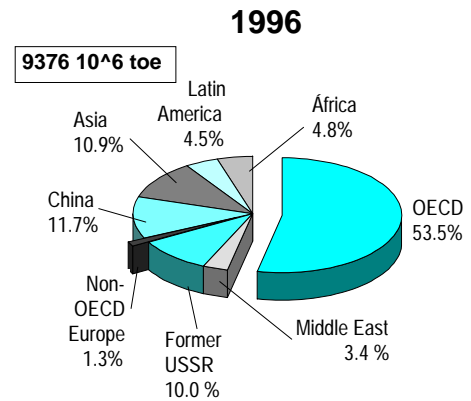
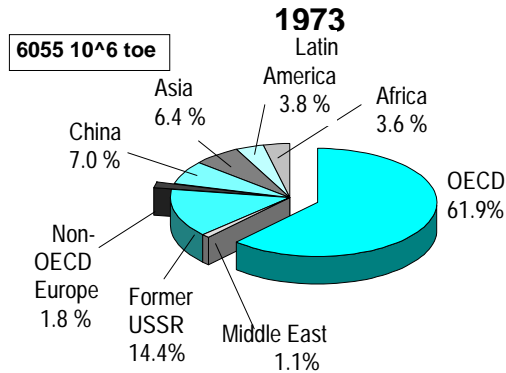
d/o - operating days.

B. WORLD DATA

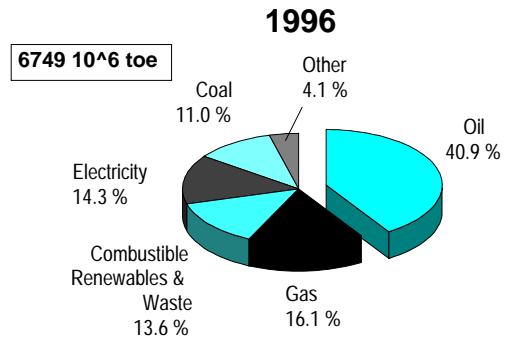
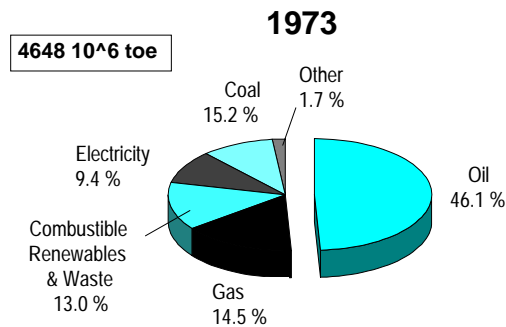
ENERGY SUPPLY BY SOURCE



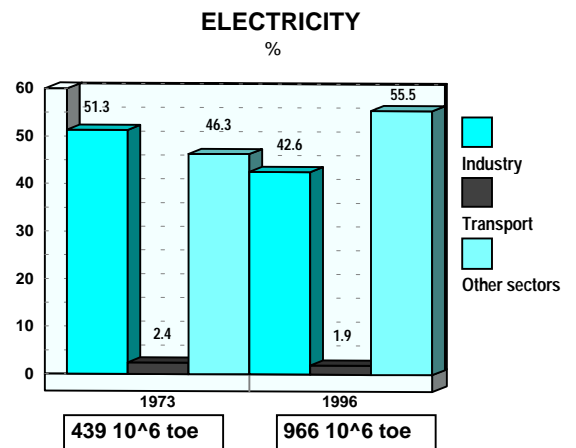
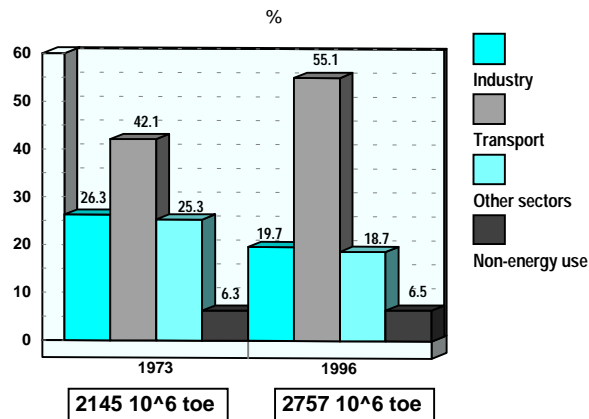
ENERGY SUPPLY BY REGION



FINAL ENERGY CONSUMPTION BY SOURCE

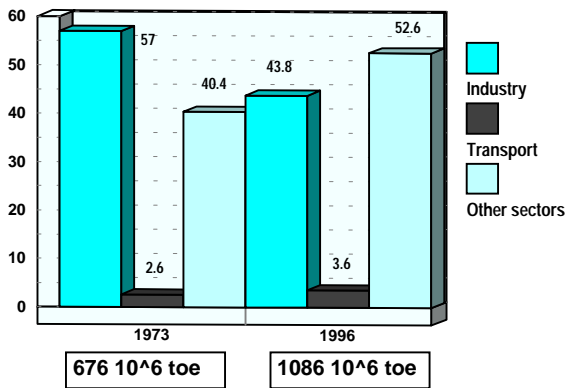


FINAL ENERGY CONSUMPTION BY SOURCE

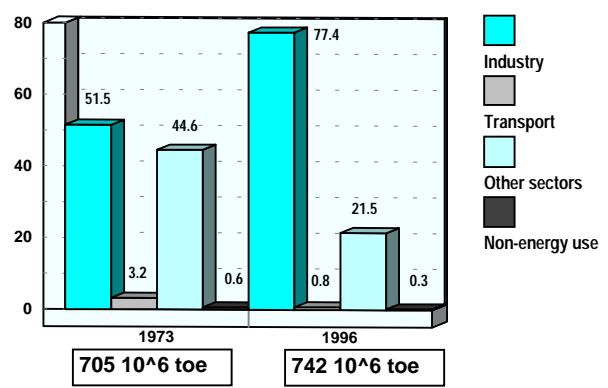


FINAL ENERGY CONSUMPTION BY SOURCE

GAS



COAL



OIL

1997 DATA		1996 DATA	
PRODUCERS	10 ⁶ t	% OF WORLD TOTAL	10 ⁶ t
SAUDI ARABIA	439	12.8	327
UNITED STATES	383	11.1	142
RUSSIA	303	8.8	126
IRAN	182	5.3	125
VENEZUELA	175	5.1	100
MEXICO	168	4.9	96
CHINA	160	4.7	85
NORWAY	156	4.5	81
UNITED KINGDOM	128	3.7	79
UAE	120	3.5	64
REST OF THE WORLD	1227	35.6	498
WORLD	3442	100.0	1722

NATURAL GAS

1997 DATA		1996 DATA	
PRODUCERS	10 ⁶ m ³	% OF WORLD TOTAL	10 ⁶ m ³
RUSSIA	560895	24.4	196474
UNITED STATES	539068	23.5	80117
CANADA	167828	7.3	48823
UNITED KINGDOM	91778	4.0	43459
NETHERLANDS	84595	3.7	37922
INDONESIA	74233	3.2	35724
ALGERIA	69504	3.0	24000
UZBEKISTAN	47252	2.1	18137
NORWAY	47052	2.0	9783
SAUDI ARABIA	46558	2.0	9076
REST OF THE WORLD	567389	24.7	33068
WORLD	2296152	100.0	536583

PETROLEUM PRODUCTS

1996 DATA		1996 DATA	
PRODUCERS	10 ⁶ t	% OF WORLD TOTAL	10 ⁶ t
UNITED STATES	777	23.8	58
JAPAN	209	6.4	57
RUSSIA	175	5.3	48
CHINA	149	4.5	45
GERMANY	116	3.5	45
UNITED KINGDOM	97	3.0	36
KOREA	96	2.9	33
ITALY	89	2.7	24
CANADA	88	2.7	20
FRANCE	86	2.6	18
REST OF THE WORLD	1387	42.4	295
WORLD	3267	100.0	681

COAL

1997 DATA		1997 DATA	
PRODUCERS	HARD COAL (10 ⁶ t)	BROWN COAL (10 ⁶ t)	10 ⁶ t
CHINA	1348	*	146
UNITED STATES	909	79	79
INDIA	310	23	79
SOUTH AFRICA	220	0	63
AUSTRALIA	207	58	42
RUSSIA	157	85	37
POLAND	138	63	29
UKRAINE	71	5	26
KAZAKHSTAN	70	3	22
INDONESIA	54	0	7
REST OF THE WORLD	290	585	14
WORLD	3775	901	494

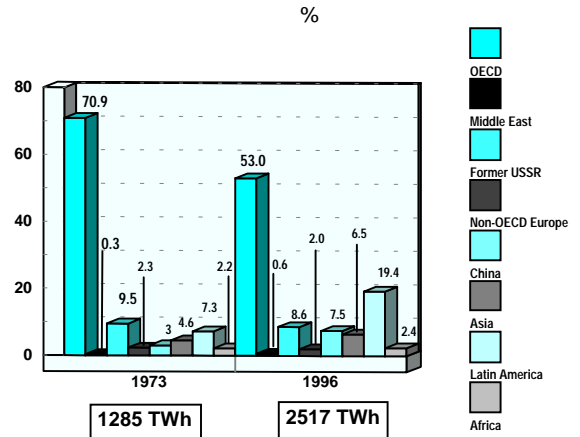
* Included in Hard Coal

HYDRAULIC GENERATION

PRODUCERS	1996 DATA		1995 DATA	
	TWh	% OF WORLD TOTAL	INSTALLED CAPACITY (PRODUCTION)	GW
CANADA	356	14.1		
UNITED STATES	351	13.9		
BRAZIL	266	10.6		
CHINA	188	7.5		
RUSSIA	154	6.1		
NORWAY	104	4.1		
JAPAN	81	3.2		
INDIA	69	2.7		
FRANCE	65	2.6		
VENEZUELA	54	2.1		
REST OF THE WORLD	830	33.0		
WORLD	2517	100.0		

COUNTRY (BASED ON FIRST 10 PRODUCERS)	1996 DATA	
	% OF HYDRO IN TOTAL DOMESTIC ELECTRICITY GENERATION	GW
NORWAY	99.2	
BRAZIL	91.7	
VENEZUELA	71.4	
CANADA	62.4	
RUSSIA	18.2	
CHINA	17.4	
INDIA	15.9	
FRANCE	12.8	
UNITED STATES	9.6	
JAPAN	8.0	
REST OF THE WORLD	17.4	
WORLD	18.4	

ELECTRICITY ENERGY PRODUCTION

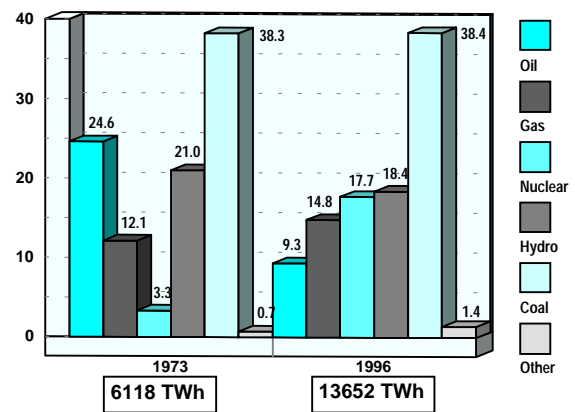


ELECTRICITY

PRODUCERS	1996 DATA		1996 DATA	
	TWh	% OF WORLD TOTAL	EXPORTERS	TWh
UNITED STATES	3652	26.8	FRANCE	72
CHINA	1080	7.9	CANADA	44
JAPAN	1003	7.3	GERMANY	43
RUSSIA	846	6.2	PARAGUAY	40
CANADA	571	4.2	RUSSIA	32
GERMANY	551	4.0	SWITZERLAND	24
FRANCE	508	3.7	DENMARK	19
INDIA	435	3.2	UKRAINE	13
UNITED KINGDOM	346	2.5	UZBEKISTAN	13
BRAZIL	291	2.1	SWEDEN	10
REST OF THE WORLD	4370	32.0	REST OF THE WORLD	38
WORLD	13652	100.0	WORLD	348

IMPORTERS	1996 DATA	
	TWh	% OF WORLD TOTAL
UNITED STATES	47	
ITALY	38	
GERMANY	37	
BRAZIL	37	
SWITZERLAND	23	
UNITED KINGDOM	17	
SWEDEN	16	
UZBEKISTAN	14	
NORWAY	13	
RUSSIA	12	
REST OF THE WORLD	95	
WORLD	349	

ELECTRIC GENERATION BY SOURCE - %



ELECTRICITY PRODUCTION FROM FOSSIL FUELS

1996 DATA		1996 DATA	
COAL	TWh	OIL	TWh
UNITED STATES	1924	JAPAN	211
CHINA	810	ITALY	117
INDIA	318	UNITED STATES	95
GERMANY	303	MEXICO	81
SOUTH AFRICA	185	RUSSIA	79
JAPAN	182	CHINA	65
RUSSIA	157	SAUDI ARABIA	56
UNITED KINGDOM	147	KOREA	41
AUSTRALIA	140	IRAN	34
POLAND	137	IRAQ	28
REST OF THE WORLD	936	REST OF THE WORLD	462
WORLD	5239	WORLD	1269

1996 DATA		1996 DATA	
GAS	TWh	UNITED STATES	TWh
UNITED STATES	484	RUSSIA	342
RUSSIA	342	JAPAN	203
JAPAN	203	UNITED KINGDOM	82
UNITED KINGDOM	82	ITALY	50
ITALY	50	IRAN	50
IRAN	50	GERMANY	48
GERMANY	48	NETHERLANDS	47
NETHERLANDS	47	SAUDI ARABIA	42
SAUDI ARABIA	42	THAILAND	37
THAILAND	37	REST OF THE WORLD	631
REST OF THE WORLD	631	WORLD	2016
WORLD	2016		

NUCLEAR ENERGY

PRODUCERS	1996 DATA		1998 DATA	
	TWh	% OF WORLD TOTAL	INSTALLED CAPACITY	GW
UNITED STATES	715	29.6	UNITED STATES	99
FRANCE	397	16.4	FRANCE	62
JAPAN	302	12.5	JAPAN	44
GERMANY	160	6.6	GERMANY	22
RUSSIA	109	4.5	RUSSIA	20
UNITED KINGDOM	95	3.9	CANADA	15
CANADA	93	3.8	UNITED KINGDOM	13
UKRAINE	80	3.3	UKRAINE	12
KOREA	74	3.1	KOREA	11
SWEDEN	73	3.0	SWEDEN	10
REST OF THE WORLD	322	13.3	REST OF THE WORLD	46
WORLD	2416	100.0	WORLD	354

COUNTRY (BASED ON FIRST 10 PRODUCERS)	1996 DATA	
	% OF NUCLEAR IN TOTAL DOMESTIC ELECTRICITY GENERATION	GW
FRANCE	78.2	
SWEDEN	52.5	
UKRAINE	43.8	
KOREA	33.1	
JAPAN	30.1	
GERMANY	29.1	
UNITED KINGDOM	27.3	
UNITED STATES	19.6	
CANADA	16.3	
RUSSIA	12.9	
REST OF THE WORLD	10.0	
WORLD	17.7	

C.GENERAL STRUCTURE OF THE BALANCE

1. General Description

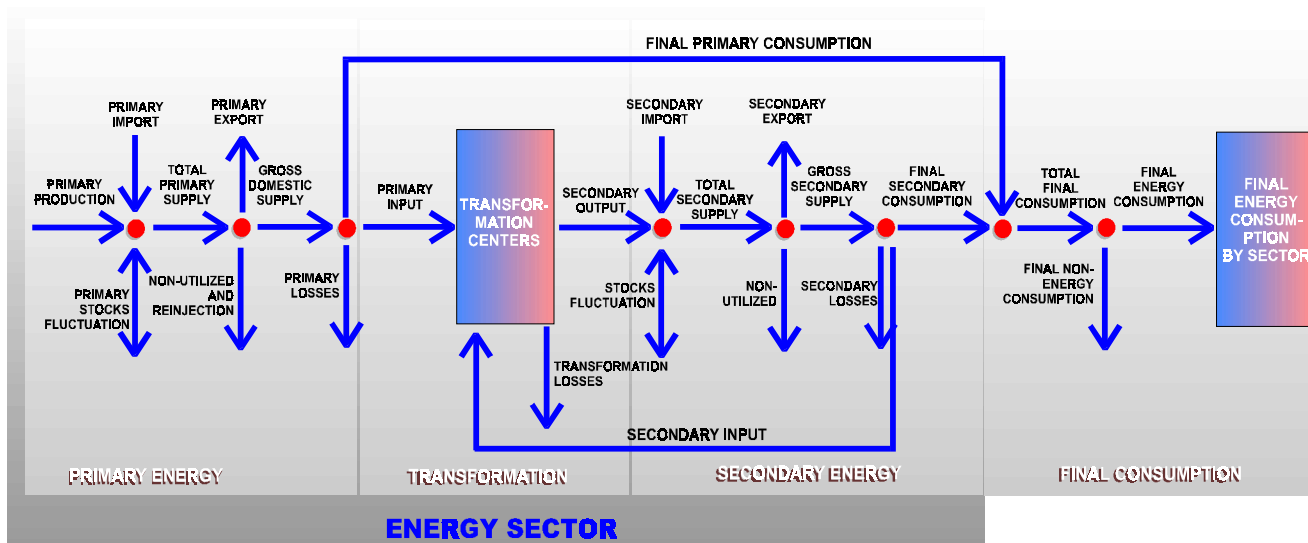
This issue of Energy Balance has been prepared according to a methodology adapted to an energy structure sufficiently general in nature to give a proper configuration of the physical variables of the energy sector.

The matrix (TABLE C.1) summarizes the methodology and expresses the balance of every stage in the energy process: production, transformation and consumption.

2. Concepts

The general structure of the balance is divided into four parts:

- primary energy
- transformation
- secondary energy
- final consumption



2.1. Primary Energy

Energy products found in nature in an immediately available form, such as natural gas, coal, animal and vegetable residues, solar and wind energy, etc.

Columns 1 to 8 - PRIMARY ENERGY SOURCES: petroleum, natural gas, steam coal, metallurgical coal, uranium, hydraulic energy, firewood, and sugar cane products, (molasses, cane juice, bagasse).

Column 9 - OTHER PRIMARY SOURCES: vegetable and industrial residues used for steam generation, heat, etc.

Column 10 - TOTAL PRIMARY ENERGY: sum of columns 1 to 9.

2.2. Secondary Energy

Energy products obtained from the various transformation centers and channelled to the different consumption sectors or to other transformation centers.

Columns 11 to 23 - SOURCES OF SECONDARY ENERGY: diesel oil, fuel oil, gasoline (automotive and aviation), LPG, naphtha, Kerosene (for illumination and aviation use), gas (town and coke oven), coke, uranium contained in UO₂, electricity, charcoal, ethanol (anhydrous and hydrated) and other petroleum secondary sources.

Column 24 - NON-ENERGY PETROLEUM PRODUCTS: petroleum derivatives that, while having considerable energy content, are employed for other purposes (greases, lubricants, paraffin wax, etc.).

Column 25 - COAL BITUMEN: energy source produced from metallurgical coal transformation.

Column 26 - TOTAL SECONDARY ENERGY: sum of columns 11 to 25.

2.3. Consolidated Total

All the energy produced, transformed and consumed in the country.

Column 27 - TOTAL: algebraic addition of columns 10 and 26.

2.4. Supply

The amount of energy available for transformation and/or for final consumption.

Line 1 - PRODUCTION: primary energy obtained from mineral, plant and animal resources (biogas) hydraulic, geothermal reservoirs, sun, wind, seas, tides. These entries have a positive sign.

Line 2 - IMPORTS: primary and secondary energy coming into the country from overseas. These entries have a positive sign.

Line 3 - VARIATION INVENTORIES: annual difference between initial stock and final stock. A stock increase in any given year means a reduction in total supply. In the Balance, entries of stock have a negative sign while withdrawals have a positive sign.

Line 4 - TOTAL SUPPLY: energy available for consumption in the country. Equivalent to the algebraic sum of lines 1 to 3.

Line 5 - EXPORTS: quantity of primary and secondary energy sent overseas. These entries have a negative sign.

Line 6 - NON-UTILIZED: quantity of energy that is not presently being used because of technical or economic constraints. These entries have a negative sign.

Line 7 - RE-INJECTION: natural gas reinjected into oil wells to obtain a better yield. This entry has a negative sign.

Line 8 - GROSS DOMESTIC SUPPLY: quantity of energy made available in the country for transformation and/or for final consumption. Equivalent to the algebraic sum of lines 4 to 7.

2.5. Transformation

The transformation sector includes all transformation centers where primary and/or secondary energy is processed by modification of its properties or original state.

Line 9 - TOTAL TRANSFORMATION: addition of lines 9.1 to 9.10. The quantities assigned to columns 1 to 9, and 11 to 25, represent the algebraic sum of primary and secondary energy entering and leaving all the transformation centers.

Lines 9.1 to 9.9 - TRANSFORMATION CENTERS: oil refineries, natural gas plants, gasification plants, cooking plants, nuclear fuel cycle, public utilities and self-production power plants, charcoal plants and distilleries.

Line 9.10 - OTHER TRANSFORMATIONS: refers to gasoline and LPG produced when the chemical industry processes naphtha and oil products or raw materials.

Important notes regarding signs:

- all primary or secondary energy put in transformation centers carries a negative sign.

- all secondary energy produced by transformation centers carries a positive sign.

2.6. Losses

Line 10 - LOSSES IN DISTRIBUTION AND STORAGE: Losses occurring during production, distribution and storage of energy. For example: losses in gas and oil pipelines, electricity transmission lines and electrical and gas distribution networks. This line does not include losses in transformation centers.

2.7. Statistical Adjustments

Device used to facilitate comparability of energy supply and consumption data from different statistical sources.

Line 11 - ADJUSTMENTS: this line quantifies the apparent deficits and surpluses, that result from statistical error, errors in information and measurement errors.

The adjustments to be introduced in each column (1 to 25) are calculated as follows:

Adjustments = gross domestic supply (-) total transformation (-) losses in distribution and storage (-) final consumption.

The adjustment is negative whenever gross domestic supply happens to be greater than the other items, and vice versa.

2.8. Final Consumption

Listed below are the different economic sectors to which primary and secondary energy flows, making up total final energy consumption.

Line 12 - FINAL CONSUMPTION: primary and secondary energy made available for utilization by all the country's final consumption sectors. Includes both final energy and final non-energy consumption. Add line 12.1 to 12.2.

Line 12.1 - FINAL NON-ENERGY CONSUMPTION: amount of energy contained in products utilized by different sectors for non-energy purposes.

Line 12.2 - FINAL ENERGY CONSUMPTION: final consumption in the following sectors: energy sector, residential, commercial, public, agricultural, transportation, industrial and unidentified consumption.

Line 12.2.1 - FINAL CONSUMPTION BY ENERGY SECTOR: energy consumed by transformation centers and/or by energy extraction and transportation processes, when the energy products are in their final form.

Line 12.2.8 - UNIDENTIFIED CONSUMPTION: consumption that cannot be classified in any of the previously listed sectors.

Furthermore, the transportation and industrial sectors are subdivided as follows:

Transportation: highways
railroads
airways
waterways

Industrial: cement
pig-iron and steel
ferro-alloys
mining/pelletization
non-ferrous/other metals
chemical
food and beverage
textile
paper and pulp
ceramics
others

3. Sign Convention

In the part referring to the energy sector (see matrix C1) every quantity of energy that increases available energy in the country has a POSITIVE sign (production, imports, inventory withdrawals, exists from transformation centers). Conversely, every amount that causes a decrease in available energy in the country has a NEGATIVE sign (increase in inventory, exports, non-utilized energy and re-injected energy, transformed energy, transformation losses and distribution and storage losses).

Finally, all data found in the section on final energy consumption are also negative. To simplify presentation, they are given as arithmetic quantities (without sign).

4. Basic Operations In The Matrix

4.1. Primary and Secondary Energy

The energy flow of each source is shown by the following formula:

Total supply = production
(+)
imports
(+ or -)
variation in inventories

Gross domestic supply = total supply
(-)
exports
(-)
non-utilized
(-)
re-injection

or:

Gross domestic supply = total transformation
(+)
final consumption
(+)
distribution and storage losses
(+ or -)
adjustments

It should be noted that production of secondary energy appears in the figure at the stage pertaining to transformation centers, as the production derives entirely from primary energy. In order to avoid double counting total production of secondary energy is not inserted in the line corresponding to production of primary energy. This way, the operations related to secondary energy are not presented in the matrix. However, these considerations will be valid when secondary products are studied separately.

4.2. Transformation

This stage is characterized by the transformation centers and the following formula is applied:

Secondary energy production = primary transformation
(+)
secondary transformation
(-)
transformation losses

4.3. Final Energy Consumption

Final consumption = final primary consumption
(+)
final secondary consumption

or:

Final consumption = final non-energy consumption
(+)
final energy consumption

TABLE C1
UNIT:

CONSOLIDATED ENERGY BALANCE

YEAR:

ENERGY FLOW		SOURCES	PRIMARY ENERGY										SECONDARY ENERGY										27 TOTAL				
			1 PETRO- LEUM	2 NATUR. RAL	3 STEAM COAL	4 METAL COAL	5 URANIM U308	6 HYDRO	7 FIRE- WOOD	8 S.CANE PROD.	9 OTHER PRIMAR.	10 TOTAL PRIMAR.	11 DIESL OIL	12 FUEL OIL	13 GASO- LINE	14 LPG	15 NAPH THA	16 KERO- SENE	17 GAS	18 COAL COQUE	19 URAN. C/UO2	20 ELECTRI- CITY		21 CHAR- COAL	22 ALCO- HOL	23 OTHER OIL PRO.	24 N.ENER. OIL PTRO.
ENERGY SECTOR	ENERGY SUPPLY	1	PRODUCTION																								
		2	IMPORTS																								
		3	CHANGES IN STOCKS																								
		4	TOTAL SUPPLY																								
		5	EXPORTS AND BUNKERS																								
		6	NON-UTILIZED																								
		7	REINJECTION																								
		8	GROSS DOMESTIC SUPPLY																								
	TRANSFORMATION CENTERS	9	TOTAL TRANSFORMATION																								
		9.1	PETROLEUM REFINERIES																								
		9.2	NATURAL GAS PLANTS																								
9.3		GASIFICATION PLANTS																									
9.4		COKING PLANTS																									
9.5		NUCLEAR CYCLE																									
9.6		PUBLIC UTIL. POWER PLANTS																									
9.7		AUTO-GENERATION																									
9.8		CHARCOAL PLANTS																									
9.9		DISTILLERIES																									
9.10	OTHER TRANSFORMATIONS																										
	10	LOSSES IN DISTRIB./STORAGE																									
	11	ADJUSTMENTS																									
FINAL CONSUMPTION	12	FINAL CONSUMPTION																									
	12.1	FINAL NON-ENERGY CONSUMPTION																									
	12.2	FINAL ENERGY CONSUMPTION																									
	12.2.1	ENERGY SECTOR																									
	12.2.2	RESIDENTIAL																									
	12.2.3	COMERCIAL																									
	12.2.4	PUBLIC																									
	12.2.5	AGRICULTURAL																									
	12.2.6	TRANSPORTATION - TOTAL																									
	12.2.6.1	HIGHWAYS																									
	12.2.6.2	RAILROADS																									
	12.2.6.3	AIRWAYS																									
	12.2.6.4	WATERWAYS																									
	12.2.7	INDUSTRIAL - TOTAL																									
	12.2.7.1	CEMENT																									
	12.2.7.2	PIG-IRON AND STEEL																									
	12.2.7.3	FERRO-ALLOYS																									
	12.2.7.4	MINING-PELLETIZATION																									
	12.2.7.5	NÃO-FER. / OTHER METALS																									
	12.2.7.6	CHEMICAL																									
	12.2.7.7	FOOD AND BEVERAGE																									
	12.2.7.8	TEXTILES																									
	12.2.7.9	PAPER AND PULP																									
	12.2.7.10	CERAMICS																									
12.2.7.8	OTHERS																										
12.2.8	UNIDENTIFIED CONSUMPTION																										

TRANSFORMATION LOSSES

D. TREATMENT OF INFORMATION

1. General Aspects

As a result of a continuing search for improvement, each edition of the Brazilian Energy Balance contains the most accurate and detailed figures to date.

For this reason some differences between the data shown in the latest edition and the previous ones may arise. Explanatory notes on these differences are included in the latest edition.

2. Direct and Indirect Data Sources

Petroleum, Natural Gas and Oil Shale

- Agência Nacional de Petróleo - ANP (ex-DNC)
- Petróleo Brasileiro S.A. - PETROBRAS
- Companhias Distribuidoras de Derivados
- Entidades de Classes e Grandes Indústrias

Steam Coal and Metallurgical Coal

- Sindicato Nacional da Indústria de Extração do Carvão
- Grandes Indústrias Consumidoras

Hydraulic Energy and Electricity

- Agência Nacional de Energia Elétrica - ANEEL (ex DNAEE)
- Centrais Elétricas Brasileiras - ELETROBRAS
- Concessionárias de Energia Elétrica

Firewood

- Fundação Instituto Brasileiro de Geografia Estatística - IBGE
- Grandes Indústrias Consumidoras
- Projeto Matriz Energética Brasileira - MEB-MME IPEA

Sugar Cane, Alcohol and Sugar Cane Bagasse

- Departamento de Assuntos Sucro-Alcooleiros - MICT
- Petróleo Brasileiro S/A - PETROBRAS
- Sindicatos e Entidades de Classe

Gas

- Companhias de Gás do Rio de Janeiro

- Companhia de Gás de São Paulo - COMGAS

Nuclear Energy

- Industrias Nucleares do Brasil - INB

Other Information Sources

- Associação Nacional dos Fabricantes de Papel e Celulose - ANFPC
- Sindicato Nacional da Indústria de Cimento - SNIC
- Associação Brasileira dos Produtores de Ferro Ligas - ABRAFE
- Instituto Brasileiro de Siderurgia - IBS
- Indústrias dos Setores Siderúrgico, Ferro-Ligas, Alumínio e Outros Não-Ferrosos
- Polos Petroquímicos - COPENE/COPELUL PETROQUÍMICA UNIÃO
- Sindicato de Indústria do Açúcar e do Alcool, no Estado de Pernambuco - SINDAÇÚCAR
- Sindicato da Indústria do Açúcar e do Alcool, no Estado de Alagoas
- Fundação IBGE, para dados gerais sobre o país
- Fundação Getúlio Vargas - FGV

3. Peculiarities in Data Processing

Petroleum, Natural Gas and By-Products

PETROBRAS is the source of data on production, imports, exports, inventories and transformation.

For sectorial consumption there are three sources: PETROBRAS, ANP and Industry Associations. Information referring to sales made directly by the refineries are received from PETROBRAS. The information referring to sales made by the distributors to consumers is furnished by ANP (ex- DNC), which is regulated by Decree CNP-DIPLAN n.º 221, dated June 25, 1981 and is broken down according to Federal Revenue Bureau criteria. Real consumption data is obtained from Industry Associations of the Steel-Milling, Cement, Pulp and Paper and Pelletization Industries.

Based on the reconciliation of these three large sources and on the analysis of the consistency of the information, the petroleum, natural gas and by-products energy flows are elaborated.

Steam Coal and Metallurgical Coal

Geological conditions of the coal pits (small thickness of layers) and the methods of mining coal lead to the extraction of run-of-mine coal with large amounts of inert matter (argillites, etc.). In the balance calculations fossil coal after beneficiation, in the forms of steam and metallurgical coal is considered primary energy.

Nuclear Energy

The time lag between mining and enrichment of uranium averages 21 months. Because of this, all the uranium in process within flues part of the nuclear fuel cycle is considered to be inventory of U_3O_8 . Every year an account is made for the amount of uranium (content of the UO_2) put out inventory. Losses of 1.5% are considered in the account.

Hydraulic and Electric Energy

In this case hydraulic consumption is the gross electricity production as measured at the hydraulic plants. The portion corresponding to leaked energy is not considered.

Electric Energy sectorial consumption and supply is regulated by Decree n°. 100, dated 06/27/89, from DNAEE, (nowadays ANEEL) that establishes several classes and subclasses of consumers.

For the auto-generators there is the follow-up of a quite significant sample, the totals being estimated.

Firewood and Charcoal

Production of firewood and charcoal is determined based on consumption data, not taking into account any inventory variation.

Firewood sectorial consumption data, except those from Pulp and Paper and Non-ferrous Industries, from which real consumption data are furnished, are obtained through extrapolation of the data from the Energy Matrix Project, 1970, from IBGE survey and by means of correlation with the sectorial consumption of the energy products, such as LPG in the residential sector.

Charcoal: the industrial sectorial consumption is directly obtained from the consumers. The consumption data of the other sectors is obtained in the same manner as for firewood. Charcoal production is calculated taking in account percentual losses in distribution and storage.

Sugar Cane Products

Include cane juice, molasse and bagasse. These products are calculated from sugar and alcohol production average coefficients.

Coke

Production and consumption data are directly obtained from industries (CSN, COSIPA, USIMINAS, AÇOMINAS, and other). Energy import and export data are provided by the Federal Revenue Bureau.

4. Electricity in the Brazilian Energy Balance - BEB

Approach: analysis of the relative participation of hydraulic power and electricity in the offer and consumption of energy in Brazil and comparison with other countries, taking into account different criteria for conversion factors for the common unit adopted.

CONVERSION COEFFICIENT FOR HYDRAULIC POWER AND ELECTRICITY IN BEB

The **ton-oil-equivalent (toe)** is the common unit used to convert the measuring units of different forms of energy used in BEB. The conversion factors are calculated based on the superior calorific power of each energy source relative to that of petroleum, namely 10,800kcal/kg.

For hydraulic power and electricity supply and consumption it is used the factor of **0.29 toe/MWh**, resulting from the ratio between the average consumption of fuel oil in kcal/kWh in the Brazilian thermoelectric plants and the superior calorific power of petroleum (3,132/10,800). Therefore, it is the factor that represents the **thermal equivalence** of electrical generation.

Note: 3,132 kcal/kWh corresponds to a thermal generation average efficiency of 27.5%.

Should the theoretical criterion for hydraulic power and electricity be used, where kWh = 860kcal (according to the first principal of thermodynamics), the conversion factor would be **0.08 toe/MWh** (860/10,800), therefore 3.62 times smaller than the one used in BEB.

Note: the use of the superior calorific power barely modifies the results in toe, since in order to calculate the conversion factors, the numerator and denominator are practically proportionally altered.

HISTORICAL PRECEDENTS

At the start of the seventies, when the first reports containing energy data consolidation were started in Brazil, the international literature on energy balance indicated for hydraulic power the preponderant use of thermal equivalence factor. This criterion was based on making comparable the supply of energy from countries with high and low participation of hydraulic generation. Therefore, hydraulic power factors varying from 0.20 to 0.30 toe/MWh were used, depending on the average efficiency of the thermal power plants.

For the supply and consumption of electricity, the **theoretical criterion** was used, namely, 0.080 toe/MWh. Therefore, the consolidated balances presented high losses (fictitious) by transforming hydraulic energy into electricity, due to accounting hydraulic power as thermal equivalency. By the previous reason, Brazil adopted for electricity supply and consumption the same criterion of thermal equivalence (0.29 factor).

As a matter of fact, from the seventies on the international energy balances have substituted the thermal equivalence criterion by the theoretical one in hydraulic power accounting, which did not occur in BEB/BR. As examples we mention the recent energy balances from the International Energy Agency, the World Energy Council, the Latin-American Energy Organization, etc. The thermal equivalence criterion is applied only to nuclear, solar, wind and geothermal energies.

EFFECTS OF CONVERSION FACTORS FOR HYDRAULIC POWER AND ELECTRICITY ON BEB

Table 1 presents 1998 data from the **Brazilian Domestic Energy Supply - DES**, considering both accounting criteria for hydraulic power and electricity - h&e (0.29 and 0.08 conversion factors).

Table 1

DOMESTIC ENERGY SUPPLY - 1998

SOURCES	Hydr. e Elect. = 0.29		Hydr. e Elect. = 0.08	
	10 ³ toe	%	10 ³ toe	%
NON-RENEWABLE ENERGY	104477	41.8	104477	57.8
PETROLEUM AND DERIVATIVES	84016	33.6	84016	46.5
NATURAL GAS	6645	2.7	6645	3.7
COAL AND COKE	12322	4.9	12322	6.8
URANIUM - U308	1494	0.6	1494	0.8
RENEWABLE ENERGY	145611	58.2	76148	42.2
HYDRAULIC AND ELECTRICITY	95925	38.4	26462	14.7
FIREWOOD AND CHARCOAL	21238	8.5	21238	11.8
SUGAR CANE PRODUCTS	25063	10.0	25063	13.9
OTHERS	3385	1.4	3385	1.9
TOTAL	250088	100.0	180625	100.0

As one can notice, the DES changes from 250.1 million toe by the thermal equivalence criterion to 180.6 million toe by the theoretical criterion - a reduction of 28%. Still by the theoretical criterion, h&e changes its participation in the DES from 14.7% to 38.4%, according to the other criterion - 23.7 percent points less. As a consequence, the renewable energy has also its relative participation considerably reduced, losing 15.8 percent points.

The Figure(a) shows the evolution indexes of the GDP and of DES, the last one according to both criteria for h&e, taking 1970 as basic year.

Since h&e was the energy source group that had the largest growth in the period 1970/1998, one can observe, due to the fact that its conversion factor is diminished, the DES presents smaller growing rates, showing in the period an elasticity smaller than one, relative to the GDP.

An analysis of the effects on the **final energy consumption** can be made through the data from table 2 where it is also introduced the concept of useful energy, namely the calculation of the relative participation considering the use efficiency of the energy sources in the final use equipment such as boilers, furnaces, dryers, motors, etc. Table 2.

It can be noticed that electricity has its participation abated by using the theoretical criterion but recuperates part of the participation when calculated in useful energy.

Figure(a)
ENERGY AND GDP

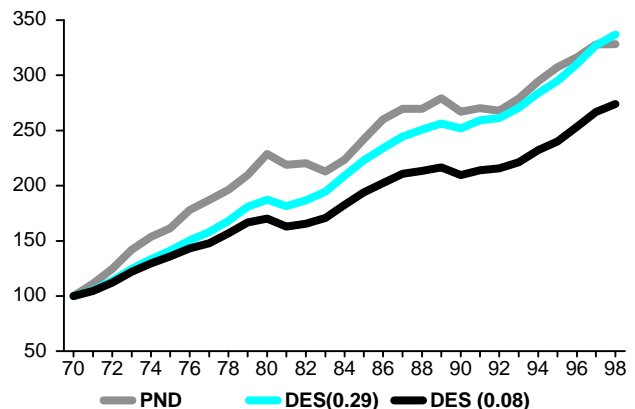


Table 2

FINAL ENERGY CONSUMPTION

SOURCES	Elect. = 0.29		Elect. = 0.08		Useful Energy	
	10 ³ tep	%	10 ³ toe	%	10 ³ toe	%
ELECTRICITY	89027	41.3	24559	16.3	18911	24.0
PETROLEUM AND DERIVATIVES	69486	32.2	69486	46.0	30668	38.9
NATURAL GAS	4193	1.9	4193	2.8	2809	3.6
COAL AND COKE	9946	4.6	9946	6.6	7176	9.1
BIOMASS	42920	19.9	42920	28.4	19267	24.4
TOTAL	215572	100.0	151104	100.0	78831	100.0

This is due to the larger efficiency of the equipment used in electricity relative to the national average.

Compared to other countries and considering the theoretical criterion, the data of table 3 show that Brazil presents electricity participation in the final energy consumption similar to that of the developed countries, between 15% and 20%.

Nevertheless, from the point of view of the offer, when one analyses the origin of electricity for the different countries, it is noticed that in Brazil, due to the high hydroelectricity, only 16.8% of the domestic energy supply - DES - is intended for electricity while other countries have this value between 32% and 40%. As a consequence, these countries present high losses in transformation - energy quantities between 18% and 28% of the DES (thermoelectric generation losses).

Table 3

ELECTRICITY IN SOME COUNTRIES

SPECIFICATION	UNIT	GERMANY	JAPAN	USA	BRAZIL
ELECTRICITY CONSUMPTION / FINAL CONSUMPTION	%	16.0	20.4	14.7	16.0
CONSUMPTION IN ELECTRIC GENERATION	%	35.1	39.6	32.4	16.8
THERMAL GENERATION - DES	%	34.7	38.0	31.3	2.8
HYDRO GENERATION - DES	%	0.4	1.6	1.1	14.0
HYDRO GENERATION / TOTAL GENERATION	%	3.2	10.1	8.7	94.0
LOSSES IN TRANSFORMATION - DES	%	27.5	26.5	18.6	6.2

CONCLUSIONS

In the energy prospective studies, where the competition possibilities among energy sources are analyzed, the end use, the equipment efficiency and captive uses are the variables used and therefore, for electricity, the theoretical

criterion is valid. Therefore, from the technical point of view, there is no restriction on using one or the criterion for representing the figures of hydraulic power and electricity in Energy Balances.

SOME CONCEPTS

Measurement Units (Commercial) - units that usually express the commercialized quantities of energy sources, for example: for solids, ton (t) or pound (lb), for liquids, cubic meter (m³) or barrel (bbl), for gases, cubic meter (m³) or cubic foot (ft³) and for electricity, watt (W) for power and watt-hour (Wh), for energy.

Common Unit - unit to which the measurement units used for different forms of energy are converted. This unit allows for adding different energy quantities in the Energy Balances. According to the International Unit System - IS, joule or kilowatt-hour are the regulated units used as Common Unit but other units are currently used by different countries and international organizations such as equivalent ton-oil-equivalent (toe), ton-coal-equivalent (tce), calorie and its multiples, British thermal unit (Btu), etc.

Conversion Factors (coefficient of equivalence) - coefficients that permit transforming quantities expressed in measuring quantities to quantities expressed in a common unit. For example, in the case of Brazil, in order to convert tons of wood into toe, the 0.306 coefficient is used, which is the ration between the calorific power of wood and that of petroleum (3,300 kcal/kg/ 10,800 kcal/kg), that is 1t of wood = 0.306 toe.

Calorie (cal) - quantity of heat in kcal necessary to raise the temperature of one gram of water from 14.5o C to 15.5 o C at normal atmospheric pressure (760 mm Hg).

Calorific Power - heat quantity in kcal produced by 1kg or 1m³ N of fuel after complete combustion.

Note: the fuels that produce H₂O in the combustion products (derived from combustion or from impregnated water) have a superior calorific power and a lower calorific power. Since most of the time H₂O escapes through the chimney as vapor, the inferior caloric power is the one that is

practically significant.

Watt (W) - Power unit - watt is the power of an energy system in which the energy of 1 joule is uniformly transferred during 1 second.

Watt-hour - (Wh) - energy uniformly transferred during 1 hour.

1 Wh = 1 x 3,600s x J/s= 3,600 J = 3,600 x (0.239 cal) = 860 cal

Therefore, in the theoretical concept 1kWh = 860 kcal

Note: watt, watt-hour and their multiples are measurement units used for hydraulic power and electricity, for power generation and distribution.

Joule (J) - Work unit for energy and quantity of heat. Joule is the work produced by a force of 1 Newton whose application point moves 1 meter in the force's direction.

1 J = 1 N. m

Newton (N) - Force unit. Newton is the force that, when applied to a body with 1 kilogram of mass, transmits the acceleration of 1 meter per second squared. Considering the acceleration of gravity as 9.806 m/s², one has

1 N = 0.102 kg

Domestic Energy Supply is the quantity of energy available for transformation and/or final consumption. Therefore it gives the energy before the transmission and distribution processes.

Final Energy Consumption is the energy consumed by the different sectors of the economy to satisfy the needs of different uses such as heat, motive power, illumination, etc. It does not include quantity of energy used as raw material for the production of any other form of energy.

Note: except for statistical adjustments, the difference between Domestic Energy Supply and Final Energy Consumption correspond to adding the losses in distribution and storage to losses in the transformation processes (refineries, distilleries, electrical power plants, coking plants, etc.)

E. CONVERSION UNITS

BASIC UNIT ADOPTED

As energy flows are expressed in different units, uniform unit of measure was adopted - the ton of oil equivalent (toe) - thus allowing the sum of all the energy flows.

Because "toe":

- Is directly related to the most important current source of energy;

- Expresses a physical reality;

- Is compatible with the International Units System.

With the exception of electricity, that takes into account yields of transformation processes, all the remaining energy products are converted into toe, and their respective energy content is compared to the average oil.

SPECIFIC MASS AND HIGH HEATING VALUES - 1998

SOURCES	SPECIFIC MASS kg/m ³ (1)	HEATING VALUE kcal/kg	SOURCES	SPECIFIC MASS kg/m ³ (1)	HEATING VALUE kcal/kg
PETROLEUM	876	10800	MEDIUM FUEL OIL	1013	10085
HUMID NATURAL GAS	-	10454 (2)	MOTOR GASOLINE	742	11220
DRY NATURAL GAS kcal/kg	-	9256 (2)	AVIATION GASOLINE	726	11290
STEAM COAL 3100 kcal/kg	-	3100	LIQUEFIED PETROLEUM GAS	552	11750
STEAM COAL 3300 kcal/kg	-	3300	NAPHTHA	702	11320
STEAM COAL 3700 kcal/kg	-	3700	LIGHTING KEROSENE	790	11090
STEAM COAL 4200 kcal/kg	-	4200	JET FUEL	790	11090
STEAM COAL 4500 kcal/kg	-	4500	GAS COKE	-	4500
STEAM COAL 4700 kcal/kg	-	4700	GASWORKS GAS-RJ	-	3900 (2)
STEAM COAL 5200 kcal/kg	-	5200	GASWORKS GAS-SP	-	4700 (2)
STEAM COAL 5900 kcal/kg	-	5900	COAL COKE	-	7300
STEAM COAL 6000 kcal/kg	-	6000	ELECTRICITY	-	3132 (3)
NON-SPECIFIED STEAM COAL	-	3000	CHARCOAL	250	6800
NATIONAL METALLURGICAL COAL	-	6800	ANHYDROUS ALCOHOL	791	7090
IMPORTED METALLURGICAL COAL	-	7300	HYDRATED ALCOHOL	809	6650
HYDRAULIC ENERGY	-	3132 (3)	REFINERY GAS	780	8800
NON COMMERCIAL FIREWOOD	300	3300	PETROLEUM COKE	1040	8500
COMMERCIAL FIREWOOD	390	3300	OTHER SOURCES OF PETROLEUM	864	10800
CANE JUICE	-	620	COAL BITUMEN	-	9000
MOLASSES	-	1930	ASPHALT	1025	10050
SUGAR CANE BAGASSE	-	2257 (4)	LUBRICANTS	875	10770
BLACK LIQUOR	-	3030	SOLVENTS	741	11240
DIESEL OIL	852	10750	OTHER NON-ENERGY OF PETROLEUM	864	10800

(1) At 20°C for oil derivatives and natural gas.

(2) kcal/m³

(3) kcal/kWh

(4) Bagasse at 50% humidity.

CONVERSION FACTORS FOR AVERAGE toe VALUES

SOURCES	UNIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
PETROLEUM	m3	0.867	0.865	0.867	0.867	0.867	0.864	0.864	0.872	0.872	0.872	0.872	0.872	0.868	0.864	0.876	0.876
HUMID NATURAL GAS	10 ³ m3	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.968
DRY NATURAL GAS	10 ³ m3	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857	0.857
STEAM COAL 3100 Kcal/Kg	t	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287	0.287
STEAM COAL 3300 Kcal/Kg	t	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306
STEAM COAL 3700 Kcal/Kg	t	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343	0.343
STEAM COAL 4200 Kcal/Kg	t	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389	0.389
STEAM COAL 4500 Kcal/Kg	t	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417
STEAM COAL 4700 Kcal/Kg	t	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435
STEAM COAL 5200 Kcal/Kg	t	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481	0.481
STEAM COAL 5900 Kcal/Kg	t	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546	0.546
STEAM COAL 6000 Kcal/Kg	t	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556	0.556
NON-ESPECIFIED STEAM COAL	t	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
NATIONAL METALLURGICAL COAL	t	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630
IMPORTED METALLURGICAL COAL	t	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733	0.733
URANIUM - U3O8	kg	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950	9.950
OTHER NON-RENEWAB.PRIM.SOURCES	toe	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
HYDRAULIC ENERGY	MWh	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
FIREWOOD	t	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306
CANE JUICE	t	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
MOLASSES	t	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
SUGAR CANE BAGASSE	t	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209
BLACK LIQUOR	m3	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281	0.281
OTHER WASTES	toe	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DIESEL OIL	m3	0.841	0.849	0.845	0.853	0.851	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
FUEL OIL	m3	0.925	0.892	0.932	0.951	0.951	0.943	0.931	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
MOTOR GASOLINE	m3	0.767	0.766	0.772	0.772	0.767	0.773	0.772	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771
AVIATION GASOLINE	m3	0.749	0.749	0.740	0.740	0.740	0.743	0.727	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759
LIQUEFIED PETROLEUM GAS	m3	0.603	0.603	0.604	0.599	0.600	0.601	0.602	0.601	0.601	0.601	0.601	0.601	0.601	0.601	0.601	0.601
NAPHTHA	m3	0.733	0.733	0.733	0.733	0.740	0.736	0.743	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736	0.736
LIGHTING KEROSENE	m3	0.807	0.810	0.815	0.796	0.804	0.801	0.804	0.811	0.811	0.811	0.811	0.811	0.811	0.811	0.811	0.811
JET FUEL	m3	0.806	0.812	0.816	0.806	0.806	0.802	0.807	0.811	0.811	0.811	0.811	0.811	0.811	0.811	0.811	0.811
GAS COKE	10 ³ m3	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417
GASWORKS GAS-RJ	10 ³ m3	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
GASWORKS GAS-SP	10 ³ m3	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435	0.435
COAL COKE	t	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676	0.676
URANIUM CONTAINED IN UO2	kg	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530	72.530
ELECTRICITY	MWh	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290	0.290
CHARCOAL	t	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630	0.630
ANHYDROUS ALCOHOL	m3	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520	0.520
HYDRATED ALCOHOL	m3	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496	0.496
REFINERY GAS	m3	0.636	0.636	0.635	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636	0.636
PETROLEUM COKE	m3	0.787	0.819	0.818	0.819	0.819	0.817	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819	0.819
OTHER SOURCES OF PETROLEUM	m3	0.867	0.867	0.867	0.867	0.867	0.864	0.872	0.872	0.872	0.872	0.872	0.872	0.868	0.864	0.864	0.864
COAL BITUMEM	m3	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833
ASPHALT	m3	0.867	0.867	0.867	0.867	0.867	0.904	0.926	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954	0.954
LUBRICANTS	m3	0.867	0.867	0.867	0.867	0.867	0.872	0.823	0.873	0.873	0.873	0.873	0.873	0.873	0.873	0.873	0.873
SOLVENTS	m3	0.867	0.867	0.867	0.867	0.867	0.761	0.742	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771
OTHER NON-ENERGY OF PETROLEUM	m3	0.867	0.867	0.867	0.867	0.867	0.864	0.864	0.872	0.872	0.872	0.872	0.872	0.868	0.864	0.864	0.864

GENERAL CONVERSION FACTORS FOR ENERGY

Multiply by	FOR	Fuel Oil (m ³)	Dry Natural Gas (1000 m ³)	Steam Coal 5200 (t)	LPG (m ³)	Firewood (t)	Charcoal (t)
TO Physical Unit							
Fuel Oil (m ³)		1.00	1.09	1.94	1.56	3.06	1.48
Dry Natural Gas (1000 m ³)		0.92	1.00	1.78	1.43	2.80	1.36
Steam Coal 5200 (t)		0.52	0.56	1.00	0.80	1.58	0.76
LPG (m ³)		0.64	0.70	1.25	1.00	1.97	0.95
Firewood (t)		0.33	0.36	0.63	0.51	1.00	0.49
Charcoal (t)		0.67	0.73	1.31	1.05	2.06	1.00

CONVERSION FACTORS FOR MASS

Multiply by	FOR	kg	t	lt	st	lb
TO						
kilogram (kg)		1.0	0.001	0.000984	0.001102	2.2046
metric ton (t)		1000	1.0	0.984	1.1023	2204.6
long ton (lt)		1016	1.016	1.0	1.120	2240.0
short ton (st)		907.2	0.9072	0.893	1.0	2000.0
pound (lb)		0.454	0.000454	0.000446	0.0005	1.0

CONVERSION FACTORS FOR VOLUME

Multiply by	FOR	m ³	l	gal (USA)	gal (UK)	bbl	ft ³
TO							
cubic metre (m ³)		1.0	1000.0	264.2	220.0	6.289	35.3147
litre (l)		0.001	1.0	0.2642	0.22	0.0063	0.0353
gallon (USA)		0.0038	3.785	1.0	0.8327	0.02381	0.1337
gallon (UK)		0.0045	4.546	1.201	1.0	0.02859	0.1605
barrels (bbl)		0.159	149.0	42.0	34.97	1.0	5.615
cubic foot (ft ³)		0.0283	28.3	7.48	6.229	0.1781	1.0

CONVERSION FACTORS FOR ENERGY

Multiply by	FOR	J	Btu	cal	kWh
TO					
joule (J)		1.0	947.8 x 10 ⁻⁶	0.23884	277.7 x 10 ⁻⁹
Btu		1.055 1x10 ³	1.0	252.0	2.9307 x 10 ⁻⁶
calorie (cal)		4.1868	3.968 x 10 ⁻³	1.0	1.163 x 10 ⁻⁶
kilowatt-hora (kWh)		3.6 x 10 ⁶	3412	860 x 10 ³	1.0
toe		45.22 x 10 ⁹	42.86 x 10 ⁶	10.8 x 10 ⁹	12.56 x 10 ³
boe		6.24 x 10 ⁹	5.91 x 10 ⁶	1.49 x 10 ⁹	1.73 x 10 ³

CONVERSION FACTORS FOR GAS FUEL

Multiply by	FOR	giga calories	ton oil equivalent 10800 kcal/kg	barrel oil equivalent	ton steam coal equivalent 7000 kcal/kg	giga joule	million Btu	megawatt- hours 860 kcal/kWh
TO 1000 m ³								
Humid Natural Gas		10.45	0.968	7.02	1.49	43.77	41.48	12.16
Dry Natural Gas		9.26	0.857	6.21	1.32	38.75	36.73	10.76
Gas coke		4.50	0.417	3.02	0.64	18.84	17.86	5.23
Gasworks Gas - RJ		3.90	0.361	2.62	0.56	16.33	15.48	4.54
Gasworks Gas - SP		4.70	0.435	3.15	0.67	19.68	18.65	5.47

CONVERSION FACTORS FOR LIQUID FUEL

Multiply by	FOR	giga	ton oil equivalent 10800	barrel oil equivalent	ton steam coal equivalent 7000	giga	million	megawatt- hours 860
TO m ³		calories	kcal/kg		kcal/kg	joule	Btu	kcal/kWh
Petroleum		9.37	0.868	6.29	1.34	39.23	37.18	10.90
Diesel Oil		9.16	0.848	6.15	1.31	38.35	36.34	10.65
Fuel Oil		10.22	0.946	6.86	1.46	42.79	40.56	11.89
Motor Gasoline		8.33	0.771	5.59	1.19	34.86	33.03	9.68
Aviation Gasoline		8.20	0.759	5.50	1.17	34.32	32.52	9.53
Liquefied Petroleum Gas		6.49	0.601	4.35	0.93	27.16	25.74	7.54
Naphtha		7.95	0.736	5.33	1.14	33.27	31.53	9.24
Lighting Kerosene		8.76	0.811	5.88	1.25	36.68	34.76	10.19
Jet Fuel		8.76	0.811	5.88	1.25	36.68	34.76	10.19
Anhydrous Alcohol		5.61	0.520	3.76	0.80	23.8	22.25	6.52
Hydrated Alcohol		5.38	0.496	3.61	0.77	22.52	21.35	6.26
Refinery Gas		6.86	0.636	4.61	0.98	28.74	27.24	7.98
Petroleum Coke		8.84	0.819	5.93	1.26	37.01	35.08	10.28
Other Sources of Petroleum		9.33	0.864	6.26	1.33	39.07	37.03	10.85
Asphalt		10.30	0.954	6.91	1.47	43.13	40.88	11.98
Lubricants		9.42	0.873	6.32	1.35	39.46	37.39	10.96
Solvents		8.33	0.771	5.59	1.19	34.87	33.05	9.69
Other Non-Energy of Petroleum		9.33	0.864	6.26	1.33	39.07	37.03	10.85

CONVERSION FACTORS FOR SOLID FUEL

Multiply by	FOR	giga	ton oil equivalent 10800	barrel oil equivalent	ton steam coal equivalent 7000	giga	million	megawatt- hours 860
TO TONNE		calories	kcal/kg		kcal/kg	joule	Btu	kcal/kWh
Steam Coal 3100 kcal/kg		3.10	0.287	2.08	0.44	12.98	12.30	3.61
Steam Coal 3300 kcal/kg		3.30	0.306	2.21	0.47	13.82	13.09	3.84
Steam Coal 3700 kcal/kg		3.70	0.343	2.48	0.53	15.49	14.68	4.30
Steam Coal 4200 kcal/kg		4.20	0.389	2.82	0.60	17.58	16.67	4.88
Steam Coal 4500 kcal/kg		4.50	0.417	3.02	0.64	18.84	17.86	5.23
Steam Coal 4700 kcal/kg		4.70	0.435	3.15	0.67	19.68	18.65	5.47
Steam Coal 5200 kcal/kg		5.20	0.481	3.49	0.74	21.77	20.63	6.05
Steam Coal 5900 kcal/kg		5.90	0.546	3.96	0.84	24.70	23.41	6.86
Steam Coal 6000 kcal/kg		6.00	0.556	4.03	0.86	25.12	23.81	6.98
Non-Specified Steam Coal		3.00	0.278	2.01	0.43	12.56	11.90	3.49
National Metallurgical Coal		6.80	0.630	4.56	0.97	28.47	26.98	7.91
Imported Metallurgical Coal		7.30	0.733	4.90	1.13	30.56	28.97	8.49
Firewood		3.30	0.306	2.21	0.47	13.82	13.09	3.84
Cane Juice		0.62	0.057	0.42	0.09	2.60	2.46	0.72
Molasses		1.93	0.179	1.30	0.28	8.08	7.66	2.24
Sugar Cana Bagasse		2.26	0.209	1.51	0.32	9.45	8.96	2.62
Black Licor		3.03	0.281	2.03	0.43	12.69	12.02	3.52
Coal Coke		7.30	0.676	4.90	1.04	30.56	28.97	8.49
Charcoal		6.80	0.630	4.56	0.97	28.47	26.8	7.91
Coal Bitumem		9.00	0.833	6.04	1.29	37.68	35.71	10.47

**CONSOLIDATED
ENERGY
BALANCE**

White page

APPENDIX F.01

CONSOLIDATED ENERGY BALANCE - YEAR 1970

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8009	1224	600	495	0	11542	31453	3536	221	57080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57080	
IMPORTS	17512	0	0	1440	0	0	0	0	0	18952	0	0	76	405	0	8	0	71	0	0	0	0	0	362	0	922	19874	
CHANGES IN STOCKS	-272	0	-28	-149	0	0	0	0	0	-449	-41	-68	-27	-95	14	-53	0	-24	0	0	0	-8	15	-53	0	-340	-789	
TOTAL SUPPLY	25249	1224	572	1786	0	11542	31453	3536	221	75583	-41	-68	49	310	14	-45	0	47	0	0	0	-8	15	309	0	582	76165	
EXPORTS AND BUNKERS	-64	0	0	0	0	0	0	0	0	-64	-46	-736	0	0	0	-120	0	0	0	-6	0	0	0	0	0	-908	-972	
NON-UTILIZED	0	-847	0	0	0	0	0	0	0	-847	0	0	0	0	0	0	-54	0	0	0	0	0	-49	0	0	-103	-950	
RE-INJECTION	0	-211	0	0	0	0	0	0	0	-211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-211	
GROSS DOMESTIC SUPPLY	25185	166	572	1786	0	11542	31453	3536	221	74461	-87	-804	49	310	14	-165	-54	47	0	-6	0	-8	-34	309	0	-429	74032	
TOTAL TRANSFORMATION	-25060	-96	-486	-1738	0	-11542	-3463	-445	-81	-42911	5345	7293	7205	1023	-8	1275	441	1145	0	13265	1724	316	254	870	58	40206	-2705	
PETROLEUM REFINERIES	-25060	0	0	0	0	0	0	0	0	-25060	5533	8259	7170	960	67	1275	0	0	0	0	0	0	254	870	0	24388	-672	
NATURAL GAS PLANTS	0	-96	0	0	0	0	0	0	0	-96	0	0	35	63	0	0	0	0	0	0	0	0	0	0	0	98	2	
GASIFICATION PLANTS	0	0	0	-169	0	0	0	0	0	-169	0	0	0	0	-75	0	144	54	0	0	0	0	0	0	0	123	-46	
COKING PLANTS	0	0	0	-1569	0	0	0	0	0	-1569	0	0	0	0	0	0	306	1091	0	0	0	0	0	0	58	1455	-114	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-476	0	0	-1140	0	0	0	-11616	-113	-642	0	0	0	0	0	0	0	12189	0	0	0	0	0	11434	-182	
SELF-PROD. POWER PLANTS	0	0	-10	0	0	-402	-13	-87	-81	-593	-75	-324	0	0	0	0	-9	0	0	1076	0	0	0	0	0	668	75	
CHARCOAL PLANTS	0	0	0	0	0	0	-3450	0	0	-3450	0	0	0	0	0	0	0	0	0	0	1724	0	0	0	0	1724	-1726	
DISTILLERIES	0	0	0	0	0	0	0	-358	0	-358	0	0	0	0	0	0	0	0	0	0	0	316	0	0	0	316	-42	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LOSSES IN DISTRIB./STORAGE	-125	0	0	-48	0	0	0	0	0	-173	0	0	0	0	0	0	-18	-33	0	-1756	-173	-7	0	0	0	-1987	-2160	
FINAL CONSUMPTION	0	69	86	0	0	0	27990	3091	140	31376	5258	6489	7254	1333	6	1110	369	1159	0	11503	1551	301	220	1179	58	37790	69166	
FINAL NON-ENERGY CONSUMPTION	0	3	0	0	0	0	0	0	0	3	0	0	0	0	6	6	0	0	0	0	0	206	0	1179	41	1438	1441	
FINAL ENERGY CONSUMPTION	0	66	86	0	0	0	27990	3091	140	31373	5258	6489	7254	1333	0	1104	369	1159	0	11503	1551	95	220	0	17	36352	67725	
ENERGY SECTOR	0	63	0	0	0	0	0	88	0	151	54	871	0	0	0	0	84	9	0	603	0	0	176	0	0	1797	1948	
RESIDENTIAL	0	0	0	0	0	0	18832	0	0	18832	0	0	0	1266	0	437	99	0	0	2426	427	0	0	0	0	4655	23487	
COMMERCIAL	0	0	0	0	0	0	189	0	0	189	63	79	0	22	0	0	15	0	0	1496	31	0	0	0	0	1706	1895	
PUBLIC	0	0	0	0	0	0	15	0	0	15	41	31	0	2	0	16	3	0	0	1034	0	0	0	0	0	1127	1142	
AGRICULTURE	0	0	0	0	0	0	4839	0	0	4839	383	11	0	0	0	0	0	0	0	92	19	0	0	0	0	505	5344	
TRANSPORTATION - TOTAL	0	0	16	0	0	0	43	0	0	59	4399	380	7254	0	0	619	0	0	0	188	0	95	0	0	0	12935	12994	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	3797	0	7179	0	0	0	0	0	0	0	0	95	0	0	0	11071	11071	
RAILROADS	0	0	16	0	0	0	33	0	0	49	340	76	0	0	0	0	0	0	0	188	0	0	0	0	0	604	653	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	75	0	0	619	0	0	0	0	0	0	0	0	0	694	694	
WATERWAYS	0	0	0	0	0	0	10	0	0	10	262	304	0	0	0	0	0	0	0	0	0	0	0	0	0	566	576	
INDUSTRIAL - TOTAL	0	3	70	0	0	0	4072	3003	140	7288	318	5117	0	43	0	32	168	1150	0	5664	1074	0	44	0	17	13627	20915	
CEMENT	0	0	0	0	0	0	0	0	0	0	23	1160	0	0	0	0	0	0	0	301	0	0	0	0	0	1484	1484	
PIG-IRON AND STEEL	0	0	1	0	0	0	0	0	0	1	11	688	0	4	0	0	160	1150	0	579	1015	0	0	0	17	3624	3625	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166	49	0	0	0	0	215	215	
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	33	186	0	0	0	0	0	0	0	131	0	0	0	0	0	350	350	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	109	0	0	0	0	2	0	0	970	10	0	44	0	0	1135	1135	
CHEMICAL	0	3	0	0	0	0	121	0	0	124	56	741	0	1	0	0	0	0	0	767	0	0	0	0	0	1565	1689	
FOODS AND BEVERAGES	0	0	0	0	0	0	1790	3003	0	4793	57	604	0	4	0	9	1	0	0	510	0	0	0	0	0	1185	5978	
TEXTILES	0	0	0	0	0	0	252	0	0	252	5	347	0	1	0	2	0	0	0	561	0	0	0	0	0	916	1168	
PAPER AND PULP	0	0	69	0	0	0	215	0	140	424	8	347	0	0	0	0	0	0	0	483	0	0	0	0	0	838	1262	
CERAMICS	0	0	0	0	0	0	1160	0	0	1160	3	302	0	4	0	5	0	0	0	162	0	0	0	0	0	476	1636	
OTHERS	0	0	0	0	0	0	534	0	0	534	122	633	0	29	0	16	5	0	0	1034	0	0	0	0	0	1839	2373	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	0	-1	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	

APPENDIX F.02

CONSOLIDATED ENERGY BALANCE - YEAR 1971

UNIT: 10³ toe

A C C O U N T	PETRO- LEUM	NATUR. GAS	STEAM COAL	METAL. COAL	URAN. U308	HYDRO	FIRE- WOOD	S.CANE PRODUC.	OTHER PRIMAR.	TOTAL PRIMAR.	DIESEL OIL	FUEL OIL	GASO- LINE	LPG	NAPH- THA	KERO- SENE	GAS	COAL COKE	URAN. C/UO2	ELECT- RICITY	CHAR- COAL	ALCO- HOL	OTHER OIL P.	N.ENER. OIL P.	BITU- MEN	TOTAL SECOND.	TOTAL	
PRODUCTION	8313	1140	642	523	0	12528	31409	3773	230	58558	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58558
IMPORTS	19935	0	0	1226	0	0	0	0	0	21161	187	404	88	420	0	19	0	80	0	0	0	0	0	428	0	1626	22787	
CHANGES IN STOCKS	-943	0	-40	73	0	0	0	0	0	-910	14	-207	105	-102	60	-75	0	-82	0	0	0	-19	14	-102	0	-394	-1304	
TOTAL SUPPLY	27305	1140	602	1822	0	12528	31409	3773	230	78809	201	197	193	318	60	-56	0	-2	0	0	0	-19	14	326	0	1232	80041	
EXPORTS AND BUNKERS	-748	0	0	0	0	0	0	0	0	-748	-132	-308	-1	0	0	-47	0	0	0	-5	0	-2	0	-1	0	-496	-1244	
NON-UTILIZED	0	-619	0	0	0	0	0	0	0	-619	0	0	0	0	0	0	-42	0	0	0	0	0	0	0	0	-42	-661	
RE-INJECTION	0	-264	0	0	0	0	0	0	0	-264	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-264	
GROSS DOMESTIC SUPPLY	26557	257	602	1822	0	12528	31409	3773	230	77178	69	-111	192	318	60	-103	-42	-2	0	-5	0	-21	14	325	0	694	77872	
TOTAL TRANSFORMATION	-26425	-145	-511	-1772	0	-12528	-3942	-461	-80	-45864	5750	7720	7702	1120	-46	1304	441	1182	0	14961	1963	319	500	820	63	43799	-2065	
PETROLEUM REFINERIES	-26425	0	0	0	0	0	0	0	0	-26425	5915	9062	7653	1028	51	1304	0	0	0	0	0	0	500	820	0	26333	-92	
NATURAL GAS PLANTS	0	-145	0	0	0	0	0	0	0	-145	0	0	49	92	0	0	0	0	0	0	0	0	0	0	0	141	-4	
GASIFICATION PLANTS	0	0	0	-146	0	0	0	0	0	-146	0	0	0	0	-97	0	145	47	0	0	0	0	0	0	0	95	-51	
COKING PLANTS	0	0	0	-1626	0	0	0	0	0	-1626	0	0	0	0	0	0	305	1135	0	0	0	0	0	0	63	1503	-123	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-498	0	0	-12142	0	0	0	-12640	-109	-1100	0	0	0	0	0	0	0	13873	0	0	0	0	0	12664	24	
SELF-PROD. POWER PLANTS	0	0	-13	0	0	-386	-13	-104	-80	-596	-56	-242	0	0	0	0	-9	0	0	1088	0	0	0	0	0	781	185	
CHARCOAL PLANTS	0	0	0	0	0	0	-3929	0	0	-3929	0	0	0	0	0	0	0	0	0	0	1963	0	0	0	0	1963	-1966	
DISTILLERIES	0	0	0	0	0	0	0	-357	0	-357	0	0	0	0	0	0	0	0	0	0	0	319	0	0	0	319	-38	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
LOSSES IN DISTRIB./STORAGE	-132	0	0	-50	0	0	0	0	0	-182	0	0	0	0	0	0	-16	-39	0	-1951	-197	-6	0	0	0	-2209	-2391	
FINAL CONSUMPTION	0	108	91	0	0	0	27467	3312	150	31128	5819	7609	7894	1438	14	1201	383	1141	0	13005	1766	292	514	1145	63	42284	73412	
FINAL NON-ENERGY CONSUMPTION	0	18	0	0	0	0	0	0	0	18	0	0	0	0	14	9	0	0	0	0	160	0	1145	46	1374	1392		
FINAL ENERGY CONSUMPTION	0	90	91	0	0	0	27467	3312	150	31110	5819	7609	7894	1438	0	1192	383	1141	0	13005	1766	132	514	0	17	40910	72020	
ENERGY SECTOR	0	80	0	0	0	0	0	83	0	163	52	918	0	0	0	0	86	8	0	711	0	0	455	0	0	2230	2393	
RESIDENTIAL	0	0	0	0	0	0	18820	0	0	18820	0	0	0	1358	0	409	101	0	0	2676	472	0	0	0	0	5016	23836	
COMMERCIAL	0	0	0	0	0	0	184	0	0	184	59	89	0	30	0	0	16	0	0	1647	33	0	0	0	0	1874	2058	
PUBLIC	0	0	0	0	0	0	15	0	0	15	67	35	0	3	0	15	3	0	0	1212	0	0	0	0	0	1335	1350	
AGRICULTURE	0	0	0	0	0	0	4651	0	0	4651	518	23	0	0	0	0	0	0	0	113	19	0	0	0	0	673	5324	
TRANSPORTATION - TOTAL	0	0	16	0	0	0	38	0	0	54	4797	409	7894	0	0	720	0	0	0	180	0	132	0	0	0	14132	14186	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	4162	0	7814	0	0	0	0	0	0	0	0	132	0	0	0	12108	12108	
RAILROADS	0	0	16	0	0	0	29	0	0	45	342	46	0	0	0	0	0	0	0	180	0	0	0	0	0	568	613	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	720	0	0	0	0	0	0	0	0	0	800	800	
WATERWAYS	0	0	0	0	0	0	9	0	0	9	293	363	0	0	0	0	0	0	0	0	0	0	0	0	0	656	665	
INDUSTRIAL - TOTAL	0	10	75	0	0	0	3759	3229	150	7223	326	6135	0	47	0	48	177	1133	0	6466	1242	0	59	0	17	15650	22873	
CEMENT	0	0	0	0	0	0	0	0	0	0	23	1250	0	0	0	0	0	0	0	328	0	0	0	0	0	1601	1601	
PIG-IRON AND STEEL	0	0	2	0	0	0	0	0	0	2	11	737	0	4	0	0	169	1133	0	916	1177	0	0	0	17	4164	4166	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	228	52	0	0	0	0	280	280	
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	36	233	0	0	0	0	0	0	0	155	0	0	0	0	0	424	424	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	136	0	0	0	0	2	0	0	878	13	0	58	0	0	1087	1087	
CHEMICAL	0	10	0	0	0	0	119	0	0	129	57	929	0	1	0	0	0	0	0	853	0	0	0	0	0	1840	1969	
FOODS AND BEVERAGES	0	0	0	0	0	0	1683	3229	0	4912	57	756	0	4	0	9	2	0	0	582	0	0	0	0	0	1410	6322	
TEXTILES	0	0	0	0	0	0	199	0	0	199	5	436	0	1	0	2	0	0	0	621	0	0	0	0	0	1065	1264	
PAPER AND PULP	0	0	73	0	0	0	214	0	150	437	8	434	0	0	0	0	0	0	0	512	0	0	0	0	0	954	1391	
CERAMICS	0	0	0	0	0	0	1039	0	0	1039	3	364	0	4	0	4	0	0	0	190	0	0	0	0	0	565	1604	
OTHERS	0	0	0	0	0	0	505	0	0	505	126	860	0	33	0	33	4	0	0	1203	0	0	1	0	0	2260	2765	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	-4	0	0	0	0	0	0	0	-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-4	

APPENDIX F.03

CONSOLIDATED ENERGY BALANCE - YEAR 1972

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8158	1202	643	527	0	14697	31741	4221	298	61487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61487
IMPORTS	25228	0	0	1361	0	0	0	0	0	26589	0	79	132	447	0	24	0	124	0	0	0	0	0	462	0	1268	27857	
CHANGES IN STOCKS	-486	0	-9	-83	0	0	0	0	0	-578	-261	-386	-89	-103	257	7	0	-17	0	0	0	21	57	-199	0	-713	-1291	
TOTAL SUPPLY	32900	1202	634	1805	0	14697	31741	4221	298	87498	-261	-307	43	344	257	31	0	107	0	0	0	21	57	263	0	555	88053	
EXPORTS AND BUNKERS	-1032	0	0	0	0	0	0	0	0	-1032	-341	-1124	-24	-14	0	-63	0	0	0	0	-7	0	-2	0	-1	0	-1576	-2608
NON-UTILIZED	0	-549	0	0	0	0	0	0	0	-549	0	0	0	0	0	0	-31	0	0	0	0	0	0	0	0	-31	-580	
RE-INJECTION	0	-365	0	0	0	0	0	0	0	-365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-365	
GROSS DOMESTIC SUPPLY	31868	288	634	1805	0	14697	31741	4221	298	85552	-602	-1431	19	330	257	-32	-31	107	0	-7	0	19	57	262	0	-1052	84500	
TOTAL TRANSFORMATION	-31710	-165	-541	-1751	0	-14697	-4569	-500	-94	-54027	7260	9828	8823	1260	305	1357	447	1174	0	16576	2275	348	431	953	67	51104	-2923	
PETROLEUM REFINERIES	-31710	0	0	0	0	0	0	0	0	-31710	7439	10678	8715	1147	529	1357	0	0	0	0	0	0	431	953	0	31249	-461	
NATURAL GAS PLANTS	0	-165	0	0	0	0	0	0	0	-165	0	0	54	100	0	0	0	0	0	0	0	0	0	0	0	154	-11	
GASIFICATION PLANTS	0	0	0	-97	0	0	0	0	0	-97	0	0	0	0	-154	0	145	31	0	0	0	0	0	0	0	22	-75	
COKING PLANTS	0	0	0	-1654	0	0	0	0	0	-1654	0	0	0	0	0	0	311	1143	0	0	0	0	0	0	67	1521	-133	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-529	0	0	-14278	0	0	0	-14807	-116	-590	0	0	0	0	0	0	0	15397	0	0	0	0	0	14691	-116	
SELF-PROD. POWER PLANTS	0	0	-12	0	0	-419	-15	-109	-94	-649	-63	-260	0	0	0	0	-9	0	0	1179	0	0	0	0	0	847	198	
CHARCOAL PLANTS	0	0	0	0	0	0	-4554	0	0	-4554	0	0	0	0	0	0	0	0	0	0	2275	0	0	0	0	2275	-2279	
DISTILLERIES	0	0	0	0	0	0	0	-391	0	-391	0	0	0	0	0	0	0	0	0	0	0	348	0	0	0	348	-43	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	54	13	-70	0	0	0	0	0	0	0	0	0	0	-3	-3	
LOSSES IN DISTRIB./STORAGE	-158	0	0	-54	0	0	0	0	0	-212	0	0	0	0	0	0	-15	-51	0	-2116	-227	-7	0	0	0	-2416	-2628	
FINAL CONSUMPTION	0	148	93	0	0	0	27172	3721	204	31338	6658	8397	8842	1590	562	1325	401	1230	0	14453	2048	360	488	1215	67	47636	78974	
FINAL NON-ENERGY CONSUMPTION	0	44	0	0	0	0	0	0	0	44	0	0	0	0	508	12	0	0	0	0	0	157	0	1215	49	1941	1985	
FINAL ENERGY CONSUMPTION	0	104	93	0	0	0	27172	3721	204	31294	6658	8397	8842	1590	54	1313	401	1230	0	14453	2048	203	488	0	18	45695	76989	
ENERGY SECTOR	0	85	0	0	0	0	0	72	0	157	58	1081	0	0	0	88	7	0	0	707	0	0	418	0	0	2359	2516	
RESIDENTIAL	0	0	0	0	0	0	18759	0	0	18759	0	0	0	1488	0	418	101	0	0	2880	515	0	0	0	0	5402	24161	
COMMERCIAL	0	0	0	0	0	0	184	0	0	184	57	100	0	46	0	0	16	0	0	1855	35	0	0	0	0	2109	2293	
PUBLIC	0	0	0	0	0	0	14	0	0	14	92	40	0	4	0	14	3	0	0	1365	0	0	0	0	0	1518	1532	
AGRICULTURE	0	0	0	0	0	0	4468	0	0	4468	694	45	0	0	0	0	0	0	0	130	18	0	0	0	0	887	5355	
TRANSPORTATION - TOTAL	0	0	11	0	0	0	34	0	0	45	5435	480	8842	0	0	819	0	0	0	177	0	203	0	0	0	15956	16001	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	4742	0	8756	0	0	0	0	0	0	0	0	203	0	0	0	13701	13701	
RAILROADS	0	0	11	0	0	0	26	0	0	37	359	35	0	0	0	0	0	0	0	177	0	0	0	0	0	571	608	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	86	0	0	819	0	0	0	0	0	0	0	0	0	905	905	
WATERWAYS	0	0	0	0	0	0	8	0	0	8	334	445	0	0	0	0	0	0	0	0	0	0	0	0	0	779	787	
INDUSTRIAL - TOTAL	0	19	82	0	0	0	3713	3649	204	7667	322	6651	0	52	54	62	193	1223	0	7339	1480	0	70	0	18	17464	25131	
CEMENT	0	0	0	0	0	0	0	0	0	0	23	1407	0	0	0	0	0	0	0	380	0	0	0	0	0	1810	1810	
PIG-IRON AND STEEL	0	0	9	0	0	0	0	0	0	9	12	782	0	5	0	0	184	1223	0	996	1404	0	0	0	18	4624	4633	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	57	0	0	0	0	311	311	
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	40	235	0	0	0	0	0	0	0	180	0	0	0	0	0	455	455	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	151	0	0	0	0	2	0	0	1106	19	0	69	0	0	1347	1347	
CHEMICAL	0	19	0	0	0	0	116	0	0	135	60	954	0	2	54	0	0	0	0	974	0	0	0	0	0	2044	2179	
FOODS AND BEVERAGES	0	0	0	0	0	0	1622	3649	0	5271	57	851	0	5	0	10	2	0	0	659	0	0	0	0	0	1584	6855	
TEXTILES	0	0	0	0	0	0	174	0	0	174	5	463	0	1	0	3	0	0	0	679	0	0	0	0	0	1151	1325	
PAPER AND PULP	0	0	73	0	0	0	211	0	204	488	9	488	0	0	0	0	0	0	0	535	0	0	0	0	0	1032	1520	
CERAMICS	0	0	0	0	0	0	1106	0	0	1106	3	426	0	4	0	5	0	0	0	217	0	0	0	0	0	655	1761	
OTHERS	0	0	0	0	0	0	484	0	0	484	113	894	0	35	0	44	5	0	0	1359	0	0	1	0	0	2451	2935	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	25	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	

APPENDIX F.04

CONSOLIDATED ENERGY BALANCE - YEAR 1973

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	8296	1142	589	520	0	16788	31498	4561	306	63700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63700
IMPORTS	34347	0	0	1304	0	0	0	0	0	35651	209	333	310	178	0	45	0	94	0	3	0	0	0	462	0	1634	37285
CHANGES IN STOCKS	-3750	0	-37	39	0	0	0	0	0	-3748	-136	297	68	-60	133	-55	0	-5	0	0	0	13	41	-199	0	97	-3651
TOTAL SUPPLY	38893	1142	552	1863	0	16788	31498	4561	306	95603	73	630	378	118	133	-10	0	89	0	3	0	13	41	263	0	1731	97334
EXPORTS AND BUNKERS	-838	0	0	0	0	0	0	0	0	-838	-484	-1896	-21	-23	-77	-94	0	0	0	-8	0	-38	0	-1	0	-2642	-3480
NON-UTILIZED	0	-416	0	0	0	0	0	0	0	-416	0	0	0	0	0	0	-25	0	0	0	0	0	-305	0	0	-330	-746
RE-INJECTION	0	-395	0	0	0	0	0	0	0	-395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-395
GROSS DOMESTIC SUPPLY	38055	331	552	1863	0	16788	31498	4561	306	93954	-411	-1266	357	95	56	-104	-25	89	0	-5	0	-25	-264	262	0	-1241	92713
TOTAL TRANSFORMATION	-37866	-160	-478	-1818	0	-16788	-4848	-477	-88	-62523	8348	11605	10013	1669	852	1631	486	1229	0	18771	2414	331	866	953	72	59240	-3283
PETROLEUM REFINERIES	-37866	0	0	0	0	0	0	0	0	-37866	8530	12697	9882	1471	1254	1631	0	0	0	0	0	0	866	953	0	37284	-582
NATURAL GAS PLANTS	0	-160	0	0	0	0	0	0	0	-160	0	0	51	95	0	0	0	0	0	0	0	0	0	0	0	146	-14
GASIFICATION PLANTS	0	0	0	-40	0	0	0	0	0	-40	0	0	0	0	-190	0	155	0	0	0	0	0	0	0	0	-35	-75
COKING PLANTS	0	0	0	-1778	0	0	0	0	0	-1778	0	0	0	0	0	0	341	1229	0	0	0	0	0	0	72	1642	-136
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-467	0	0	-16324	0	0	0	-16791	-115	-802	0	0	0	0	0	0	0	17500	0	0	0	0	0	16583	-208
SELF-PROD. POWER PLANTS	0	0	-11	0	0	-464	-16	-104	-88	-683	-67	-290	0	0	0	0	-10	0	0	1271	0	0	0	0	0	904	221
CHARCOAL PLANTS	0	0	0	0	0	0	-4832	0	0	-4832	0	0	0	0	0	0	0	0	0	0	2414	0	0	0	0	2414	-2418
DISTILLERIES	0	0	0	0	0	0	0	-373	0	-373	0	0	0	0	0	0	0	0	0	0	0	331	0	0	0	331	-42
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	80	103	-212	0	0	0	0	0	0	0	0	0	0	-29	-29
LOSSES IN DISTRIB./STORAGE	-189	0	0	-59	0	0	0	0	0	-248	0	0	0	0	0	0	-17	-61	0	-2318	-241	-6	0	0	0	-2643	-2891
FINAL CONSUMPTION	0	170	74	0	0	0	26650	4084	218	31196	7937	10339	10370	1764	908	1527	444	1257	0	16448	2173	300	602	1215	72	55356	86552
FINAL NON-ENERGY CONSUMPTION	0	66	0	0	0	0	0	0	0	66	0	0	0	0	857	16	0	0	0	0	0	140	0	1215	54	2282	2348
FINAL ENERGY CONSUMPTION	0	104	74	0	0	0	26650	4084	218	31130	7937	10339	10370	1764	51	1511	444	1257	0	16448	2173	160	602	0	18	53074	84204
ENERGY SECTOR	0	84	0	0	0	0	0	127	0	211	110	1312	0	0	0	0	100	0	0	743	0	0	522	0	0	2787	2998
RESIDENTIAL	0	0	0	0	0	0	18361	0	0	18361	0	0	0	1636	0	455	104	0	0	3174	552	0	0	0	0	5921	24282
COMMERCIAL	0	0	0	0	0	0	177	0	0	177	54	113	0	52	0	0	20	0	0	2099	38	0	0	0	0	2376	2553
PUBLIC	0	0	0	0	0	0	12	0	0	12	112	45	0	5	0	14	3	0	0	1546	0	0	0	0	0	1725	1737
AGRICULTURE	0	0	0	0	0	0	4315	0	0	4315	913	72	0	0	0	0	0	0	0	153	17	0	0	0	0	1155	5470
TRANSPORTATION - TOTAL	0	0	2	0	0	0	31	0	0	33	6418	608	10370	0	0	966	0	0	0	174	0	160	0	0	0	18696	18729
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	5626	0	10269	0	0	0	0	0	0	0	0	160	0	0	0	16055	16055
RAILROADS	0	0	2	0	0	0	24	0	0	26	405	29	0	0	0	0	0	0	0	174	0	0	0	0	0	608	634
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	101	0	0	966	0	0	0	0	0	0	0	0	0	1067	1067
WATERWAYS	0	0	0	0	0	0	7	0	0	7	387	579	0	0	0	0	0	0	0	0	0	0	0	0	0	966	973
INDUSTRIAL - TOTAL	0	20	72	0	0	0	3754	3957	218	8021	330	8189	0	71	51	76	217	1257	0	8559	1566	0	80	0	18	20414	28435
CEMENT	0	0	0	0	0	0	0	0	0	0	23	1560	0	0	0	0	0	0	0	456	0	0	0	0	0	2039	2039
PIG-IRON AND STEEL	0	0	6	0	0	0	0	0	0	6	12	843	0	12	0	0	207	1238	0	954	1483	0	0	0	18	4767	4773
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	274	62	0	0	0	0	355	355
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	42	317	0	0	0	2	0	0	0	216	0	0	0	0	0	577	577
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	176	0	0	0	0	2	0	0	1597	21	0	78	0	0	1874	1874
CHEMICAL	0	20	0	0	0	0	110	0	0	130	58	1300	0	2	51	0	0	0	0	1123	0	0	0	0	0	2534	2664
FOODS AND BEVERAGES	0	0	0	0	0	0	1530	3957	0	5487	58	941	0	6	0	12	2	0	0	771	0	0	0	0	0	1790	7277
TEXTILES	0	0	0	0	0	0	153	0	0	153	5	517	0	1	0	6	0	0	0	763	0	0	0	0	0	1292	1445
PAPER AND PULP	0	0	66	0	0	0	208	0	218	492	9	635	0	0	0	0	0	0	0	576	0	0	0	0	0	1220	1712
CERAMICS	0	0	0	0	0	0	1294	0	0	1294	3	474	0	6	0	6	1	0	0	252	0	0	0	0	0	742	2036
OTHERS	0	0	0	0	0	0	459	0	0	459	120	1426	0	44	0	50	5	0	0	1577	0	0	2	0	0	3224	3683
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	0	-1	0	14	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13

APPENDIX F.05

CONSOLIDATED ENERGY BALANCE - YEAR 1974

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	8648	1440	815	717	0	19047	32191	4535	344	67737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67737
IMPORTS	33818	0	0	1279	0	0	0	0	0	35097	59	68	603	237	0	0	0	140	0	18	0	0	0	509	0	1634	36731
CHANGES IN STOCKS	-1825	0	-252	-42	0	0	0	0	0	-2119	370	985	-121	-59	-82	67	0	-2	0	0	0	5	-38	102	0	1227	-892
TOTAL SUPPLY	40641	1440	563	1954	0	19047	32191	4535	344	100715	429	1053	482	178	-82	67	0	138	0	18	0	5	-38	611	0	2861	103576
EXPORTS AND BUNKERS	-650	0	0	0	0	0	0	0	0	-650	-864	-1586	-14	-40	-73	-154	0	0	0	-6	0	-29	0	0	0	-2766	-3416
NON-UTILIZED	0	-376	0	0	0	0	0	0	0	-376	0	0	0	0	0	0	-25	0	0	0	0	0	-45	0	0	-70	-446
RE-INJECTION	0	-562	0	0	0	0	0	0	0	-562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-562
GROSS DOMESTIC SUPPLY	39991	502	563	1954	0	19047	32191	4535	344	99127	-435	-533	468	138	-155	-87	-25	138	0	12	0	-24	-83	611	0	25	99152
TOTAL TRANSFORMATION	-39793	-191	-458	-1785	0	-19047	-6043	-460	-94	-67871	9235	12282	10277	1741	1182	1727	499	1218	0	20793	3011	310	1031	1319	68	64693	-3178
PETROLEUM REFINERIES	-39793	0	0	0	0	0	0	0	0	-39793	9420	13158	10133	1511	1627	1727	0	0	0	0	0	0	1031	1319	0	39926	133
NATURAL GAS PLANTS	0	-191	0	0	0	0	0	0	0	-191	0	0	61	113	0	0	0	0	0	0	0	0	0	0	0	174	-17
GASIFICATION PLANTS	0	0	0	-3	0	0	0	0	0	-3	0	0	0	0	-212	0	180	0	0	0	0	0	0	0	0	-32	-35
COKING PLANTS	0	0	0	-1782	0	0	0	0	0	-1782	0	0	0	0	0	0	329	1218	0	0	0	0	0	0	68	1615	-167
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-447	0	0	-18555	0	0	0	-19002	-116	-573	0	0	0	0	0	0	0	19462	0	0	0	0	0	18773	-229
SELF-PROD. POWER PLANTS	0	0	-11	0	0	-492	-17	-109	-94	-723	-69	-303	0	0	0	0	-10	0	0	1331	0	0	0	0	0	949	226
CHARCOAL PLANTS	0	0	0	0	0	0	-6026	0	0	-6026	0	0	0	0	0	0	0	0	0	0	3011	0	0	0	0	3011	-3015
DISTILLERIES	0	0	0	0	0	0	0	-351	0	-351	0	0	0	0	0	0	0	0	0	0	0	310	0	0	0	310	-41
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	83	117	-233	0	0	0	0	0	0	0	0	0	0	-33	-33
LOSSES IN DISTRIB./STORAGE	-198	0	0	-120	0	0	0	0	0	-318	0	0	0	0	0	0	-28	-73	0	-2435	-301	-6	0	0	0	-2843	-3161
FINAL CONSUMPTION	0	327	105	0	0	0	26148	4075	250	30905	8800	11749	10745	1879	1027	1640	446	1283	0	18370	2710	280	948	1930	68	61875	92780
FINAL NON-ENERGY CONSUMPTION	0	70	0	0	0	0	0	0	0	70	0	0	0	0	976	22	0	0	0	0	0	181	0	1930	51	3160	3230
FINAL ENERGY CONSUMPTION	0	257	105	0	0	0	26148	4075	250	30835	8800	11749	10745	1879	51	1618	446	1283	0	18370	2710	99	948	0	17	58715	89550
ENERGY SECTOR	0	117	0	0	0	0	0	123	0	240	122	1386	0	0	0	96	0	0	0	716	0	0	861	0	0	3181	3421
RESIDENTIAL	0	0	0	0	0	0	18147	0	0	18147	0	0	0	1731	0	394	111	0	0	3486	596	0	0	0	0	6318	24465
COMMERCIAL	0	0	0	0	0	0	174	0	0	174	49	127	0	59	0	0	22	0	0	2354	43	0	0	0	0	2654	2828
PUBLIC	0	0	0	0	0	0	10	0	0	10	101	51	0	6	8	3	0	0	0	1722	0	0	0	0	0	1891	1901
AGRICULTURE	0	0	0	0	0	0	4131	0	0	4131	1010	84	0	0	0	0	0	0	0	190	15	0	0	0	0	1299	5430
TRANSPORTATION - TOTAL	0	0	8	0	0	0	20	0	0	28	7187	1129	10745	0	0	1128	0	0	0	176	0	99	0	0	0	20464	20492
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	6148	0	10656	0	0	0	0	0	0	0	0	99	0	0	0	16903	16903
RAILROADS	0	0	8	0	0	0	16	0	0	24	474	29	0	0	0	0	0	0	0	176	0	0	0	0	0	679	703
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	89	0	0	1128	0	0	0	0	0	0	0	0	0	1217	1217
WATERWAYS	0	0	0	0	0	0	4	0	0	4	565	1100	0	0	0	0	0	0	0	0	0	0	0	0	0	1665	1669
INDUSTRIAL - TOTAL	0	140	89	0	0	0	3666	3952	250	8097	331	8972	0	83	51	88	214	1283	0	9726	2056	0	87	0	17	22908	31005
CEMENT	0	0	0	0	0	0	0	0	0	0	23	1740	0	0	0	0	0	0	0	508	0	0	0	0	0	2271	2271
PIG-IRON AND STEEL	0	119	13	0	0	0	0	0	0	132	13	871	0	13	0	0	199	1263	0	1283	1949	0	0	0	17	5608	5740
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	315	75	0	0	0	0	410	410
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	42	434	0	0	0	4	0	0	0	306	0	0	0	0	0	786	786
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	192	0	0	0	0	3	0	0	1632	32	0	84	0	0	1943	1943
CHEMICAL	0	21	0	0	0	0	107	0	0	128	54	1258	0	2	51	1	0	0	0	1286	0	0	0	0	0	2652	2780
FOODS AND BEVERAGES	0	0	0	0	0	0	1469	3952	0	5421	58	1040	0	7	0	12	3	0	0	909	0	0	0	0	0	2029	7450
TEXTILES	0	0	0	0	0	0	129	0	0	129	5	561	0	2	0	6	0	0	0	830	0	0	0	0	0	1404	1533
PAPER AND PULP	0	0	76	0	0	0	217	0	250	543	10	740	0	1	0	2	0	0	0	634	0	0	0	0	0	1387	1930
CERAMICS	0	0	0	0	0	0	1285	0	0	1285	5	607	0	7	0	6	1	0	0	288	0	0	0	0	0	914	2199
OTHERS	0	0	0	0	0	0	459	0	0	459	121	1529	0	51	0	57	8	0	0	1735	0	0	3	0	0	3504	3963
UNIDENTIFIED CONSUMPTION	0	0	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
ADJUSTMENTS	0	16	0	-49	0	0	0	0	0	-33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-33

APPENDIX F.06

CONSOLIDATED ENERGY BALANCE - YEAR 1975

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	8565	1573	729	547	0	20963	32739	4105	358	69579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69579
IMPORTS	35847	0	0	2047	0	0	0	0	0	37894	83	23	65	33	0	0	0	117	0	23	0	0	0	307	0	651	38545
CHANGES IN STOCKS	882	0	-163	-142	0	0	0	0	0	577	119	201	-33	-62	-138	-105	0	24	0	0	0	13	-45	256	0	230	807
TOTAL SUPPLY	45294	1573	566	2452	0	20963	32739	4105	358	108050	202	224	32	-29	-138	-105	0	141	0	23	0	13	-45	563	0	881	108931
EXPORTS AND BUNKERS	-1081	0	0	0	0	0	0	0	0	-1081	-552	-918	-183	-61	0	-34	0	0	0	-7	0	-32	0	-7	0	-1794	-2875
NON-UTILIZED	0	-362	0	0	0	0	0	0	0	-362	0	0	0	0	0	0	-30	0	0	0	0	0	-251	0	0	-281	-643
RE-INJECTION	0	-654	0	0	0	0	0	0	0	-654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-654
GROSS DOMESTIC SUPPLY	44213	557	566	2452	0	20963	32739	4105	358	105953	-350	-694	-151	-90	-138	-139	-30	141	0	16	0	-19	-296	556	0	-1194	104759
TOTAL TRANSFORMATION	-43994	-205	-443	-2196	0	-20963	-7223	-453	-93	-75570	10181	13169	11128	2056	1135	1861	589	1520	0	22891	3600	293	1241	1524	85	71273	-4297
PETROLEUM REFINERIES	-43994	0	0	0	0	0	0	0	0	-43994	10379	14082	10922	1793	1681	1861	0	0	0	0	0	0	1241	1524	0	43483	-511
NATURAL GAS PLANTS	0	-205	0	0	0	0	0	0	0	-205	0	0	69	129	0	0	0	0	0	0	0	0	0	0	0	198	-7
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-238	0	195	0	0	0	0	0	0	0	0	-43	-43
COKING PLANTS	0	0	0	-2196	0	0	0	0	0	-2196	0	0	0	0	0	0	406	1520	0	0	0	0	0	0	85	2011	-185
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-434	0	0	-20412	0	0	0	-20846	-121	-578	0	0	0	0	0	0	0	21421	0	0	0	0	0	20722	-124
SELF-PROD. POWER PLANTS	0	0	-9	0	0	-551	-18	-121	-93	-792	-77	-335	0	0	0	0	-12	-792	0	1470	0	0	0	0	0	1046	254
CHARCOAL PLANTS	0	0	0	0	0	0	-7205	0	0	-7205	0	0	0	0	0	0	0	0	0	0	3600	0	0	0	0	3600	-3605
DISTILLERIES	0	0	0	0	0	0	0	-332	0	-332	0	0	0	0	0	0	0	0	0	0	0	293	0	0	0	293	-39
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	137	134	-308	0	0	0	0	0	0	0	0	0	0	-37	-37
LOSSES IN DISTRIB./STORAGE	-219	0	0	-130	0	0	0	0	0	-349	0	0	0	0	0	0	-30	-91	0	-2650	-360	-5	0	0	0	-3136	-3485
FINAL CONSUMPTION	0	355	123	0	0	0	25516	3652	265	29911	9831	12475	10977	1966	997	1722	529	1570	0	20257	3240	269	945	2080	85	66943	96854
FINAL NON-ENERGY CONSUMPTION	0	79	0	0	0	0	0	0	0	79	0	0	0	0	947	32	0	0	0	0	0	185	0	2080	63	3307	3386
FINAL ENERGY CONSUMPTION	0	276	123	0	0	0	25516	3652	265	29832	9831	12475	10977	1966	50	1690	529	1570	0	20257	3240	84	945	0	22	63636	93468
ENERGY SECTOR	0	128	0	0	0	0	0	136	0	264	136	1495	0	0	0	0	119	0	0	756	0	0	849	0	0	3355	3619
RESIDENTIAL	0	0	0	0	0	0	17716	0	0	17716	0	0	0	1777	0	372	118	0	0	3831	631	0	0	0	0	6729	24445
COMMERCIAL	0	0	0	0	0	0	171	0	0	171	43	140	0	65	0	0	24	0	0	2606	47	0	0	0	0	2925	3096
PUBLIC	0	0	0	0	0	0	9	0	0	9	121	56	0	7	0	6	3	0	0	1949	0	0	0	0	0	2142	2151
AGRICULTURE	0	0	0	0	0	0	3978	0	0	3978	1122	90	0	0	0	0	0	0	0	218	14	0	0	0	0	1444	5422
TRANSPORTATION - TOTAL	0	0	10	0	0	0	10	0	0	20	8060	1219	10977	0	0	1216	0	0	0	182	0	84	0	0	0	21738	21758
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	7071	0	10900	0	0	0	0	0	0	0	0	84	0	0	0	18055	18055
RAILROADS	0	0	10	0	0	0	7	0	0	17	492	27	0	0	0	0	0	0	0	182	0	0	0	0	0	701	718
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	77	0	0	1216	0	0	0	0	0	0	0	0	0	1293	1293
WATERWAYS	0	0	0	0	0	0	3	0	0	3	497	1192	0	0	0	0	0	0	0	0	0	0	0	0	0	1689	1692
INDUSTRIAL - TOTAL	0	148	90	0	0	0	3632	3516	265	7651	349	9475	0	117	50	96	265	1570	0	10715	2548	0	96	0	22	25303	32954
CEMENT	0	0	0	0	0	0	0	0	0	0	25	1846	0	0	0	2	0	0	0	570	0	0	0	0	0	2443	2443
PIG-IRON AND STEEL	0	125	17	0	0	0	0	0	0	142	18	890	0	18	0	6	246	1546	0	1414	2416	0	0	0	22	6576	6718
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	383	89	0	0	0	0	496	496
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	44	516	0	0	0	6	0	0	0	354	0	0	0	0	0	920	920
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	205	0	0	0	0	4	0	0	1865	43	0	93	0	0	2210	2210
CHEMICAL	0	23	0	0	0	0	104	0	0	127	54	1359	0	3	50	1	0	0	0	1316	0	0	0	0	0	2783	2910
FOODS AND BEVERAGES	0	0	0	0	0	0	1438	3516	0	4954	60	1101	0	8	0	14	4	0	0	1066	0	0	0	0	0	2253	7207
TEXTILES	0	0	0	0	0	0	116	0	0	116	6	593	0	2	0	6	0	0	0	879	0	0	0	0	0	1486	1602
PAPER AND PULP	0	0	73	0	0	0	199	0	265	537	11	714	0	1	0	2	0	0	0	660	0	0	0	0	0	1388	1925
CERAMICS	0	0	0	0	0	0	1301	0	0	1301	7	643	0	9	0	5	2	0	0	316	0	0	0	0	0	982	2283
OTHERS	0	0	0	0	0	0	474	0	0	474	124	1608	0	76	0	54	9	0	0	1892	0	0	3	0	0	3766	4240
UNIDENTIFIED CONSUMPTION	0	0	23	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
ADJUSTMENTS	0	3	0	-126	0	0	0	0	0	-123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-123

APPENDIX F.07

CONSOLIDATED ENERGY BALANCE - YEAR 1976

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8344	1590	934	632	0	24045	31483	4662	406	72096	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72096
IMPORTS	41132	0	0	2172	0	0	0	0	0	43304	149	753	81	149	0	0	0	83	0	21	0	0	0	373	0	1609	44913	
CHANGES IN STOCKS	421	0	-409	120	0	0	0	0	0	132	-100	249	-293	-126	-149	-54	0	-157	0	0	0	-35	19	164	0	-482	-350	
TOTAL SUPPLY	49897	1590	525	2924	0	24045	31483	4662	406	115532	49	1002	-212	23	-149	-54	0	-74	0	21	0	-35	19	537	0	1127	116659	
EXPORTS AND BUNKERS	-2869	0	0	0	0	0	0	0	0	-2869	-258	-628	-10	-11	0	-8	0	0	0	-7	0	-17	0	0	0	-939	-3808	
NON-UTILIZED	0	-379	0	0	0	0	0	0	0	-379	0	0	0	0	0	0	-39	0	0	0	0	0	-81	0	0	-120	-499	
RE-INJECTION	0	-590	0	0	0	0	0	0	0	-590	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-590	
GROSS DOMESTIC SUPPLY	47028	621	525	2924	0	24045	31483	4662	406	111694	-209	374	-222	12	-149	-62	-39	-74	0	14	0	-52	-62	537	0	68	111762	
TOTAL TRANSFORMATION	-46794	-209	-437	-2813	0	-24045	-6558	-480	-107	-81443	11583	13960	11082	2143	1211	1962	705	1945	0	26109	3266	324	1180	1697	98	77265	-4178	
PETROLEUM REFINERIES	-46794	0	0	0	0	0	0	0	0	-46794	11743	14851	10885	1865	1747	1962	0	0	0	0	0	0	1180	1697	0	45930	-864	
NATURAL GAS PLANTS	0	-209	0	0	0	0	0	0	0	-209	0	0	67	127	0	0	0	0	0	0	0	0	0	0	0	194	-15	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-236	0	206	0	0	0	0	0	0	0	0	-30	-30	
COKING PLANTS	0	0	0	-2813	0	0	0	0	0	-2813	0	0	0	0	0	0	525	1945	0	0	0	0	0	0	98	2568	-245	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-423	0	0	-23398	0	0	0	-23821	-145	-514	0	0	0	0	0	0	0	24514	0	0	0	0	0	23855	34	
SELF-PROD. POWER PLANTS	0	0	-14	0	0	-647	-21	-114	-107	-903	-16	-379	0	0	0	0	-26	-903	0	1595	0	0	0	0	0	1174	271	
CHARCOAL PLANTS	0	0	0	0	0	0	-6537	0	0	-6537	0	0	0	0	0	0	0	0	0	0	3266	0	0	0	0	3266	-3271	
DISTILLERIES	0	0	0	0	0	0	0	-366	0	-366	0	0	0	0	0	0	0	0	0	0	0	324	0	0	0	324	-42	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	1	2	130	151	-300	0	0	0	0	0	0	0	0	0	0	-16	-16	
LOSSES IN DISTRIB./STORAGE	-234	0	0	-135	0	0	0	0	0	-369	0	0	0	0	0	0	-23	-95	0	-3133	-326	-6	0	0	0	-3583	-3952	
FINAL CONSUMPTION	0	409	90	0	0	0	24925	4182	299	29905	11374	14334	10860	2155	1062	1900	643	1835	0	22990	2940	246	1118	2234	98	73789	103694	
FINAL NON-ENERGY CONSUMPTION	0	127	0	0	0	0	0	0	0	127	0	0	0	0	1047	48	0	0	0	0	0	157	0	2234	73	3559	3686	
FINAL ENERGY CONSUMPTION	0	282	90	0	0	0	24925	4182	299	29778	11374	14334	10860	2155	15	1852	643	1835	0	22990	2940	89	1118	0	25	70230	100008	
ENERGY SECTOR	0	125	0	0	0	0	0	113	0	238	140	1616	0	0	0	0	154	0	0	892	0	0	882	0	0	3684	3922	
RESIDENTIAL	0	0	0	0	0	0	17239	0	0	17239	0	0	0	1952	0	371	123	0	0	4314	674	0	0	0	0	7434	24673	
COMMERCIAL	0	0	0	0	0	0	168	0	0	168	40	158	0	72	0	0	26	0	0	2874	50	0	0	0	0	3220	3388	
PUBLIC	0	0	0	0	0	0	9	0	0	9	117	63	0	7	0	6	3	0	0	2080	3	0	0	0	0	2279	2288	
AGRICULTURE	0	0	0	0	0	0	3856	0	0	3856	1297	103	0	0	0	1	0	0	0	252	13	0	0	0	0	1666	5522	
TRANSPORTATION - TOTAL	0	0	13	0	0	0	6	0	0	19	9386	1327	10860	0	0	1354	0	0	0	197	0	89	0	0	0	23213	23232	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	8323	0	10783	0	0	0	0	0	0	0	0	89	0	0	0	19195	19195	
RAILROADS	0	0	13	0	0	0	3	0	0	16	512	30	0	0	0	0	0	0	0	197	0	0	0	0	0	739	755	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	77	0	0	1354	0	0	0	0	0	0	0	0	0	1431	1431	
WATERWAYS	0	0	0	0	0	0	3	0	0	3	551	1297	0	0	0	0	0	0	0	0	0	0	0	0	0	1848	1851	
INDUSTRIAL - TOTAL	0	157	77	0	0	0	3647	4069	299	8249	394	11067	0	124	15	120	337	1835	0	12381	2200	0	236	0	25	28734	36983	
CEMENT	0	0	5	0	0	0	0	0	0	5	29	2222	0	0	0	2	0	0	0	584	0	0	0	0	0	2837	2842	
PIG-IRON AND STEEL	0	125	21	0	0	0	0	0	0	146	23	948	0	20	1	11	307	1807	0	1712	2071	0	0	0	25	6925	7071	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	403	101	0	0	0	0	532	532	
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	52	610	0	0	0	8	0	0	0	349	0	0	0	0	0	1019	1019	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	273	0	0	0	0	7	0	0	2185	28	0	97	0	0	2590	2590	
CHEMICAL	0	29	0	0	0	0	101	0	0	130	54	1594	0	4	14	2	0	0	0	1612	0	0	0	0	0	3280	3410	
FOODS AND BEVERAGES	0	0	0	0	0	0	1376	4069	0	5445	64	1271	0	11	0	16	6	0	0	1150	0	0	0	0	0	2518	7963	
TEXTILES	0	0	0	0	0	0	83	0	0	83	7	680	0	3	0	6	1	0	0	966	0	0	0	0	0	1663	1746	
PAPER AND PULP	0	0	51	0	0	0	196	0	299	546	15	836	0	1	0	2	0	0	0	938	0	0	0	0	0	1792	2338	
CERAMICS	0	3	0	0	0	0	1429	0	0	1432	8	637	0	10	0	4	3	0	0	355	0	0	0	0	0	1017	2449	
OTHERS	0	0	0	0	0	0	462	0	0	462	142	1996	0	75	0	69	13	0	0	2127	0	0	139	0	0	4561	5023	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	-3	2	24	0	0	0	0	0	23	0	0	0	0	0	0	0	59	0	0	0	-20	0	0	0	39	62	

APPENDIX F.08

CONSOLIDATED ENERGY BALANCE - YEAR 1977

UNIT: 10^3 toe

ACCOUNT	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8025	1750	1071	755	0	27109	30436	6417	463	76026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76026
IMPORTS	40704	0	0	2803	0	0	0	0	0	43507	64	527	72	186	0	0	0	99	0	6	0	0	0	301	0	1255	44762	
CHANGES IN STOCKS	765	0	-317	-116	0	0	0	0	0	332	-169	331	79	-90	-92	11	0	-20	0	0	0	-175	65	19	0	-41	291	
TOTAL SUPPLY	49494	1750	754	3442	0	27109	30436	6417	463	119865	-105	858	151	96	-92	11	0	79	0	6	0	-175	65	320	0	1214	121079	
EXPORTS AND BUNKERS	-1353	0	0	0	0	0	0	0	0	-1353	-445	-591	-254	-16	0	-53	0	0	0	-41	0	-2	0	0	0	-1402	-2755	
NON-UTILIZED	0	-367	0	0	0	0	0	0	0	-367	0	0	0	0	0	0	-31	0	0	0	0	0	-109	0	0	-140	-507	
RE-INJECTION	0	-636	0	0	0	0	0	0	0	-636	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-636	
GROSS DOMESTIC SUPPLY	48141	747	754	3442	0	27109	30436	6417	463	117509	-550	267	-103	80	-92	-42	-31	79	0	-35	0	-177	-44	320	0	-328	117181	
TOTAL TRANSFORMATION	-47902	-237	-556	-3337	0	-27109	-6667	-970	-107	-86885	12780	14276	10152	2189	1283	2007	793	2317	0	29293	3320	715	1265	2091	110	82591	-4294	
PETROLEUM REFINERIES	-47902	0	0	0	0	0	0	0	0	-47902	12929	15252	9975	1894	1801	2007	0	0	0	0	0	0	1265	2091	0	47214	-688	
NATURAL GAS PLANTS	0	-237	0	0	0	0	0	0	0	-237	0	0	73	137	0	0	0	0	0	0	0	0	0	0	0	210	-27	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	-233	0	220	0	0	0	0	0	0	0	0	0	-13	-13	
COKING PLANTS	0	0	0	-3337	0	0	0	0	0	-3337	0	0	0	0	0	0	603	2317	0	0	0	0	0	0	110	3030	-307	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-542	0	0	-26356	0	0	0	-26898	-134	-599	0	0	0	0	0	0	0	27574	0	0	0	0	0	26841	-57	
SELF-PROD. POWER PLANTS	0	0	-14	0	0	-753	-22	-165	-107	-1061	-15	-383	0	0	0	0	-30	-1061	0	1719	0	0	0	0	0	1291	230	
CHARCOAL PLANTS	0	0	0	0	0	0	-6645	0	0	-6645	0	0	0	0	0	0	0	0	0	0	3320	0	0	0	0	3320	-3325	
DISTILLERIES	0	0	0	0	0	0	0	-805	0	-805	0	0	0	0	0	0	0	0	0	0	0	715	0	0	0	715	-90	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	6	104	158	-285	0	0	0	0	0	0	0	0	0	0	-17	-17	
LOSSES IN DISTRIB./STORAGE	-239	0	0	-173	0	0	0	0	0	-412	0	0	0	0	0	0	-30	-113	0	-3495	-332	-14	0	0	0	-3984	-4396	
FINAL CONSUMPTION	0	510	169	0	0	0	23769	5447	356	30251	12230	14543	10049	2269	1191	1965	732	2425	0	25763	2988	539	1221	2411	110	78436	108687	
FINAL NON-ENERGY CONSUMPTION	0	105	0	0	0	0	0	0	0	105	0	0	0	0	1155	64	0	0	0	0	0	206	0	2411	44	3880	3985	
FINAL ENERGY CONSUMPTION	0	405	169	0	0	0	23769	5447	356	30146	12230	14543	10049	2269	36	1901	732	2425	0	25763	2988	333	1221	0	66	74556	104702	
ENERGY SECTOR	0	137	0	0	0	0	0	554	0	691	148	1684	0	0	0	0	158	0	0	926	0	0	870	0	0	3786	4477	
RESIDENTIAL	0	0	0	0	0	0	16427	0	0	16427	0	0	0	2025	0	368	118	0	0	4968	708	0	0	0	0	8187	24614	
COMMERCIAL	0	0	0	0	0	0	165	0	0	165	36	168	0	76	0	0	27	0	0	3055	55	0	0	0	0	3417	3582	
PUBLIC	0	0	0	0	0	0	8	0	0	8	79	67	0	11	0	4	3	0	0	2325	3	0	0	0	0	2492	2500	
AGRICULTURE	0	0	0	0	0	0	3733	0	0	3733	1474	104	0	0	0	1	0	0	0	302	12	0	0	0	0	1893	5626	
TRANSPORTATION - TOTAL	0	0	16	0	0	0	6	0	0	22	10098	941	10049	0	0	1388	0	0	0	197	0	333	0	0	0	23006	23028	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	9084	0	9977	0	0	0	0	0	0	0	0	333	0	0	0	19394	19394	
RAILROADS	0	0	16	0	0	0	3	0	0	19	501	16	0	0	0	0	0	0	0	197	0	0	0	0	0	714	733	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0	1388	0	0	0	0	0	0	0	0	0	1460	1460	
WATERWAYS	0	0	0	0	0	0	3	0	0	3	513	925	0	0	0	0	0	0	0	0	0	0	0	0	0	1438	1441	
INDUSTRIAL - TOTAL	0	268	126	0	0	0	3430	4893	356	9073	395	11579	0	157	36	140	426	2425	0	13990	2210	0	351	0	66	31775	40848	
CEMENT	0	44	40	0	0	0	0	0	0	84	29	2311	0	0	0	2	0	0	0	642	0	0	0	0	0	2984	3068	
PIG-IRON AND STEEL	0	119	17	0	0	0	0	0	0	136	23	1077	0	29	1	16	385	2391	0	1895	2067	0	0	0	66	7950	8086	
FERRO-ALLOYS	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	34	0	510	120	0	0	0	0	664	665	
MINING/PELLETIZATION	0	0	0	0	0	0	0	0	0	0	49	674	0	0	0	9	0	0	0	438	0	0	0	0	0	1170	1170	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	259	0	0	0	0	10	0	0	2452	23	0	170	0	0	2914	2914	
CHEMICAL	0	100	0	0	0	0	98	0	0	198	52	1667	0	4	35	2	0	0	0	1941	0	0	0	0	0	3701	3899	
FOODS AND BEVERAGES	0	0	1	0	0	0	1315	4893	0	6209	62	1329	0	12	0	19	8	0	0	1322	0	0	0	0	0	2752	8961	
TEXTILES	0	0	0	0	0	0	80	0	0	80	6	685	0	4	0	8	1	0	0	1003	0	0	0	0	0	1707	1787	
PAPER AND PULP	0	0	62	0	0	0	199	0	356	617	13	950	0	1	0	4	0	0	0	1050	0	0	0	0	0	2018	2635	
CERAMICS	0	5	4	0	0	0	1285	0	0	1294	8	711	0	13	0	6	4	0	0	380	0	0	0	0	0	1122	2416	
OTHERS	0	0	1	0	0	0	453	0	0	454	153	1916	0	94	0	74	18	0	0	2357	0	0	181	0	0	4793	5247	
UNIDENTIFIED CONSUMPTION	0	0	27	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	
ADJUSTMENTS	0	0	-29	68	0	0	0	0	0	39	0	0	0	0	0	0	0	142	0	0	0	15	0	0	0	157	196	

APPENDIX F.09

CONSOLIDATED ENERGY BALANCE - YEAR 1978

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8002	1871	1224	829	0	29796	29422	7166	552	78862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78862
IMPORTS	44957	0	0	2600	0	0	0	0	0	47557	72	163	71	69	0	5	0	325	0	16	0	0	117	326	0	1164	48721	
CHANGES IN STOCKS	955	0	-67	16	0	0	0	0	0	904	-307	446	-30	-170	-162	-73	0	-16	0	0	0	-157	-3	342	0	-130	774	
TOTAL SUPPLY	53914	1871	1157	3445	0	29796	29422	7166	552	127323	-235	609	41	-101	-162	-68	0	309	0	16	0	-157	114	668	0	1034	128357	
EXPORTS AND BUNKERS	-242	0	0	0	0	0	0	0	0	-242	-538	-502	-793	-45	0	-206	0	0	0	-53	0	-12	0	0	0	-2149	-2391	
NON-UTILIZED	0	-456	0	0	0	0	0	0	0	-456	0	0	0	0	0	0	-25	0	0	0	0	0	-100	0	0	-125	-581	
RE-INJECTION	0	-512	0	0	0	0	0	0	0	-512	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-512	
GROSS DOMESTIC SUPPLY	53672	903	1157	3445	0	29796	29422	7166	552	126113	-773	107	-752	-146	-162	-274	-25	309	0	-37	0	-169	14	668	0	-1240	124873	
TOTAL TRANSFORMATION	-53405	-237	-943	-3367	0	-29796	-6829	-1515	-126	-96218	14104	15639	11011	2659	1763	2297	831	2417	0	32691	3398	1160	1582	2252	131	91935	-4283	
PETROLEUM REFINERIES	-53405	0	0	0	0	0	0	0	0	-53405	14286	16805	10821	2321	2360	2297	0	0	0	0	0	0	1582	2252	0	52724	-681	
NATURAL GAS PLANTS	0	-237	0	0	0	0	0	0	0	-237	0	0	74	139	0	0	0	0	0	0	0	0	0	0	0	213	-24	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	-252	0	234	0	0	0	0	0	0	0	0	0	-18	-18	
COKING PLANTS	0	0	0	-3367	0	0	0	0	0	-3367	0	0	0	0	0	0	628	2417	0	0	0	0	0	0	131	3176	-191	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-926	0	0	-28999	0	0	0	-29925	-163	-741	0	0	0	0	0	0	0	30719	0	0	0	0	0	29815	-110	
SELF-PROD. POWER PLANTS	0	0	-17	0	0	-797	-27	-183	-119	-1143	-19	-430	0	0	0	0	-31	0	0	1972	0	0	0	0	0	1492	349	
CHARCOAL PLANTS	0	0	0	0	0	0	-6802	0	0	-6802	0	0	0	0	0	0	0	0	0	0	3398	0	0	0	0	3398	-3404	
DISTILLERIES	0	0	0	0	0	0	0	-1332	-7	-1339	0	0	0	0	0	0	0	0	0	0	0	1160	0	0	0	1160	-179	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	5	116	199	-345	0	0	0	0	0	0	0	0	0	0	-25	-25	
LOSSES IN DISTRIB./STORAGE	-267	0	0	-165	0	0	0	0	0	-432	0	0	0	0	0	0	-30	-118	0	-3933	-340	-23	0	0	0	-4444	-4876	
FINAL CONSUMPTION	0	671	207	0	0	0	22593	5651	426	29548	13331	15746	10259	2513	1601	2023	776	2622	0	28721	3058	968	1596	2920	131	86265	115813	
FINAL NON-ENERGY CONSUMPTION	0	285	0	0	0	0	0	0	0	285	0	0	0	0	1557	88	0	0	0	0	0	184	0	2920	100	4849	5134	
FINAL ENERGY CONSUMPTION	0	386	207	0	0	0	22593	5651	426	29263	13331	15746	10259	2513	44	1935	776	2622	0	28721	3058	784	1596	0	31	81416	110679	
ENERGY SECTOR	0	134	0	0	0	0	0	1213	0	1347	155	1692	0	0	0	0	170	0	0	1030	0	0	1107	0	0	4154	5501	
RESIDENTIAL	0	0	0	0	0	0	15452	0	0	15452	0	0	0	2241	0	356	122	0	0	5494	735	0	0	0	0	8948	24400	
COMMERCIAL	0	0	0	0	0	0	162	0	0	162	31	181	0	81	0	0	29	0	0	3303	59	0	0	0	0	3684	3846	
PUBLIC	0	0	0	0	0	0	7	0	0	7	95	73	0	13	0	4	3	0	0	2514	3	0	0	0	0	2705	2712	
AGRICULTURE	0	0	0	0	0	0	3550	0	0	3550	1496	114	0	0	0	2	0	0	0	387	11	0	0	0	0	2010	5560	
TRANSPORTATION - TOTAL	0	0	19	0	0	0	5	0	0	24	11148	1171	10259	0	0	1422	0	0	0	196	0	784	0	0	0	24980	25004	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	10070	0	10183	0	0	0	0	0	0	0	0	784	0	0	0	21037	21037	
RAILROADS	0	0	19	0	0	0	3	0	0	22	503	16	0	0	0	0	0	0	0	196	0	0	0	0	0	715	737	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	76	0	0	1422	0	0	0	0	0	0	0	0	0	1498	1498	
WATERWAYS	0	0	0	0	0	0	2	0	0	2	575	1155	0	0	0	0	0	0	0	0	0	0	0	0	0	1730	1732	
INDUSTRIAL - TOTAL	0	252	146	0	0	0	3417	4438	426	8679	406	12515	0	178	44	151	452	2622	0	15797	2250	0	489	0	31	34935	43614	
CEMENT	0	43	51	0	0	0	0	0	0	94	25	2469	0	0	0	2	0	0	0	708	0	0	0	0	0	3204	3298	
PIG-IRON AND STEEL	0	117	18	0	0	0	0	0	0	135	28	1064	0	31	1	20	404	2582	0	2058	2074	0	0	0	31	8293	8428	
FERRO-ALLOYS	0	0	11	0	0	0	0	0	0	11	0	0	0	0	0	0	0	40	0	561	132	0	0	0	0	733	744	
MINING/PELLETIZATION	0	0	0	0	0	0	2	0	0	2	50	795	0	0	0	12	0	0	0	523	0	0	0	0	0	1380	1382	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	333	0	0	0	0	12	0	0	2597	23	0	263	0	0	3228	3228	
CHEMICAL	0	90	1	0	0	0	95	0	0	186	41	1927	0	4	43	2	0	0	0	2071	21	0	0	0	0	4109	4295	
FOODS AND BEVERAGES	0	0	2	0	0	0	1255	4438	0	5695	63	1444	0	14	0	19	8	0	0	1453	0	0	0	0	0	3001	8696	
TEXTILES	0	0	0	0	0	0	73	0	0	73	6	663	0	4	0	10	2	0	0	1083	0	0	0	0	0	1768	1841	
PAPER AND PULP	0	0	56	0	0	0	202	0	426	684	13	1065	0	1	0	6	0	0	0	1121	0	0	0	0	0	2206	2890	
CERAMICS	0	2	5	0	0	0	1346	0	0	1353	11	743	0	19	0	5	4	0	0	401	0	0	0	0	0	1183	2536	
OTHERS	0	0	2	0	0	0	444	0	0	446	169	2012	0	105	0	75	22	0	0	3221	0	0	226	0	0	5830	6276	
UNIDENTIFIED CONSUMPTION	0	0	42	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	
ADJUSTMENTS	0	5	-7	87	0	0	0	0	0	85	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	14	99	

APPENDIX F.10

CONSOLIDATED ENERGY BALANCE - YEAR 1979

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	8262	1838	1376	905	0	33808	29995	8068	809	85061	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85061
IMPORTS	50050	0	0	3117	0	0	0	0	0	53167	137	224	123	83	1	0	0	222	0	23	0	0	133	275	0	1221	54388	
CHANGES IN STOCKS	-2457	0	-282	-40	0	0	0	0	0	-2779	46	842	-204	-93	-230	-83	0	39	0	0	-21	-9	-110	0	177	-2602		
TOTAL SUPPLY	55855	1838	1094	3982	0	33808	29995	8068	809	135449	183	1066	-81	-10	-229	-83	0	261	0	23	0	-21	124	165	0	1398	136847	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-338	-419	-351	-69	0	-194	0	0	0	-44	0	-61	0	0	0	-1476	-1476	
NON-UTILIZED	0	-517	0	0	0	0	0	0	0	-517	0	0	0	0	0	0	-33	0	0	0	0	0	-56	0	0	-89	-606	
RE-INJECTION	0	-375	0	0	0	0	0	0	0	-375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-375	
GROSS DOMESTIC SUPPLY	55855	946	1094	3982	0	33808	29995	8068	809	134557	-155	647	-432	-79	-229	-277	-33	261	0	-21	0	-82	68	165	0	-167	134390	
TOTAL TRANSFORMATION	-55577	-214	-792	-3859	0	-33808	-8037	-1918	-197	-104402	14586	15863	10459	2855	1915	2566	905	2736	0	36764	4001	1471	1878	3551	142	99692	-4710	
PETROLEUM REFINERIES	-55577	0	0	0	0	0	0	0	0	-55577	14868	16912	10221	2471	2841	2565	0	0	0	0	0	0	1664	3551	0	55093	-484	
NATURAL GAS PLANTS	0	-214	0	0	0	0	0	0	0	-214	0	0	71	134	0	0	0	0	0	0	0	0	0	0	0	205	-9	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	-263	0	243	0	0	0	0	0	0	0	0	0	-20	-20	
COKING PLANTS	0	0	0	-3859	0	0	0	0	0	-3859	0	0	0	0	0	0	697	2736	0	0	0	0	0	0	142	3575	-284	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-771	0	0	-33046	0	0	0	-33817	-258	-536	0	0	0	0	0	0	0	34488	0	0	0	0	0	33694	-123	
SELF-PROD. POWER PLANTS	0	0	-21	0	0	-762	-28	-215	-183	-1209	-24	-513	0	0	0	0	-35	-1209	0	2276	0	0	-1	0	0	1703	494	
CHARCOAL PLANTS	0	0	0	0	0	0	-8009	0	0	-8009	0	0	0	0	0	0	0	0	0	0	4001	0	0	0	0	4001	-4008	
DISTILLERIES	0	0	0	0	0	0	0	-1703	-14	-1717	0	0	0	0	0	0	0	0	0	0	1471	0	0	0	0	1471	-246	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	167	250	-663	1	0	0	0	0	0	0	215	0	0	-30	-30	
LOSSES IN DISTRIB./STORAGE	-278	0	0	-193	0	0	0	0	0	-471	0	0	0	0	0	0	-29	-132	0	-4551	-400	-58	0	0	0	-5170	-5641	
FINAL CONSUMPTION	0	735	305	0	0	0	21958	6150	612	29760	14431	16510	10027	2776	1686	2289	843	2999	0	32192	3601	1331	1946	3716	142	94489	124249	
FINAL NON-ENERGY CONSUMPTION	0	331	0	0	0	0	0	0	0	331	0	0	0	0	1657	112	0	0	0	0	0	169	0	3716	89	5743	6074	
FINAL ENERGY CONSUMPTION	0	404	305	0	0	0	21958	6150	612	29429	14431	16510	10027	2776	29	2177	843	2999	0	32192	3601	1162	1946	0	53	88746	118175	
ENERGY SECTOR	0	138	0	0	0	0	0	1998	0	2136	219	1754	0	0	0	0	163	0	0	1143	0	0	1188	0	0	4467	6603	
RESIDENTIAL	0	0	0	0	0	0	15141	0	0	15141	0	0	0	2480	0	360	124	0	0	6096	782	0	0	0	0	9842	24983	
COMMERCIAL	0	0	0	0	0	0	159	0	0	159	27	201	0	91	0	0	32	0	0	3643	60	0	0	0	0	4054	4213	
PUBLIC	0	0	0	0	0	0	6	0	0	6	97	80	0	16	0	2	3	0	0	2746	3	0	0	0	0	2947	2953	
AGRICULTURE	0	0	0	0	0	0	3366	0	0	3366	1839	118	0	0	0	2	0	0	0	462	11	0	0	0	0	2432	5798	
TRANSPORTATION - TOTAL	0	0	18	0	0	0	5	0	0	23	11854	1354	10027	0	0	1637	0	0	0	212	0	1162	0	0	0	26246	26269	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	10630	0	9948	0	0	0	0	0	0	0	0	1162	0	0	0	21740	21740	
RAILROADS	0	0	18	0	0	0	3	0	0	21	552	13	0	0	0	0	0	0	0	212	0	0	0	0	0	777	798	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	1637	0	0	0	0	0	0	0	0	0	1716	1716	
WATERWAYS	0	0	0	0	0	0	2	0	0	2	672	1341	0	0	0	0	0	0	0	0	0	0	0	0	0	2013	2015	
INDUSTRIAL - TOTAL	0	266	286	0	0	0	3281	4152	612	8597	395	13003	0	189	29	176	521	2999	0	17890	2745	0	758	0	53	38758	47355	
CEMENT	0	44	133	0	0	0	0	0	0	177	26	2315	0	0	0	3	0	0	0	763	0	0	0	0	0	3107	3284	
PIG-IRON AND STEEL	0	113	24	0	0	0	0	0	0	137	33	1169	0	34	0	26	468	2958	0	2388	2556	0	0	0	53	9685	9822	
FERRO-ALLOYS	0	0	11	0	0	0	0	0	0	11	0	0	0	0	0	0	41	0	0	649	154	0	0	0	0	844	855	
MINING/PELLETIZATION	0	0	0	0	0	0	2	0	0	2	54	895	0	0	0	16	0	0	0	603	0	0	0	0	0	1568	1570	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	0	0	0	0	0	396	0	0	0	0	12	0	0	3156	14	0	281	0	0	3859	3859	
CHEMICAL	0	107	5	0	0	0	92	0	0	204	39	2135	0	5	29	3	0	0	0	2256	21	0	214	0	0	4702	4906	
FOODS AND BEVERAGES	0	0	11	0	0	0	1209	4152	0	5372	64	1491	0	16	0	20	9	0	0	1524	0	0	0	0	0	3124	8496	
TEXTILES	0	0	0	0	0	0	67	0	0	67	6	691	0	5	0	14	2	0	0	1168	0	0	0	0	0	1886	1953	
PAPER AND PULP	0	0	60	0	0	0	185	0	608	853	15	1091	0	2	0	6	0	0	0	1296	0	0	0	0	0	2410	3263	
CERAMICS	0	2	29	0	0	0	1285	0	4	1320	11	817	0	27	0	5	4	0	0	425	0	0	0	0	0	1289	2609	
OTHERS	0	0	13	0	0	0	441	0	0	454	147	2003	0	100	0	83	26	0	0	3662	0	0	263	0	0	6284	6738	
UNIDENTIFIED CONSUMPTION	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
ADJUSTMENTS	0	3	3	70	0	0	0	0	0	76	0	0	0	0	0	0	0	134	0	0	0	0	0	0	0	134	210	

APPENDIX F.11

CONSOLIDATED ENERGY BALANCE - YEAR 1980

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	9083	2134	1463	973	0	37383	30695	9082	995	91808	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91808
IMPORTS	43485	0	0	3310	0	0	0	0	0	46795	570	1114	77	143	1	0	0	357	0	0	0	0	121	232	0	2615	49410
CHANGES IN STOCKS	2082	0	-286	57	0	0	0	0	0	1853	-684	325	147	-227	-204	-223	0	-51	0	0	109	3	263	0	-542	1311	
TOTAL SUPPLY	54650	2134	1177	4340	0	37383	30695	9082	995	140456	-114	1439	224	-84	-203	-223	0	306	0	0	109	124	495	0	2073	142529	
EXPORTS AND BUNKERS	-60	0	0	0	0	0	0	0	0	-60	-534	-673	-269	-35	0	-301	0	0	0	-62	0	-191	0	-40	0	-2105	-2165
NON-UTILIZED	0	-586	0	0	0	0	0	0	0	-586	0	0	0	0	0	0	-39	0	0	0	0	0	-33	0	0	-72	-658
RE-INJECTION	0	-483	0	0	0	0	0	0	0	-483	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-483
GROSS DOMESTIC SUPPLY	54590	1065	1177	4340	0	37383	30695	9082	995	139327	-648	766	-45	-119	-203	-524	-39	306	0	-62	0	-82	91	455	0	-104	139223
TOTAL TRANSFORMATION	-54319	-218	-693	-4013	0	-37383	-9106	-2394	-270	-108396	16038	15172	8676	3124	1741	2670	932	2883	0	40421	4530	1876	1921	2668	173	102825	-5571
PETROLEUM REFINERIES	-54319	0	0	0	0	0	0	0	0	-54319	16400	16185	8365	2676	2992	2670	0	0	0	0	0	0	1508	2894	0	53690	-629
NATURAL GAS PLANTS	0	-218	0	0	0	0	0	0	0	-218	0	0	74	140	0	0	0	0	0	0	0	0	0	0	0	214	-4
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	-266	0	245	0	0	0	0	0	0	0	0	0	-21	-21
COKING PLANTS	0	0	0	-4013	0	0	0	0	0	-4013	0	0	0	0	0	0	723	2883	0	0	0	0	0	0	173	3779	-234
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-669	0	0	-36570	0	0	0	-37239	-296	-509	0	0	0	0	0	0	0	38002	0	0	0	0	0	37197	-42
SELF-PROD. POWER PLANTS	0	0	-24	0	0	-813	-39	-205	-247	-1328	-66	-504	0	0	0	0	-36	0	0	2419	0	0	-3	0	0	1810	482
CHARCOAL PLANTS	0	0	0	0	0	0	-9067	0	0	-9067	0	0	0	0	0	0	0	0	0	0	4530	0	0	0	0	4530	-4537
DISTILLERIES	0	0	0	0	0	0	0	-2189	-23	-2212	0	0	0	0	0	0	0	0	0	0	1876	0	0	0	0	1876	-336
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	0	0	237	308	-985	0	0	0	0	0	0	0	416	-226	0	-250	-250
LOSSES IN DISTRIB./STORAGE	-271	0	0	-327	0	0	0	0	0	-598	0	0	0	0	0	0	-27	-55	0	-4775	-362	-75	0	0	0	-5294	-5892
FINAL CONSUMPTION	0	860	502	0	0	0	21589	6688	725	30364	15390	15938	8631	3005	1538	2146	866	3134	0	35584	4168	1630	2012	3123	173	97338	127702
FINAL NON-ENERGY CONSUMPTION	0	388	0	0	0	0	0	0	0	388	0	0	0	0	1505	88	0	0	0	0	0	245	70	3123	116	5147	5535
FINAL ENERGY CONSUMPTION	0	472	502	0	0	0	21589	6688	725	29976	15390	15938	8631	3005	33	2058	866	3134	0	35584	4168	1385	1942	0	57	92191	122167
ENERGY SECTOR	0	161	0	0	0	0	0	1976	0	2137	242	1755	0	0	0	162	0	0	0	1210	0	0	1105	0	0	4474	6611
RESIDENTIAL	0	0	0	0	0	0	14787	0	0	14787	0	0	0	2694	0	292	122	0	0	6746	810	0	0	0	0	10664	25451
COMMERCIAL	0	0	0	0	0	0	153	0	0	153	24	223	0	101	0	0	32	0	0	4003	63	0	0	0	0	4446	4599
PUBLIC	0	0	0	0	0	0	6	0	0	6	141	89	0	16	0	2	4	0	0	3012	4	0	0	0	0	3268	3274
AGRICULTURE	0	0	0	0	0	0	3191	0	0	3191	2174	114	0	0	0	2	0	0	0	591	10	0	0	0	0	2891	6082
TRANSPORTATION - TOTAL	0	0	21	0	0	0	3	0	0	24	12435	972	8631	0	0	1625	0	0	0	239	0	1385	0	0	0	25287	25311
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	11175	0	8561	0	0	0	0	0	0	0	0	1385	0	0	0	21121	21121
RAILROADS	0	0	21	0	0	0	3	0	0	24	571	10	0	0	0	0	0	0	0	239	0	0	0	0	0	820	844
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	70	0	0	1625	0	0	0	0	0	0	0	0	0	1695	1695
WATERWAYS	0	0	0	0	0	0	0	0	0	0	689	962	0	0	0	0	0	0	0	0	0	0	0	0	0	1651	1651
INDUSTRIAL - TOTAL	0	311	481	0	0	0	3449	4712	725	9678	374	12785	0	194	33	137	546	3134	0	19783	3281	0	837	0	57	41161	50839
CEMENT	0	45	249	0	0	0	0	0	0	294	28	2011	0	0	0	2	0	0	0	934	103	0	0	0	0	3078	3372
PIG-IRON AND STEEL	0	110	27	0	0	0	0	0	0	137	39	1010	0	38	0	20	488	3081	0	2587	2884	0	0	0	57	10204	10341
FERRO-ALLOYS	0	0	17	0	0	0	0	0	0	17	0	0	0	0	0	0	53	0	0	842	175	0	0	0	0	1070	1087
MINING/PELLETIZATION	0	0	0	0	0	0	15	0	0	15	57	894	0	0	0	15	0	0	0	787	22	0	0	0	0	1775	1790
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	4	0	0	4	0	404	0	0	0	0	13	0	0	3219	57	0	271	0	0	3964	3968
CHEMICAL	0	153	1	0	0	0	86	17	0	257	38	2291	0	6	33	2	0	0	0	2314	31	0	343	0	0	5058	5315
FOODS AND BEVERAGES	0	0	62	0	0	0	1180	4695	0	5937	65	1422	0	13	0	15	11	0	0	1821	0	0	0	0	0	3347	9284
TEXTILES	0	0	0	0	0	0	61	0	0	61	6	657	0	4	0	9	3	0	0	1327	1	0	0	0	0	2007	2068
PAPER AND PULP	0	0	60	0	0	0	329	0	723	1112	17	1053	0	2	0	5	1	0	0	1476	0	0	0	0	0	2554	3666
CERAMICS	0	3	56	0	0	0	1335	0	2	1396	12	869	0	29	0	2	4	0	0	560	0	0	0	0	0	1476	2872
OTHERS	0	0	9	0	0	0	439	0	0	448	112	2174	0	102	0	67	26	0	0	3916	8	0	223	0	0	6628	7076
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	0	13	18	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	-89	0	0	0	-89	-58

APPENDIX F.12

CONSOLIDATED ENERGY BALANCE - YEAR 1981

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	10675	2395	1884	713	0	37922	30034	9955	1080	94658	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94658
IMPORTS	42261	0	0	3125	0	0	0	0	0	45386	763	182	67	139	0	0	0	187	0	0	0	0	59	96	0	1493	46879	
CHANGES IN STOCKS	542	0	-110	76	0	0	0	0	0	508	-169	-107	309	-163	-211	-121	0	-179	0	0	0	-399	-337	403	0	-974	-466	
TOTAL SUPPLY	53478	2395	1774	3914	0	37922	30034	9955	1080	140552	594	75	376	-24	-211	-121	0	8	0	0	0	-399	-278	499	0	519	141071	
EXPORTS AND BUNKERS	-738	0	0	0	0	0	0	0	0	-738	-582	-1573	-1093	-46	-7	-559	0	0	0	-75	0	-79	0	-89	0	-4103	-4841	
NON-UTILIZED	0	-784	0	0	0	0	0	0	0	-784	0	0	0	0	0	0	-65	0	0	0	0	0	-60	0	0	-125	-909	
RE-INJECTION	0	-593	0	0	0	0	0	0	0	-593	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-593	
GROSS DOMESTIC SUPPLY	52740	1018	1774	3914	0	37922	30034	9955	1080	138437	12	-1498	-717	-70	-218	-680	-65	8	0	-75	0	-478	-338	410	0	-3709	134728	
TOTAL TRANSFORMATION	-52478	-261	-947	-3617	0	-37922	-8660	-2741	-328	-106954	15041	14315	8981	3257	2111	2989	872	2750	0	41234	4302	2120	2189	2246	158	102565	-4389	
PETROLEUM REFINERIES	-52478	0	0	0	0	0	0	0	0	-52478	15461	15218	8712	2719	3385	2989	0	0	0	0	0	0	1710	2478	0	52672	194	
NATURAL GAS PLANTS	0	-261	0	0	0	0	0	0	0	-261	0	0	85	171	1	0	0	0	0	0	0	0	0	0	0	257	-4	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	-290	0	258	0	0	0	0	0	0	0	0	0	-32	-32	
COKING PLANTS	0	0	0	-3617	0	0	0	0	0	-3617	0	0	0	0	0	0	660	2750	0	0	0	0	0	0	158	3568	-49	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-935	0	0	-37148	0	0	0	-38083	-363	-492	0	0	0	0	0	0	0	38866	0	0	0	0	0	38011	-72	
SELF-PROD. POWER PLANTS	0	0	-12	0	0	-774	-49	-234	-297	-1366	-91	-411	0	0	0	0	-46	0	0	2368	0	0	-30	0	0	1790	424	
CHARCOAL PLANTS	0	0	0	0	0	0	-8611	0	0	-8611	0	0	0	0	0	0	0	0	0	0	4302	0	0	0	0	4302	-4309	
DISTILLERIES	0	0	0	0	0	0	0	-2507	-31	-2538	0	0	0	0	0	0	0	0	0	0	2120	0	0	0	0	2120	-418	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	34	0	184	367	-985	0	0	0	0	0	0	0	509	-232	0	-123	-123	
LOSSES IN DISTRIB./STORAGE	-262	0	0	-297	0	0	0	0	0	-559	0	0	0	0	0	0	-26	-149	0	-4552	-344	-85	0	0	0	-5156	-5715	
FINAL CONSUMPTION	0	771	847	0	0	0	21374	7214	752	30958	15053	12817	8264	3187	1893	2309	781	2609	0	36607	3958	1492	1851	2656	158	93635	124593	
FINAL NON-ENERGY CONSUMPTION	0	276	0	0	0	0	0	0	0	276	0	0	0	1848	83	0	0	0	0	0	0	206	36	2656	105	4934	5210	
FINAL ENERGY CONSUMPTION	0	495	847	0	0	0	21374	7214	752	30682	15053	12817	8264	3187	45	2226	781	2609	0	36607	3958	1286	1815	0	53	88701	119383	
ENERGY SECTOR	0	169	0	0	0	0	0	2210	0	2379	230	1520	0	17	0	0	136	0	0	1315	0	0	1154	0	0	4372	6751	
RESIDENTIAL	0	0	0	0	0	0	14187	0	0	14187	0	0	0	2880	0	257	130	0	0	7265	827	0	0	0	0	11359	25546	
COMMERCIAL	0	0	0	0	0	0	171	0	0	171	23	233	0	106	0	0	35	0	0	4201	64	0	0	0	0	4662	4833	
PUBLIC	0	0	0	0	0	0	6	0	0	6	64	93	0	14	0	2	4	0	0	3222	4	0	0	0	0	3403	3409	
AGRICULTURE	0	0	0	0	0	0	3202	0	0	3202	2100	99	0	0	0	2	0	0	0	723	10	0	0	0	0	2934	6136	
TRANSPORTATION - TOTAL	0	0	20	0	0	0	3	0	0	23	12204	1354	8264	0	0	1831	0	0	0	255	0	1286	0	0	0	25194	25217	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	10990	0	8196	0	0	0	0	0	0	0	0	1286	0	0	0	20472	20472	
RAILROADS	0	0	20	0	0	0	3	0	0	23	553	7	0	0	0	0	0	0	0	255	0	0	0	0	0	815	838	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	68	0	0	1831	0	0	0	0	0	0	0	0	0	1899	1899	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	661	1347	0	0	0	0	0	0	0	0	0	0	0	0	0	2008	2008	
INDUSTRIAL - TOTAL	0	326	827	0	0	0	3805	5004	752	10714	432	9518	0	170	45	134	476	2609	0	19626	3053	0	661	0	53	36777	47491	
CEMENT	0	21	511	0	0	0	0	0	40	572	26	1695	0	0	0	3	0	0	0	894	167	0	0	0	0	2785	3357	
PIG-IRON AND STEEL	0	105	24	0	0	0	0	0	0	129	50	666	0	33	0	24	415	2578	0	2475	2512	0	0	0	53	8806	8935	
FERRO-ALLOYS	0	0	15	0	0	0	0	0	0	15	0	0	0	0	0	0	0	25	0	939	243	0	0	0	0	1207	1222	
MINING/PELLETIZATION	0	0	0	0	0	0	16	0	0	16	59	690	0	0	0	16	0	0	0	1082	25	0	0	0	0	1872	1888	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	5	0	0	5	0	341	0	0	0	0	13	6	0	2795	67	0	189	0	0	3411	3416	
CHEMICAL	0	194	7	0	0	0	101	19	0	321	30	2065	0	6	45	2	0	0	0	2262	28	0	443	0	0	4881	5202	
FOODS AND BEVERAGES	0	0	133	0	0	0	1205	4984	0	6322	66	1121	0	10	0	14	12	0	0	1979	0	0	0	0	0	3202	9524	
TEXTILES	0	0	1	0	0	0	95	0	0	96	6	518	0	4	0	10	2	0	0	1286	1	0	0	0	0	1827	1923	
PAPER AND PULP	0	3	78	0	0	0	461	0	708	1250	19	803	0	2	0	5	1	0	0	1467	0	0	0	0	0	2297	3547	
CERAMICS	0	3	24	0	0	0	1444	0	4	1475	13	458	0	33	0	2	5	0	0	548	2	0	0	0	0	1061	2536	
OTHERS	0	0	34	0	0	0	478	1	0	513	163	1161	0	82	0	58	28	0	0	3899	8	0	29	0	0	5428	5941	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	14	20	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	-65	0	0	0	-65	-31	

APPENDIX F.13

CONSOLIDATED ENERGY BALANCE - YEAR 1982

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	12984	2933	2153	718	2846	40928	28745	11844	1154	104305	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104305
IMPORTS	39856	0	0	3005	0	0	0	0	0	42861	202	2032	65	831	1	0	0	78	3416	0	0	0	280	96	0	7001	49862	
CHANGES IN STOCKS	378	0	58	0	-1692	0	0	0	0	-1256	470	-735	-136	-261	-12	-86	0	7	-4555	0	0	-540	-238	240	0	-5846	-7102	
TOTAL SUPPLY	53218	2933	2211	3723	1154	40928	28745	11844	1154	145910	672	1297	-71	570	-11	-86	0	85	-1139	0	0	-540	42	336	0	1155	147065	
EXPORTS AND BUNKERS	-1103	0	0	0	0	0	0	0	0	-1103	-1244	-2154	-1173	-35	0	-622	0	0	0	-107	0	-172	-18	-114	0	-5639	-6742	
NON-UTILIZED	0	-955	0	0	0	0	0	0	0	-955	0	0	0	0	0	0	-41	0	0	0	0	0	-48	0	0	-89	-1044	
RE-INJECTION	0	-613	0	0	0	0	0	0	0	-613	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-613	
GROSS DOMESTIC SUPPLY	52115	1365	2211	3723	1154	40928	28745	11844	1154	143239	-572	-857	-1244	535	-11	-708	-41	85	-1139	-107	0	-712	-24	222	0	-4573	138666	
TOTAL TRANSFORMATION	-51856	-294	-917	-3768	-1154	-40928	-8788	-3673	-357	-111735	16082	12878	9119	3036	2311	3064	936	2718	1139	44106	4360	2871	2059	2638	175	107492	-4243	
PETROLEUM REFINERIES	-51856	0	0	0	0	0	0	0	0	-51856	16365	13558	8835	2514	3602	3064	0	0	0	0	0	0	1537	2868	0	52343	487	
NATURAL GAS PLANTS	0	-294	0	0	0	0	0	0	0	-294	0	0	87	200	3	0	0	0	0	0	0	0	0	0	0	290	-4	
GASIFICATION PLANTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-296	0	271	0	0	0	0	0	0	0	0	-25	-25	
COKING PLANTS	0	0	0	-3768	0	0	0	0	0	-3768	0	0	0	0	0	0	715	2718	0	0	0	0	0	0	175	3608	-160	
NUCLEAR CYCLE	0	0	0	0	-1154	0	0	0	0	-1154	0	0	0	0	0	0	0	0	1139	0	0	0	0	0	0	1139	-15	
PUBL. UTIL. POWER PLANTS	0	0	-905	0	0	-40145	0	0	0	-41050	-240	-331	0	0	0	0	0	0	0	41615	0	0	0	0	0	41044	-6	
SELF-PROD. POWER PLANTS	0	0	-12	0	0	-783	-62	-278	-330	-1465	-89	-349	0	0	0	0	-50	0	0	2491	0	0	-48	0	0	1955	490	
CHARCOAL PLANTS	0	0	0	0	0	0	-8726	0	0	-8726	0	0	0	0	0	0	0	0	0	0	4360	0	0	0	0	4360	-4366	
DISTILLERIES	0	0	0	0	0	0	0	-3395	-27	-3422	0	0	0	0	0	0	0	0	0	0	0	2871	0	0	0	2871	-551	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	46	0	197	322	-998	0	0	0	0	0	0	0	570	-230	0	-93	-93	
LOSSES IN DISTRIB./STORAGE	-259	0	0	0	0	0	0	0	0	-259	0	0	0	0	0	0	-23	0	0	-5262	-305	-115	0	0	0	-5705	-5964	
FINAL CONSUMPTION	0	1102	1276	0	0	0	19957	8171	797	31303	15510	12021	7875	3571	2302	2356	872	2803	0	38737	4055	2076	2035	2860	175	97248	128551	
FINAL NON-ENERGY CONSUMPTION	0	413	0	0	0	0	0	0	0	413	0	0	0	0	2300	95	0	0	0	0	0	195	147	2860	136	5733	6146	
FINAL ENERGY CONSUMPTION	0	689	1276	0	0	0	19957	8171	797	30890	15510	12021	7875	3571	2	2261	872	2803	0	38737	4055	1881	1888	0	39	91515	122405	
ENERGY SECTOR	0	335	0	0	0	0	0	3036	0	3371	305	1417	0	13	0	0	158	0	0	1428	0	0	1161	0	0	4482	7853	
RESIDENTIAL	0	0	0	0	0	0	12386	0	0	12386	0	0	0	3269	0	238	133	0	0	7850	826	0	0	0	0	12316	24702	
COMMERCIAL	0	0	0	0	0	0	168	0	0	168	22	222	0	114	0	0	39	0	0	4491	66	0	0	0	0	4954	5122	
PUBLIC	0	0	0	0	0	0	6	0	0	6	64	104	0	14	0	2	4	0	0	3461	4	0	0	0	0	3653	3659	
AGRICULTURE	0	0	0	0	0	0	3160	0	0	3160	2199	66	0	0	0	1	0	0	0	800	9	0	0	0	0	3075	6235	
TRANSPORTATION - TOTAL	0	0	19	0	0	0	3	0	0	22	12605	1389	7875	0	0	1864	0	0	0	290	0	1881	0	0	0	25904	25926	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	11220	0	7807	0	0	0	0	0	0	0	0	1881	0	0	0	20908	20908	
RAILROADS	0	0	19	0	0	0	3	0	0	22	538	7	0	0	0	0	0	0	0	290	0	0	0	0	0	835	857	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	68	0	0	1864	0	0	0	0	0	0	0	0	0	1932	1932	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	847	1382	0	0	0	0	0	0	0	0	0	0	0	0	0	2229	2229	
INDUSTRIAL - TOTAL	0	354	1257	0	0	0	4234	5135	797	11777	315	8696	0	161	2	156	538	2803	0	20417	3150	0	727	0	39	37004	48781	
CEMENT	0	21	910	0	0	0	0	0	50	981	26	1192	0	0	0	3	0	0	0	877	280	0	0	0	0	2378	3359	
PIG-IRON AND STEEL	0	87	18	0	0	0	0	0	0	105	38	576	0	42	0	27	469	2774	0	2517	2457	0	0	0	39	8939	9044	
FERRO-ALLOYS	0	0	18	0	0	0	0	0	0	18	0	0	0	0	0	0	24	0	0	882	222	0	0	0	0	1128	1146	
MINING/PELLETIZATION	0	0	10	0	0	0	12	0	0	22	61	635	0	2	0	12	0	0	0	1018	60	0	0	0	0	1788	1810	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	7	0	0	7	0	302	0	0	0	0	15	5	0	2989	67	0	216	0	0	3594	3601	
CHEMICAL	0	232	44	0	0	0	125	26	0	427	23	2036	0	5	2	2	0	0	0	2629	40	0	491	0	0	5228	5655	
FOODS AND BEVERAGES	0	0	140	0	0	0	1432	5108	0	6680	55	971	0	12	0	12	13	0	0	2003	0	0	0	0	0	3066	9746	
TEXTILES	0	0	8	0	0	0	119	0	0	127	6	538	0	4	0	8	2	0	0	1349	8	0	0	0	0	1915	2042	
PAPER AND PULP	0	11	81	0	0	0	569	0	741	1402	14	768	0	3	0	4	1	0	0	1486	0	0	0	0	0	2276	3678	
CERAMICS	0	3	15	0	0	0	1373	0	6	1397	12	356	0	36	0	2	6	0	0	538	4	0	0	0	0	954	2351	
OTHERS	0	0	13	0	0	0	597	1	0	611	80	1322	0	57	0	86	32	0	0	4129	12	0	20	0	0	5738	6349	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	127	127	
ADJUSTMENTS	0	31	-18	45	0	0	0	0	0	58	0	0	0	0	2	0	0	0	0	0	0	32	0	0	0	34	92	

APPENDIX F.14

CONSOLIDATED ENERGY BALANCE - YEAR 1983

UNIT: 10^3 toe

	PETRO- LEUM	NATUR. GAS	STEAM COAL	METAL COAL	URAN. U308	HYDRO	FIRE- WOOD	S.CANE PRODUC.	OTHER PRIMAR.	TOTAL PRIMAR.	DIESEL OIL	FUEL OIL	GASO- LINE	LPG	NAPH- THA	KERO- SENE	GAS	COAL COKE	URAN. C/UO2	ELECT- RICITY	CHAR- COAL	ALCO- HOL	OTHER OIL P.	N.ENER. OIL P.	BITU- MEN	TOTAL SECOND.		
	16595	3885	2308	737	2269	43928	29855	15056	1179	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	36692	0	0	4002	0	0	0	0	0	40694	228	389	67	527	4	0	0	152	0	1	0	0	9	88	0	1465	42159	
	-2077	0	-145	-256	-2269	0	0	0	0	-4747	-13	278	-21	-70	128	18	0	-28	0	0	0	-658	-30	62	0	-334	-5081	
EXPORTS AND BUNKERS																												
NON-UTILIZED	0	-1369	0	0	0	0	0	0	0	-1369	0	0	0	0	0	0	-43	0	0	0	0	0	-170	0	0	-213	-1582	
RE-INJECTION	0	-657	0	0	0	0	0	0	0	-657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-657	
GROSS DOMESTIC SUPPLY	51159	1859	2163	4483	0	43928	29855	15056	1179	149682	-764	-1857	-1525	408	132	-549	-43	124	0	-70	0	-881	-191	-32	0	-5248	144434	
TOTAL TRANSFORMATION	-50905	-421	-707	-4475	0	-43928	-9899	-5217	-348	-115900	15956	11280	8259	3305	2897	2824	1073	3187	0	4712	4903	4005	2429	2491	213	109944	-5956	
PETROLEUM REFINERIES	-50905	0	0	0	0	0	0	0	0	-50905	16256	11921	7818	2687	4437	2824	0	0	0	0	0	0	1917	2663	0	50523	-382	
NATURAL GAS PLANTS	0	-339	0	0	0	0	0	0	0	-339	0	0	112	231	2	0	0	0	0	0	0	0	0	0	0	345	6	
GASIFICATION PLANTS	0	-82	0	0	0	0	0	0	0	-82	0	0	0	-204	0	285	0	0	0	0	0	0	0	0	0	81	-1	
COKING PLANTS	0	0	0	-4475	0	0	0	0	0	-4475	0	0	0	0	0	847	3187	0	0	0	0	0	0	0	213	4247	-228	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-689	0	0	-43066	0	0	0	-43755	-279	-265	0	0	0	0	0	0	0	44316	0	0	0	0	0	43772	17	
SELF-PROD. POWER PLANTS	0	0	-18	0	0	-862	-86	-378	-321	-1665	-71	-376	0	0	0	0	-59	0	0	2806	0	0	-12	0	0	2288	623	
CHARCOAL PLANTS	0	0	0	0	0	0	-9813	0	0	-9813	0	0	0	0	0	0	0	0	0	0	4903	0	0	0	0	4903	-4910	
DISTILLERIES	0	0	0	0	0	0	0	-4839	-27	-4866	0	0	0	0	0	0	0	0	0	0	4005	0	0	0	0	4005	-861	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	50	0	329	387	-1338	0	0	0	0	0	0	0	524	-172	0	-220	-220	
LOSSES IN DISTRIB./STORAGE	-254	0	-1	0	0	0	0	0	0	-255	0	0	0	0	0	0	-23	0	0	-5317	-294	-162	0	0	0	-5796	-6051	
FINAL CONSUMPTION	0	1491	1456	0	0	0	19956	9839	831	33573	15192	9423	6734	3713	3030	2275	1007	3311	0	41735	4609	2983	2238	2459	213	98922	132495	
FINAL NON-ENERGY CONSUMPTION	0	687	0	0	0	0	0	0	0	687	0	0	0	0	3029	87	0	0	0	0	0	377	131	2459	165	6248	6935	
FINAL ENERGY CONSUMPTION	0	804	1456	0	0	0	19956	9839	831	32886	15192	9423	6734	3713	1	2188	1007	3311	0	41735	4609	2606	2107	0	48	92674	125560	
ENERGY SECTOR	0	419	0	0	0	0	0	4374	0	4793	362	1293	0	12	0	0	200	0	0	1460	0	0	1358	0	0	4685	9478	
RESIDENTIAL	0	0	0	0	0	0	11440	0	0	11440	0	0	0	3399	0	211	139	0	0	8623	853	0	0	0	0	13225	24665	
COMMERCIAL	0	0	0	0	0	0	171	0	0	171	28	176	0	122	0	0	41	0	0	4855	67	0	0	0	0	5289	5460	
PUBLIC	0	0	0	0	0	0	6	0	0	6	67	103	0	14	0	2	4	0	0	3718	7	0	0	0	0	3915	3921	
AGRICULTURE	0	0	0	0	0	0	3111	0	0	3111	2382	25	0	0	0	0	0	0	0	934	9	0	0	0	0	3350	6461	
TRANSPORTATION - TOTAL	0	0	24	0	0	0	3	0	0	27	12081	1307	6734	0	0	1868	0	0	0	307	0	2606	0	0	0	24903	24930	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	10744	0	6673	0	0	0	0	0	0	0	0	2606	0	0	0	20023	20023	
RAILROADS	0	0	24	0	0	0	3	0	0	27	541	7	0	0	0	0	0	0	0	307	0	0	0	0	0	855	882	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	61	0	0	1868	0	0	0	0	0	0	0	0	0	1929	1929	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	796	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	2096	2096	
INDUSTRIAL - TOTAL	0	385	1432	0	0	0	5225	5465	831	13338	272	6398	0	166	1	107	623	3311	0	21838	3673	0	749	0	48	37186	50524	
CEMENT	0	21	907	0	0	0	0	0	47	975	19	463	0	0	0	2	0	0	0	708	400	0	0	0	0	1592	2567	
PIG-IRON AND STEEL	0	103	18	0	0	0	0	0	0	121	30	506	0	25	0	19	548	3284	0	2699	2755	0	0	0	48	9914	10035	
FERRO-ALLOYS	0	0	13	0	0	0	0	0	0	13	0	0	0	0	0	0	0	22	0	958	292	0	0	0	0	1272	1285	
MINING/PELLETIZATION	0	0	26	0	0	0	15	0	0	41	54	471	0	5	0	11	0	0	0	1243	52	0	0	0	0	1836	1877	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	7	0	0	7	0	389	0	13	0	0	16	5	0	3451	100	0	240	0	0	4214	4221	
CHEMICAL	0	249	141	0	0	0	263	13	0	666	14	1444	0	7	1	2	0	0	0	2906	34	0	493	0	0	4901	5567	
FOODS AND BEVERAGES	0	0	166	0	0	0	1825	5451	0	7442	55	842	0	14	0	13	16	0	0	2172	0	0	0	0	0	3112	10554	
TEXTILES	0	0	11	0	0	0	138	0	0	149	3	437	0	4	0	7	2	0	0	1289	9	0	0	0	0	1751	1900	
PAPER AND PULP	0	9	122	0	0	0	757	0	770	1658	15	563	0	4	0	3	1	0	0	1654	0	0	0	0	0	2240	3898	
CERAMICS	0	3	17	0	0	0	1665	0	14	1699	9	384	0	34	0	1	6	0	0	493	14	0	0	0	0	941	2640	
OTHERS	0	0	11	0	0	0	555	1	0	567	73	899	0	60	0	49	34	0	0	4265	17	0	16	0	0	5413	5980	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	121	0	0	0	0	0	0	0	0	0	0	0	0	0	121	121	
ADJUSTMENTS	0	53	1	-8	0	0	0	0	0	46	0	0	0	0	1	0	0	0	0	0	0	21	0	0	0	22	68	

APPENDIX F.15

CONSOLIDATED ENERGY BALANCE - YEAR 1984

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	23216	4746	2605	821	1374	48312	32922	16342	1408	131746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	131746
IMPORTS	32689	0	0	5553	0	0	0	0	0	38242	2	127	62	269	4	0	0	41	0	4	0	0	84	55	0	648	38890	
CHANGES IN STOCKS	-1511	0	-383	-293	-1374	0	0	0	0	-3561	34	-377	-78	-111	211	-169	0	26	841	0	0	-287	-3	-108	0	-21	-3582	
TOTAL SUPPLY	54394	4746	2222	6081	0	48312	32922	16342	1408	166427	36	-250	-16	158	215	-169	0	67	841	4	0	-287	81	-53	0	627	167054	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-1349	-2668	-3239	-46	0	-1191	0	0	0	-29	0	-496	0	-211	0	-9229	-9229	
NON-UTILIZED	0	-1616	0	0	0	0	0	0	0	-1616	0	0	0	0	0	0	-29	0	0	0	0	0	-90	0	0	-119	-1735	
RE-INJECTION	0	-783	0	0	0	0	0	0	0	-783	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-783	
GROSS DOMESTIC SUPPLY	54394	2347	2222	6081	0	48312	32922	16342	1408	164028	-1313	-2918	-3255	112	215	-1360	-29	67	841	-25	0	-783	-9	-264	0	-8721	155307	
TOTAL TRANSFORMATION	-54124	-629	-813	-6008	0	-48312	-12238	-5794	-480	-128398	17029	11205	9298	3564	2938	3386	1296	4297	-841	52023	6065	4615	2585	2833	268	120561	-7837	
PETROLEUM REFINERIES	-54124	0	0	0	0	0	0	0	0	-54124	17307	11734	8804	2935	4570	3386	0	0	0	0	0	0	1979	3012	0	53727	-397	
NATURAL GAS PLANTS	0	-472	0	0	0	0	0	0	0	-472	0	0	135	326	1	0	0	0	0	0	0	0	0	0	0	462	-10	
GASIFICATION PLANTS	0	-157	0	0	0	0	0	0	0	-157	0	0	0	0	-158	0	293	0	0	0	0	0	0	0	0	135	-22	
COKING PLANTS	0	0	0	-6008	0	0	0	0	0	-6008	0	0	0	0	0	0	1118	4297	0	0	0	0	0	0	268	5683	-325	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-793	0	0	-47430	-2	0	0	-48225	-268	-269	0	0	0	0	0	0	-841	49242	0	0	0	0	0	47864	-361	
SELF-PROD. POWER PLANTS	0	0	-20	0	0	-882	-107	-344	-437	-1790	-81	-260	0	0	0	0	-115	0	0	2781	0	0	-12	0	0	2313	523	
CHARCOAL PLANTS	0	0	0	0	0	0	-12129	0	0	-12129	0	0	0	0	0	0	0	0	0	0	6065	0	0	0	0	6065	-6064	
DISTILLERIES	0	0	0	0	0	0	0	-5450	-43	-5493	0	0	0	0	0	0	0	0	0	0	0	4615	0	0	0	4615	-878	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	71	0	359	303	-1475	0	0	0	0	0	0	0	618	-179	0	-303	-303	
LOSSES IN DISTRIB./STORAGE	-270	0	-24	-67	0	0	0	0	0	-361	0	0	0	0	0	0	-26	-13	0	-5598	-307	-138	0	0	0	-6082	-6443	
FINAL CONSUMPTION	0	1735	1385	0	0	0	20684	10548	928	35280	15716	8287	6043	3676	3153	2026	1241	4351	0	46400	5758	3694	2576	2569	268	105758	141038	
FINAL NON-ENERGY CONSUMPTION	0	752	0	0	0	0	0	0	0	752	0	0	0	0	3141	64	0	0	0	0	0	342	258	2569	213	6587	7339	
FINAL ENERGY CONSUMPTION	0	983	1385	0	0	0	20684	10548	928	34528	15716	8287	6043	3676	12	1962	1241	4351	0	46400	5758	3352	2318	0	55	99171	133699	
ENERGY SECTOR	0	538	0	0	0	0	0	5246	0	5784	294	1386	0	5	10	16	282	0	0	1655	0	0	1426	0	0	5074	10858	
RESIDENTIAL	0	0	0	0	0	0	11657	0	0	11657	0	0	0	3372	0	197	137	0	0	8969	879	0	0	0	0	13554	25211	
COMMERCIAL	0	0	0	0	0	0	171	0	0	171	8	99	0	128	0	0	43	0	0	5128	67	0	0	0	0	5473	5644	
PUBLIC	0	0	0	0	0	0	5	0	0	5	93	63	0	15	0	1	4	0	0	3929	7	0	0	0	0	4112	4117	
AGRICULTURE	0	0	0	0	0	0	2765	0	0	2765	2506	25	0	0	0	1	0	0	0	1112	9	0	0	0	0	3653	6418	
TRANSPORTATION - TOTAL	0	0	23	0	0	0	3	0	0	26	12556	1349	6043	0	0	1653	0	0	0	322	0	3352	0	0	0	25275	25301	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	11193	0	5984	0	0	0	0	0	0	0	0	3352	0	0	0	20529	20529	
RAILROADS	0	0	23	0	0	0	3	0	0	26	551	2	0	0	0	0	0	0	0	322	0	0	0	0	0	875	901	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	59	0	0	1653	0	0	0	0	0	0	0	0	0	1712	1712	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	812	1347	0	0	0	0	0	0	0	0	0	0	0	0	0	2159	2159	
INDUSTRIAL - TOTAL	0	445	1362	0	0	0	6083	5302	928	14120	259	5365	0	156	2	94	775	4351	0	25285	4796	0	892	0	55	42030	56150	
CEMENT	0	10	840	0	0	0	8	0	35	893	19	145	0	0	0	2	0	0	0	673	571	0	0	0	0	1410	2303	
PIG-IRON AND STEEL	0	98	29	0	0	0	0	0	0	127	30	526	0	31	0	15	695	4318	0	3280	3623	0	0	0	55	12573	12700	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	1100	341	0	0	0	0	1467	1467	
MINING/PELLETIZATION	0	50	41	0	0	0	18	0	0	109	63	551	0	3	0	10	0	0	0	1475	51	0	0	0	0	2153	2262	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	11	0	0	11	0	330	0	4	0	0	18	7	0	4170	116	0	303	0	0	4948	4959	
CHEMICAL	0	261	153	0	0	0	321	35	0	770	13	1380	0	7	2	1	0	0	0	3274	37	0	578	0	0	5292	6062	
FOODS AND BEVERAGES	0	0	146	0	0	0	2038	5266	0	7450	51	621	0	13	0	12	14	0	0	2656	0	0	0	0	0	3367	10817	
TEXTILES	0	0	7	0	0	0	174	0	0	181	2	289	0	4	0	5	2	0	0	1485	9	0	0	0	0	1796	1977	
PAPER AND PULP	0	8	122	0	0	0	900	0	862	1892	11	411	0	3	0	3	1	0	0	1717	0	0	0	0	0	2146	4038	
CERAMICS	0	9	9	0	0	0	1822	0	31	1871	7	398	0	25	0	1	5	0	0	498	17	0	0	0	0	951	2822	
OTHERS	0	9	15	0	0	0	791	1	0	816	63	714	0	66	0	45	40	0	0	4957	31	0	11	0	0	5927	6743	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	17	0	-6	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	

APPENDIX F.16

CONSOLIDATED ENERGY BALANCE - YEAR 1985

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	27493	5292	2572	887	992	51729	32513	18576	1564	141618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	141618
IMPORTS	27422	0	0	5900	0	0	0	0	0	33322	362	218	163	527	33	37	0	66	0	556	0	0	68	134	0	2164	35486
CHANGES IN STOCKS	-63	0	415	107	-992	0	0	0	0	-533	452	-448	155	-277	218	-372	0	-52	899	0	0	-982	33	359	0	-15	-548
TOTAL SUPPLY	54852	5292	2987	6894	0	51729	32513	18576	1564	174407	814	-230	318	250	251	-335	0	14	899	556	0	-982	101	493	0	2149	176556
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-1095	-2162	-3668	-45	0	-772	0	0	0	-1	0	-216	0	-187	0	-8146	-8146
NON-UTILIZED	0	-1547	0	0	0	0	0	0	0	-1547	0	0	0	0	0	0	-29	0	0	0	0	0	-358	0	0	-387	-1934
RE-INJECTION	0	-872	0	0	0	0	0	0	0	-872	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-872
GROSS DOMESTIC SUPPLY	54852	2873	2987	6894	0	51729	32513	18576	1564	171988	-281	-2392	-3350	205	251	-1107	-29	14	899	555	0	-1198	-257	306	0	-6384	165604
TOTAL TRANSFORMATION	-54580	-773	-978	-6800	0	-51729	-12841	-7065	-413	-135179	16921	10979	9289	3794	3656	3184	1435	4878	-899	56168	6347	5811	2663	2941	265	127432	-7747
PETROLEUM REFINERIES	-54580	0	0	0	0	0	0	0	0	-54580	17243	11585	8722	3090	5294	3184	0	0	0	0	0	0	2068	3076	0	54262	-318
NATURAL GAS PLANTS	0	-627	0	0	0	0	0	0	0	-627	0	0	147	391	1	0	0	0	0	0	0	0	0	0	0	539	-88
GASIFICATION PLANTS	0	-146	-9	0	0	0	0	0	0	-155	0	0	0	0	-182	0	300	0	0	0	0	0	0	0	0	118	-37
COKING PLANTS	0	0	0	-6800	0	0	0	0	0	-6800	0	0	0	0	0	0	1246	4878	0	0	0	0	0	0	265	6389	-411
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	0	-948	0	0	-50847	-23	0	0	-51818	-324	-334	0	0	0	0	0	0	-899	53463	0	0	0	0	0	51906	88
SELF-PROD. POWER PLANTS	0	0	-21	0	0	-882	-113	-374	-360	-1750	-83	-272	0	0	0	0	-111	0	0	2705	0	0	-8	0	0	2231	481
CHARCOAL PLANTS	0	0	0	0	0	0	-12705	0	0	-12705	0	0	0	0	0	0	0	0	0	0	6347	0	0	0	0	6347	-6358
DISTILLERIES	0	0	0	0	0	0	0	-6691	-53	-6744	0	0	0	0	0	0	0	0	0	0	0	5811	0	0	0	5811	-933
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	85	0	420	313	-1457	0	0	0	0	0	0	0	603	-135	0	-171	-171
LOSSES IN DISTRIB./STORAGE	-272	0	-515	-77	0	0	0	0	0	-864	0	0	0	0	0	0	-22	-49	0	-6389	-316	-86	0	0	0	-6862	-7726
FINAL CONSUMPTION	0	2176	1494	0	0	0	19672	11511	1151	36004	16640	8587	5939	3999	3907	2077	1384	4843	0	50334	6031	4527	2406	3247	265	114186	150190
FINAL NON-ENERGY CONSUMPTION	0	812	0	0	0	0	0	0	0	812	0	0	0	0	3907	55	0	0	0	0	0	405	194	3247	209	8017	8829
FINAL ENERGY CONSUMPTION	0	1364	1494	0	0	0	19672	11511	1151	35192	16640	8587	5939	3999	0	2022	1384	4843	0	50334	6031	4122	2212	0	56	106169	141361
ENERGY SECTOR	0	781	0	0	0	0	0	6587	0	7368	343	1377	0	13	0	0	350	0	0	1805	0	0	1291	0	0	5179	12547
RESIDENTIAL	0	0	0	0	0	0	10629	0	0	10629	0	0	0	3680	0	185	144	0	0	9464	837	0	0	0	0	14310	24939
COMMERCIAL	0	0	0	0	0	0	159	0	0	159	10	126	0	135	0	0	45	0	0	5357	66	0	0	0	0	5739	5898
PUBLIC	0	0	0	0	0	0	4	0	0	4	83	70	0	18	0	1	6	0	0	4169	6	0	0	0	0	4353	4357
AGRICULTURE	0	0	0	0	0	0	2601	0	0	2601	2928	23	0	0	0	1	0	0	0	1298	9	0	0	0	0	4259	6860
TRANSPORTATION - TOTAL	0	0	13	0	0	0	3	0	0	16	13026	1640	5939	0	0	1754	0	0	0	332	0	4122	0	0	0	26813	26829
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	11538	0	5883	0	0	0	0	0	0	0	0	4122	0	0	0	21543	21543
RAILROADS	0	0	13	0	0	0	3	0	0	16	570	2	0	0	0	0	0	0	0	332	0	0	0	0	0	904	920
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	1754	0	0	0	0	0	0	0	0	0	1810	1810
WATERWAYS	0	0	0	0	0	0	0	0	0	0	918	1638	0	0	0	0	0	0	0	0	0	0	0	0	0	2556	2556
INDUSTRIAL - TOTAL	0	583	1481	0	0	0	6276	4924	1151	14415	250	5351	0	153	0	81	839	4843	0	27909	5113	0	921	0	56	45516	59931
CEMENT	0	6	985	0	0	0	8	0	38	1037	19	83	0	0	0	2	0	0	0	712	709	0	0	0	0	1525	2562
PIG-IRON AND STEEL	0	192	30	0	0	0	0	0	0	222	30	471	0	26	0	13	760	4804	0	3581	3727	0	0	0	56	13468	13690
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	1208	411	0	0	0	0	1646	1646
MINING/PELLETIZATION	0	56	18	0	0	0	22	0	0	96	66	549	0	4	0	7	0	2	0	1586	56	0	0	0	0	2270	2366
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	16	0	0	16	0	362	0	11	0	0	15	10	0	4979	120	0	358	0	0	5855	5871
CHEMICAL	0	258	165	0	0	0	297	36	0	756	12	1543	0	7	0	1	0	0	0	3811	37	0	559	0	0	5970	6726
FOODS AND BEVERAGES	0	9	107	0	0	0	2151	4852	0	7119	46	568	0	13	0	7	14	0	0	2814	0	0	0	0	0	3462	10581
TEXTILES	0	0	5	0	0	0	229	0	0	234	2	283	0	5	0	5	3	0	0	1622	8	0	0	0	0	1928	2162
PAPER AND PULP	0	14	131	0	0	0	969	34	1033	2181	12	352	0	4	0	3	1	0	0	1922	0	0	0	0	0	2294	4475
CERAMICS	0	21	16	0	0	0	1758	0	80	1875	6	362	0	15	0	1	7	0	0	545	17	0	0	0	0	953	2828
OTHERS	0	27	24	0	0	0	826	2	0	879	57	778	0	68	0	42	39	0	0	5129	28	0	4	0	0	6145	7024
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	0	76	0	-17	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59

APPENDIX F.17

CONSOLIDATED ENERGY BALANCE - YEAR 1986

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	28784	5504	2443	838	360	52902	32356	16781	1750	141718	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	141718
IMPORTS	30234	0	0	6188	0	0	0	0	0	36422	694	349	98	654	3	37	0	63	0	2988	0	0	12	54	0	4952	41374	
CHANGES IN STOCKS	-647	16	623	28	-360	0	0	0	0	-340	-165	119	-69	-153	-182	-280	0	-116	36	0	0	1024	2	-147	0	69	-271	
TOTAL SUPPLY	58371	5520	3066	7054	0	52902	32356	16781	1750	177800	529	468	29	501	-179	-243	0	-53	36	2988	0	1024	14	-93	0	5021	182821	
EXPORTS AND BUNKERS	0	0	-51	0	0	0	0	0	0	-51	-774	-2174	-2826	-21	0	-429	0	0	0	-3	0	-161	0	-117	0	-6505	-6556	
NON-UTILIZED	0	-1180	0	0	0	0	0	0	0	-1180	0	0	0	0	0	0	-33	0	0	0	0	0	-162	0	0	-195	-1375	
RE-INJECTION	0	-979	0	0	0	0	0	0	0	-979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-979	
GROSS DOMESTIC SUPPLY	58371	3361	3015	7054	0	52902	32356	16781	1750	175590	-245	-1706	-2797	480	-179	-672	-33	-53	36	2985	0	863	-148	-210	0	-1679	173911	
TOTAL TRANSFORMATION	-58081	-826	-1252	-6955	0	-52902	-13562	-6130	-448	-140156	18781	10558	9499	3823	4089	2904	1490	4948	-36	58617	6700	5003	2834	3323	283	132816	-7340	
PETROLEUM REFINERIES	-58081	0	0	0	0	0	0	0	0	-58081	19256	12644	8987	3052	5651	2904	0	0	0	0	0	0	2163	3390	0	58047	-34	
NATURAL GAS PLANTS	0	-669	0	0	0	0	0	0	0	-669	0	0	175	509	1	0	0	0	0	0	0	0	0	2	0	687	18	
GASIFICATION PLANTS	0	-157	-1	0	0	0	0	0	0	-158	0	0	0	0	-173	0	320	0	0	0	0	0	0	0	0	147	-11	
COKING PLANTS	0	0	0	-6955	0	0	0	0	0	-6955	0	0	0	0	0	0	1272	4948	0	0	0	0	0	0	283	6503	-452	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	0	-1224	0	0	-51908	-29	0	0	-53161	-463	-1654	0	0	0	0	0	-36	55527	0	0	0	0	0	0	53374	213	
SELF-PROD. POWER PLANTS	0	0	-27	0	0	-994	-124	-360	-416	-1921	-92	-432	0	0	0	0	-102	0	3090	0	0	0	-9	0	0	2455	534	
CHARCOAL PLANTS	0	0	0	0	0	0	-13409	0	0	-13409	0	0	0	0	0	0	0	0	0	0	6700	0	0	0	0	6700	-6709	
DISTILLERIES	0	0	0	0	0	0	0	-5770	-32	-5802	0	0	0	0	0	0	0	0	0	0	5003	0	0	0	0	5003	-799	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	80	0	337	262	-1390	0	0	0	0	0	0	0	680	-69	0	-100	-100	
LOSSES IN DISTRIB./STORAGE	-290	0	-86	-81	0	0	0	0	0	-457	0	0	0	0	0	0	-26	-48	0	-7352	-335	-53	0	0	0	-7814	-8271	
FINAL CONSUMPTION	0	2535	1679	0	0	0	18794	10651	1302	34961	18536	8852	6702	4303	3910	2232	1431	4847	0	54250	6365	5814	2686	3113	283	123324	158285	
FINAL NON-ENERGY CONSUMPTION	0	889	0	0	0	0	0	0	0	889	0	0	0	0	3910	81	0	0	0	0	0	379	366	3113	221	8070	8959	
FINAL ENERGY CONSUMPTION	0	1646	1679	0	0	0	18794	10651	1302	34072	18536	8852	6702	4303	0	2151	1431	4847	0	54250	6365	5435	2320	0	62	115254	149326	
ENERGY SECTOR	0	900	0	0	0	0	0	5766	0	6666	370	1473	0	16	0	1	346	0	0	1843	0	0	1335	0	0	5384	12050	
RESIDENTIAL	0	0	0	0	0	0	9547	0	0	9547	0	0	0	3945	0	172	140	0	0	10369	784	0	0	0	0	15410	24957	
COMMERCIAL	0	0	0	0	0	0	165	0	0	165	34	150	0	146	0	0	49	0	0	5680	63	0	0	0	0	6122	6287	
PUBLIC	0	0	0	0	0	0	4	0	0	4	57	61	0	18	0	1	6	0	0	4306	6	0	0	0	0	4455	4459	
AGRICULTURE	0	0	0	0	0	0	2479	0	0	2479	2900	25	0	0	0	1	0	0	0	1451	8	0	0	0	0	4385	6864	
TRANSPORTATION - TOTAL	0	0	7	0	0	0	2	0	0	9	14906	1296	6702	0	0	1894	0	0	0	336	0	5435	0	0	0	30569	30578	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	13594	0	6635	0	0	0	0	0	0	0	0	5435	0	0	0	25664	25664	
RAILROADS	0	0	7	0	0	0	2	0	0	9	580	2	0	0	0	0	0	0	0	336	0	0	0	0	0	918	927	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	67	0	0	1894	0	0	0	0	0	0	0	0	0	1961	1961	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	732	1294	0	0	0	0	0	0	0	0	0	0	0	0	0	2026	2026	
INDUSTRIAL - TOTAL	0	746	1672	0	0	0	6597	4885	1302	15202	269	5847	0	178	0	82	890	4847	0	30265	5504	0	985	0	62	48929	64131	
CEMENT	0	18	1145	0	0	0	7	0	43	1213	20	206	0	0	0	2	0	0	0	871	658	0	0	0	0	1757	2970	
PIG-IRON AND STEEL	0	276	32	0	0	0	0	0	0	308	35	448	0	27	0	10	794	4805	0	3844	4223	0	0	0	62	14248	14556	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	1439	432	0	0	0	0	1901	1901	
MINING/PELLETIZATION	0	61	29	0	0	0	21	0	0	111	72	577	0	4	0	7	0	0	0	1694	40	0	0	0	0	2394	2505	
NON-FERROUS/OTHER METALS	0	0	0	0	0	0	13	0	0	13	0	444	0	12	0	0	18	12	0	5989	71	0	270	0	0	6816	6829	
CHEMICAL	0	274	169	0	0	0	251	38	0	732	12	1530	0	14	0	1	1	0	0	3781	33	0	686	0	0	6058	6790	
FOODS AND BEVERAGES	0	25	107	0	0	0	2234	4806	0	7172	42	562	0	16	0	7	15	0	0	2838	0	0	0	0	0	3480	10652	
TEXTILES	0	4	5	0	0	0	245	0	0	254	3	358	0	5	0	6	4	0	0	1707	6	0	0	0	0	2089	2343	
PAPER AND PULP	0	26	125	0	0	0	905	39	1188	2283	13	420	0	5	0	4	1	0	0	1992	0	0	0	0	0	2435	4718	
CERAMICS	0	23	29	0	0	0	1972	0	71	2095	11	445	0	18	0	1	10	0	0	648	16	0	0	0	0	1149	3244	
OTHERS	0	39	31	0	0	0	949	2	0	1021	61	857	0	77	0	44	47	0	0	5462	25	0	29	0	0	6602	7623	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	0	0	2	-18	0	0	0	0	0	-16	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-15	

APPENDIX F.18

CONSOLIDATED ENERGY BALANCE - YEAR 1987

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	28463	5596	2333	625	1130	53824	32367	20197	1841	146376	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146376
IMPORTS	31109	0	0	7081	0	0	0	0	0	38190	490	854	8	835	33	0	0	490	0	4876	0	0	0	65	0	7651	45841	
CHANGES IN STOCKS	185	156	413	-337	-316	0	0	0	0	101	-92	30	-40	-184	-97	-35	0	-115	-529	0	0	-144	-25	-157	0	-1388	-1287	
TOTAL SUPPLY	59757	5752	2746	7369	814	53824	32367	20197	1841	184667	398	884	-32	651	-64	-35	0	375	-529	4876	0	-144	-25	-92	0	6263	190930	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-781	-1891	-3940	-46	0	-669	0	0	0	-3	0	-20	0	-132	0	-7482	-7482	
NON-UTILIZED	0	-938	0	0	0	0	0	0	0	-938	0	0	0	0	0	0	-14	0	0	0	0	0	-6	0	0	-20	-958	
RE-INJECTION	0	-1011	0	0	0	0	0	0	0	-1011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1011	
GROSS DOMESTIC SUPPLY	59757	3803	2746	7369	814	53824	32367	20197	1841	182718	-383	-1007	-3972	605	-64	-704	-14	375	-529	4873	0	-164	-31	-224	0	-1239	181479	
TOTAL TRANSFORMATION	-59460	-987	-1018	-7251	-814	-53824	-13218	-7513	-503	-144588	19633	10753	9814	4119	4526	2973	1701	5150	529	58966	6518	6173	2981	3111	257	137204	-7384	
PETROLEUM REFINERIES	-59460	0	0	0	0	0	0	0	0	-59460	20455	12068	9268	3233	5975	2973	0	0	0	0	0	0	2386	3112	0	59470	10	
NATURAL GAS PLANTS	0	-818	0	0	0	0	0	0	0	-818	0	0	225	629	2	0	0	0	0	0	0	0	0	0	0	856	38	
GASIFICATION PLANTS	0	-169	0	0	0	0	0	0	0	-169	0	0	0	0	-181	0	327	0	0	0	0	0	0	0	0	146	-23	
COKING PLANTS	0	0	0	-7251	0	0	0	0	0	-7251	0	0	0	0	0	0	1444	5150	0	0	0	0	0	0	273	6867	-384	
NUCLEAR CYCLE	0	0	0	0	-814	0	0	0	0	-814	0	0	0	0	0	0	0	0	790	0	0	0	0	0	0	790	-24	
PUBL. UTIL. POWER PLANTS	0	0	-991	0	0	-52810	-45	0	0	-53846	-805	-955	0	0	0	0	0	0	-261	55760	0	0	0	0	0	53739	-107	
SELF-PROD. POWER PLANTS	0	0	-27	0	0	-1014	-126	-410	-496	-2073	-94	-360	0	0	0	0	-70	0	0	3206	0	0	-13	0	-16	2653	580	
CHARCOAL PLANTS	0	0	0	0	0	0	-13047	0	0	-13047	0	0	0	0	0	0	0	0	0	0	6518	0	0	0	0	6518	-6529	
DISTILLERIES	0	0	0	0	0	0	0	-7103	-7	-7110	0	0	0	0	0	0	0	0	0	0	0	6173	0	0	0	6173	-937	
OTHER TRANSFORMATIONS	0	0	0	0	0	0	0	0	0	0	77	0	321	257	-1270	0	0	0	0	0	0	0	608	-1	0	-8	-8	
LOSSES IN DISTRIB./STORAGE	-297	0	-49	-118	0	0	0	0	0	-464	0	0	0	0	0	0	-20	-90	0	-7940	-326	-98	0	0	0	-8474	-8938	
FINAL CONSUMPTION	0	2830	1679	0	0	0	19149	12684	1338	37680	19250	9746	5842	4724	4462	2269	1667	5435	0	55899	6192	5886	2950	2887	257	127466	165146	
FINAL NON-ENERGY CONSUMPTION	0	949	0	0	0	0	0	0	0	949	0	0	0	0	4462	117	0	0	0	0	0	351	425	2887	122	8364	9313	
FINAL ENERGY CONSUMPTION	0	1881	1679	0	0	0	19149	12684	1338	36731	19250	9746	5842	4724	0	2152	1667	5435	0	55899	6192	5535	2525	0	135	119102	155833	
ENERGY SECTOR	0	910	0	0	0	0	0	7184	0	8094	335	1627	0	14	0	1	340	0	0	1849	0	0	1514	0	0	5680	13774	
RESIDENTIAL	0	1	0	0	0	0	10052	0	0	10053	0	0	0	4164	0	160	145	0	0	11130	762	0	0	0	0	16361	26414	
COMMERCIAL	0	0	0	0	0	0	150	0	0	150	31	145	0	169	0	0	51	0	0	5933	57	0	0	0	0	6386	6536	
PUBLIC	0	1	0	0	0	0	3	0	0	4	91	110	0	23	0	1	7	0	0	4516	5	0	0	0	0	4753	4757	
AGRICULTURE	0	0	0	0	0	0	2571	0	0	2571	3149	34	0	0	0	1	0	0	0	1704	13	0	0	0	0	4901	7472	
TRANSPORTATION - TOTAL	0	0	6	0	0	0	2	0	0	8	15358	1227	5842	0	0	1914	0	0	0	342	0	5535	2	0	0	30220	30228	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	14317	0	5780	0	0	0	0	0	0	0	0	5535	0	0	0	25632	25632	
RAILROADS	0	0	6	0	0	0	2	0	0	8	555	0	0	0	0	0	0	0	0	342	0	0	0	0	0	897	905	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	62	0	0	1914	0	0	0	0	0	0	0	0	0	1976	1976	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	486	1227	0	0	0	0	0	0	0	0	0	0	0	2	0	1715	1715	
INDUSTRIAL - TOTAL	0	969	1673	0	0	0	6371	5500	1338	15851	286	6603	0	253	0	75	1124	5435	0	30425	5355	0	1009	0	135	50700	66551	
CEMENT	0	21	1028	0	0	0	12	0	45	1106	22	479	0	0	0	2	0	0	0	811	501	0	12	0	0	1827	2933	
PIG-IRON AND STEEL	0	351	49	0	0	0	0	0	0	400	39	383	0	35	0	10	1024	5401	0	3921	4141	0	0	0	135	15089	15489	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	1478	439	0	0	0	0	1944	1944	
MINING/PELLETIZATION	0	42	32	0	0	0	20	0	0	94	87	573	0	2	0	6	0	0	0	1722	41	0	4	0	0	2435	2529	
NON-FERROUS/OTHER METALS	0	10	0	0	0	0	25	0	0	35	0	463	0	23	0	0	22	7	0	6245	168	0	337	0	0	7265	7300	
CHEMICAL	0	280	191	0	0	0	324	40	0	835	14	1636	0	39	0	1	0	0	0	3624	28	0	653	0	0	5995	6830	
FOODS AND BEVERAGES	0	58	142	0	0	0	2179	5390	0	7769	32	727	0	19	0	7	21	0	0	2664	0	0	0	0	0	3470	11239	
TEXTILES	0	6	6	0	0	0	223	0	0	235	6	438	0	5	0	6	4	0	0	1627	5	0	0	0	0	2091	2326	
PAPER AND PULP	0	30	152	0	0	0	766	67	1217	2232	14	507	0	5	0	3	1	0	0	1976	0	0	0	0	0	2506	4738	
CERAMICS	0	30	51	0	0	0	1919	0	76	2076	10	431	0	25	0	2	8	0	0	617	13	0	0	0	0	1106	3182	
OTHERS	0	141	22	0	0	0	903	3	0	1069	62	966	0	100	0	38	44	0	0	5740	19	0	3	0	0	6972	8041	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	101	0	0	0	0	0	0	0	0	0	0	0	101	101	
ADJUSTMENTS	0	14	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	-25	0	0	0	-25	-11	

APPENDIX F.19

CONSOLIDATED ENERGY BALANCE - YEAR 1988

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE	THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL		
PRODUCTION	27853	5857	2442	775	179	57737	32158	18506	1979	147486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	147486
IMPORTS	32110	0	0	6804	0	0	0	0	0	38914	465	1704	5	1442	72	28	0	574	0	5206	0	0	0	80	0	9576	48490	
CHANGES IN STOCKS	-67	7	-146	168	174	0	0	0	0	136	145	-138	-23	-120	4	-166	0	104	-189	0	0	616	74	-56	0	251	387	
TOTAL SUPPLY	59896	5864	2296	7747	353	57737	32158	18506	1979	186536	610	1566	-18	1322	76	-138	0	678	-189	5206	0	616	74	24	0	9827	196363	
EXPORTS AND BUNKERS	-187	0	0	0	0	0	0	0	0	-187	-897	-2180	-4004	-41	0	-549	0	0	0	-2	0	-45	0	-140	0	-7858	-8045	
NON-UTILIZED	0	-881	0	0	0	0	0	0	0	-881	0	0	0	0	0	0	-15	0	0	0	0	0	-54	0	0	-69	-950	
RE-INJECTION	0	-1032	0	0	0	0	0	0	0	-1032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1032	
GROSS DOMESTIC SUPPLY	59709	3951	2296	7747	353	57737	32158	18506	1979	184436	-287	-614	-4022	1281	76	-687	-15	678	-189	5204	0	571	20	-116	0	1900	186336	
TOTAL TRANSFORMATION	-59709	-1028	-792	-7638	-353	-57737	-14038	-6928	-505	-148728	20096	10292	9782	3780	4355	2884	1799	5485	189	62336	6941	5757	2933	3111	258	139998	-8730	
PETROLEUM REFINERIES	-59709	0	0	0	0	0	0	0	-129	-59838	20914	11469	9257	3022	5813	2884	0	0	0	0	0	0	2316	3115	0	58790	-1048	
NATURAL GAS PLANTS	0	-746	0	0	0	0	0	0	0	-746	0	0	164	535	4	0	0	0	0	0	0	0	0	0	0	703	-43	
GASIFICATION PLANTS	0	-151	0	0	0	0	0	0	0	-151	0	0	0	0	-196	0	331	0	0	0	0	0	0	0	0	135	-16	
COKING PLANTS	0	0	0	-7638	0	0	0	0	0	-7638	0	0	0	0	0	0	1553	5485	0	0	0	0	0	0	290	7328	-310	
NUCLEAR CYCLE	0	0	0	0	-353	0	0	0	0	-353	0	0	0	0	0	0	0	0	348	0	0	0	0	0	0	348	-5	
PUBL. UTIL. POWER PLANTS	0	-2	-765	0	0	-56709	-31	0	0	-57507	-805	-809	0	0	0	0	0	0	-159	59096	0	0	0	0	0	57323	-184	
SELF-PROD. POWER PLANTS	0	0	-27	0	0	-1028	-113	-405	-499	-2072	-97	-368	0	0	0	0	-85	0	0	3240	0	0	-22	0	-32	2636	564	
CHARCOAL PLANTS	0	0	0	0	0	0	-13894	0	0	-13894	0	0	0	0	0	0	0	0	0	0	6941	0	0	0	0	6941	-6953	
DISTILLERIES	0	0	0	0	0	0	0	-6523	-6	-6529	0	0	0	0	0	0	0	0	0	0	0	5757	0	0	0	5757	-772	
OTHER TRANSFORMATIONS	0	-129	0	0	0	0	0	0	129	0	84	0	361	223	-1266	0	0	0	0	0	0	0	639	-4	0	37	37	
LOSSES IN DISTRIB./STORAGE	0	-65	-49	-109	0	0	0	0	0	-223	0	0	-43	-21	0	0	-24	-32	0	-8408	-347	-54	0	0	0	-8929	-9152	
FINAL CONSUMPTION	0	2919	1455	0	0	0	18120	11578	1474	35546	19809	9678	5717	5040	4431	2197	1760	6131	0	59132	6594	6198	2953	2995	258	132893	168439	
FINAL NON-ENERGY CONSUMPTION	0	1026	0	0	0	0	0	0	0	1026	0	0	0	0	4431	102	0	0	0	0	0	0	335	318	2995	66	8247	9273
FINAL ENERGY CONSUMPTION	0	1893	1455	0	0	0	18120	11578	1474	34520	19809	9678	5717	5040	0	2095	1760	6131	0	59132	6594	5863	2635	0	192	124646	159166	
ENERGY SECTOR	0	848	0	0	0	0	0	6722	0	7570	395	1577	0	14	0	0	353	0	0	1900	0	0	1557	0	0	5796	13366	
RESIDENTIAL	0	0	0	0	0	0	9441	0	0	9441	0	0	0	4479	0	158	146	0	0	11755	735	0	0	0	0	17273	26714	
COMMERCIAL	0	0	0	0	0	0	135	0	0	135	31	195	0	216	0	0	51	0	0	6189	50	0	0	0	0	6732	6867	
PUBLIC	0	0	0	0	0	0	2	0	0	2	144	177	0	22	0	1	7	0	0	4814	4	0	0	0	0	5169	5171	
AGRICULTURE	0	0	0	0	0	0	2463	0	0	2463	3298	35	0	1	0	0	0	0	0	1805	11	0	0	0	0	5150	7613	
TRANSPORTATION - TOTAL	0	3	7	0	0	0	2	0	0	12	15627	1143	5717	0	0	1856	0	0	0	348	0	5863	0	0	0	30554	30566	
HIGHWAYS	0	3	0	0	0	0	0	0	0	3	14600	0	5657	0	0	0	0	0	0	0	0	5863	0	0	0	26120	26123	
RAILROADS	0	0	7	0	0	0	2	0	0	9	583	0	0	0	0	0	0	0	0	348	0	0	0	0	0	931	940	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	60	0	0	1856	0	0	0	0	0	0	0	0	0	0	1916	1916	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	444	1143	0	0	0	0	0	0	0	0	0	0	0	0	0	1587	1587	
INDUSTRIAL - TOTAL	0	1042	1448	0	0	0	6077	4856	1474	14897	314	6551	0	218	0	80	1203	6131	0	32321	5794	0	1078	0	192	53882	68779	
CEMENT	0	23	906	0	0	0	10	0	54	993	22	482	0	0	0	2	0	0	0	808	481	0	60	0	0	1855	2848	
PIG-IRON AND STEEL	0	318	27	0	0	0	0	0	0	345	38	467	0	28	0	12	1103	6077	0	4161	4450	0	0	0	192	16528	16873	
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	1684	536	0	0	0	0	2248	2248	
MINING/PELLETIZATION	0	62	31	0	0	0	18	0	0	111	109	574	0	2	0	4	0	18	0	1685	37	0	4	0	0	2433	2544	
NON-FERROUS/OTHER METALS	0	57	0	0	0	0	21	0	0	78	0	418	0	19	0	0	22	8	0	6904	214	0	332	0	0	7917	7995	
CHEMICAL	0	259	173	0	0	0	260	38	0	730	8	1642	0	22	0	0	0	0	0	3784	44	0	680	0	0	6180	6910	
FOODS AND BEVERAGES	0	62	97	0	0	0	2127	4733	0	7019	38	669	0	17	0	15	22	0	0	2807	0	0	0	0	0	3568	10587	
TEXTILES	0	30	5	0	0	0	190	0	0	225	3	413	0	5	0	6	3	0	0	1765	4	0	0	0	0	2199	2424	
PAPER AND PULP	0	25	142	0	0	0	830	81	1345	2423	15	453	0	5	0	3	1	0	0	2092	0	0	0	0	0	2569	4992	
CERAMICS	0	45	44	0	0	0	1810	0	75	1974	8	424	0	31	0	2	10	0	0	602	11	0	0	0	0	1088	3062	
OTHERS	0	161	23	0	0	0	811	4	0	999	73	1009	0	89	0	36	42	0	0	6029	17	0	2	0	0	7297	8296	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	90	0	0	0	0	0	0	0	0	0	0	0	90	90	
ADJUSTMENTS	0	61	0	0	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	0	0	-76	0	0	0	-76	-15	

APPENDIX F.20

CONSOLIDATED ENERGY BALANCE - YEAR 1989

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	29845	5910	2179	663	346	59360	32541	17966	1977	150787	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150787
IMPORTS	29667	0	0	7002	0	0	0	0	0	36669	825	991	2	1384	120	28	0	846	0	6849	0	0	0	108	0	11153	47822
CHANGES IN STOCKS	259	0	59	4	-346	0	0	0	0	-24	18	7	-46	-19	-17	-222	0	-114	464	0	0	843	-29	-15	0	870	846
TOTAL SUPPLY	59771	5910	2238	7669	0	59360	32541	17966	1977	187432	843	998	-44	1365	103	-194	0	732	464	6849	0	843	-29	93	0	12023	199455
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-563	-2532	-3007	-31	0	-444	0	0	0	-438	0	0	-24	-76	0	-7115	-7115
NON-UTILIZED	0	-829	0	0	0	0	0	0	0	-829	0	0	0	0	0	0	-45	0	0	0	0	0	-187	0	0	-232	-1061
RE-INJECTION	0	-926	0	0	0	0	0	0	0	-926	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-926
GROSS DOMESTIC SUPPLY	59771	4155	2238	7669	0	59360	32541	17966	1977	185677	280	-1534	-3051	1334	103	-638	-45	732	464	6411	0	843	-240	17	0	4676	190353
TOTAL TRANSFORMATION	-59771	-1115	-1072	-7586	0	-59360	-15569	-6790	-486	-151749	20278	10882	9539	3976	4661	2924	1781	5436	-464	64304	7729	5893	3129	2876	253	143197	-8552
PETROLEUM REFINERIES	-59771	0	0	0	0	0	0	0	-120	-59891	20815	11777	9054	3237	6110	2924	0	0	0	0	0	0	2536	2876	0	59329	-562
NATURAL GAS PLANTS	0	-748	0	0	0	0	0	0	0	-748	0	0	151	499	2	0	0	0	0	0	0	0	0	0	0	652	-96
GASIFICATION PLANTS	0	-179	0	0	0	0	0	0	0	-179	0	0	0	0	-166	0	326	0	0	0	0	0	0	0	0	160	-19
COKING PLANTS	0	0	0	-7586	0	0	0	0	0	-7586	0	0	0	0	0	0	1565	5436	0	0	0	0	0	0	284	7285	-301
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUBL. UTIL. POWER PLANTS	0	-68	-1053	0	0	-58320	-7	0	0	-59448	-534	-524	0	0	0	0	0	0	-464	61125	0	0	0	0	0	59603	155
SELF-PROD. POWER PLANTS	0	0	-19	0	0	-1040	-104	-388	-435	-1986	-96	-371	0	0	0	0	-110	0	0	3179	0	0	-21	0	-31	2550	564
CHARCOAL PLANTS	0	0	0	0	0	0	-15458	0	0	-15458	0	0	0	0	0	0	0	0	0	0	7729	0	0	0	0	7729	-7729
DISTILLERIES	0	0	0	0	0	0	0	-6402	-51	-6453	0	0	0	0	0	0	0	0	0	0	5893	0	0	0	0	5893	-560
OTHER TRANSFORMATIONS	0	-120	0	0	0	0	0	0	120	0	93	0	334	240	-1285	0	0	0	0	0	0	0	614	0	0	-4	-4
LOSSES IN DISTRIB./STORAGE	0	0	-14	-83	0	0	0	0	0	-97	0	0	-40	0	0	0	-28	-122	0	-9124	-386	-41	0	0	-2	-9743	-9840
FINAL CONSUMPTION	0	2995	1152	0	0	0	16972	11176	1491	33786	20558	9348	6448	5310	4764	2286	1708	6046	0	61591	7343	6700	2889	2893	251	138135	171921
FINAL NON-ENERGY CONSUMPTION	0	1088	0	0	0	0	0	0	0	1088	0	0	0	0	4764	107	0	0	0	0	0	367	230	2893	65	8426	9514
FINAL ENERGY CONSUMPTION	0	1907	1152	0	0	0	16972	11176	1491	32698	20558	9348	6448	5310	0	2179	1708	6046	0	61591	7343	6333	2659	0	186	129709	162407
ENERGY SECTOR	0	819	0	0	0	0	0	6966	0	7785	374	1518	0	28	0	0	342	0	0	1935	0	0	1659	0	0	5856	13641
RESIDENTIAL	0	2	0	0	0	0	8793	0	0	8795	0	0	0	4712	0	145	146	0	0	12681	688	0	0	0	0	18372	27167
COMMERCIAL	0	0	0	0	0	0	113	0	0	113	45	215	0	281	0	0	54	0	0	6524	54	0	0	0	0	7173	7286
PUBLIC	0	1	0	0	0	0	2	0	0	3	73	51	0	15	0	1	8	0	0	5015	3	0	0	0	0	5166	5169
AGRICULTURE	0	0	0	0	0	0	2326	0	0	2326	3478	28	0	1	0	0	0	0	0	1844	13	0	0	0	0	5364	7690
TRANSPORTATION - TOTAL	0	2	7	0	0	0	2	0	0	11	16286	695	6448	0	0	1961	0	0	0	375	0	6333	0	0	0	32098	32109
HIGHWAYS	0	2	0	0	0	0	0	0	0	2	15378	0	6386	0	0	0	0	0	0	0	0	6333	0	0	0	28097	28099
RAILROADS	0	0	7	0	0	0	2	0	0	9	591	0	0	0	0	0	0	0	0	375	0	0	0	0	0	966	975
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	62	0	0	1961	0	0	0	0	0	0	0	0	0	2023	2023
WATERWAYS	0	0	0	0	0	0	0	0	0	0	317	695	0	0	0	0	0	0	0	0	0	0	0	0	0	1012	1012
INDUSTRIAL - TOTAL	0	1083	1145	0	0	0	5736	4210	1491	13665	302	6841	0	184	0	72	1158	6046	0	33217	6585	0	1000	0	186	55591	69256
CEMENT	0	32	626	0	0	0	3	0	47	708	13	801	0	0	0	2	0	0	0	817	399	0	3	0	0	2035	2743
PIG-IRON AND STEEL	0	348	68	0	0	0	0	0	0	416	41	411	0	25	0	13	1071	5918	0	4338	5197	0	0	0	186	17200	17616
FERRO-ALLOYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	1876	647	0	0	0	0	2555	2555
MINING/PELLETIZATION	0	86	0	0	0	0	0	0	0	86	77	554	0	2	0	5	0	86	0	1628	14	0	3	0	0	2369	2455
NON-FERROUS/OTHER METALS	0	21	0	0	0	0	17	0	0	38	0	381	0	16	0	0	14	10	0	7160	251	0	331	0	0	8163	8201
CHEMICAL	0	290	113	0	0	0	248	44	0	695	23	1637	0	10	0	0	4	0	0	3751	38	0	661	0	0	6124	6819
FOODS AND BEVERAGES	0	56	108	0	0	0	2002	4088	0	6254	20	710	0	17	0	13	17	0	0	2766	0	0	0	0	0	3543	9797
TEXTILES	0	26	3	0	0	0	174	0	0	203	3	463	0	4	0	6	3	0	0	1809	4	0	0	0	0	2292	2495
PAPER AND PULP	0	30	149	0	0	0	725	73	1371	2348	17	533	0	4	0	3	1	0	0	2262	0	0	0	0	0	2820	5168
CERAMICS	0	59	70	0	0	0	1802	0	73	2004	8	454	0	29	0	2	10	0	0	627	16	0	0	0	0	1146	3150
OTHERS	0	135	8	0	0	0	765	5	0	913	100	897	0	77	0	28	38	0	0	6183	19	0	2	0	0	7344	8257
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	89	0	0	0	0	0	0	0	0	0	0	0	89	89
ADJUSTMENTS	0	-45	0	0	0	0	0	0	0	-45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	-40

APPENDIX F.21

CONSOLIDATED ENERGY BALANCE - YEAR 1990

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	31906	6077	1564	314	47	59945	28180	17937	2104	148074	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148074	
IMPORTS	28882	0	0	7437	0	0	0	0	0	36319	577	620	4	1405	181	23	0	388	0	7698	0	584	0	99	0	11579	47898	
CHANGES IN STOCKS	-1524	5	353	-135	-47	0	0	0	0	-1348	-36	44	-65	-33	-12	-28	0	-416	587	0	0	-62	-18	-226	-17	-282	-1630	
TOTAL SUPPLY	59264	6082	1917	7616	0	59945	28180	17937	2104	183045	541	664	-61	1372	169	-5	0	-28	587	7698	0	522	-18	-127	-17	11297	194342	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-216	-2442	-1706	-5	0	-477	0	0	0	-2	0	0	0	-51	0	-4899	-4899	
NON-UTILIZED	0	-1010	0	0	0	0	0	0	0	-1010	0	0	0	0	0	0	-42	0	0	0	0	0	-288	0	0	-330	-1340	
RE-INJECTION	0	-842	0	0	0	0	0	0	0	-842	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-842	
GROSS DOMESTIC SUPPLY	59264	4230	1917	7616	0	59945	28180	17937	2104	181193	325	-1778	-1767	1367	169	-482	-42	-28	587	7696	0	522	-306	-178	-17	6068	187261	
TOTAL TRANSFORMATION	-59382	-1132	-945	-7468	0	-59945	-12739	-6876	-629	-149116	19934	11199	9229	4216	4612	2667	1523	5161	-587	64618	6310	5734	3110	3339	236	141301	-7815	
PETROLEUM REFINERIES	-59382	0	0	0	0	0	0	0	-130	-59512	20408	11885	8790	3390	6053	2667	0	0	0	0	0	0	2488	3339	0	59020	-492	
NATURAL GAS PLANTS	0	-763	0	0	0	0	0	0	0	-763	0	0	166	533	4	0	0	0	0	0	0	0	0	0	0	0	703	-60
GASIFICATION PLANTS	0	-165	0	0	0	0	0	0	0	-165	0	0	0	0	-158	0	289	0	0	0	0	0	0	0	0	131	-34	
COKING PLANTS	0	0	0	-7468	0	0	0	0	0	-7468	0	0	0	0	0	0	1326	5161	0	0	0	0	0	0	263	6750	-718	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	-5	-925	0	0	-59042	0	0	0	-59972	-443	-276	0	0	0	0	0	0	-587	61165	0	0	0	0	0	59859	-113	
SELF-PROD. POWER PLANTS	0	-69	-20	0	0	-903	-119	-387	-589	-2087	-111	-410	0	0	0	0	-92	0	0	3453	0	0	-21	0	-27	2792	705	
CHARCOAL PLANTS	0	0	0	0	0	0	-12620	0	0	-12620	0	0	0	0	0	0	0	0	0	0	6310	0	0	0	0	6310	-6310	
DISTILLERIES	0	0	0	0	0	0	0	-6489	-40	-6529	0	0	0	0	0	0	0	0	0	0	0	5734	0	0	0	5734	-795	
OTHER TRANSFORMATIONS	0	-130	0	0	0	0	0	0	130	0	80	0	273	293	-1287	0	0	0	0	0	0	0	643	0	0	2	2	
LOSSES IN DISTRIB./STORAGE	0	0	0	-148	0	0	0	0	0	-148	0	0	-42	0	0	-25	-20	-103	0	-9193	-323	-79	0	0	0	-9785	-9933	
FINAL CONSUMPTION	0	3015	972	0	0	0	15441	11061	1475	31964	20298	9448	7336	5545	4781	2132	1461	5030	0	63121	5987	6177	2758	3161	219	137454	169418	
FINAL NON-ENERGY CONSUMPTION	0	872	0	0	0	0	0	0	0	872	0	0	0	0	4781	79	0	0	0	0	0	477	239	3161	107	8844	9716	
FINAL ENERGY CONSUMPTION	0	2143	972	0	0	0	15441	11061	1475	31092	20298	9448	7336	5545	0	2053	1461	5030	0	63121	5987	5700	2519	0	112	128610	159702	
ENERGY SECTOR	0	793	0	0	0	0	0	6584	0	7377	416	1611	0	20	0	3	329	0	0	1983	0	0	1442	0	0	5804	13181	
RESIDENTIAL	0	4	0	0	0	0	7862	0	0	7866	0	0	0	4863	0	125	139	0	0	14113	624	0	0	0	0	19864	27730	
COMMERCIAL	0	1	0	0	0	0	113	0	0	114	38	280	0	329	0	0	53	0	0	6908	52	0	0	0	0	7660	7774	
PUBLIC	0	2	0	0	0	0	2	0	0	4	80	53	0	16	0	1	7	0	0	5259	3	0	3	0	0	5422	5426	
AGRICULTURE	0	0	0	0	0	0	2142	0	0	2142	3146	26	0	1	0	0	0	0	0	1933	11	0	0	0	0	5117	7259	
TRANSPORTATION - TOTAL	0	2	5	0	0	0	2	0	0	9	16308	745	7336	0	0	1867	0	0	0	346	0	5700	0	0	0	32302	32311	
HIGHWAYS	0	2	0	0	0	0	0	0	0	2	15489	0	7288	0	0	0	0	0	0	0	0	5700	0	0	0	28477	28479	
RAILROADS	0	0	5	0	0	0	2	0	0	7	506	0	0	0	0	0	0	0	0	346	0	0	0	0	0	852	859	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0	1867	0	0	0	0	0	0	0	0	0	1915	1915	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	313	745	0	0	0	0	0	0	0	0	0	0	0	0	0	1058	1058	
INDUSTRIAL - TOTAL	0	1341	967	0	0	0	5320	4477	1475	13580	310	6589	0	157	0	57	933	5030	0	32579	5297	0	1074	0	112	52138	65718	
CEMENT	0	39	573	0	0	0	2	0	42	656	10	955	0	0	0	2	0	0	0	852	341	0	3	0	0	2163	2819	
PIG-IRON AND STEEL	0	324	19	0	0	0	0	0	0	343	41	374	0	23	0	11	869	4838	0	3705	4259	0	0	0	112	14232	14575	
FERRO-ALLOYS	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	20	25	0	1801	353	0	0	0	0	2199	2202	
MINING/PELLETIZATION	0	85	0	0	0	0	0	0	0	85	75	461	0	2	0	4	0	97	0	1727	33	0	0	0	0	2399	2484	
NON-FERROUS/OTHER METALS	0	27	0	0	0	0	37	0	0	64	0	381	0	15	0	0	0	70	0	7408	248	0	329	0	0	8451	8515	
CHEMICAL	0	315	93	0	0	0	216	40	0	664	22	1546	0	9	0	0	1	0	0	3861	31	0	740	0	0	6210	6874	
FOODS AND BEVERAGES	0	128	105	0	0	0	1940	4384	0	6557	19	709	0	18	0	8	12	0	0	2997	0	0	0	0	0	3763	10320	
TEXTILES	0	51	4	0	0	0	153	0	0	208	3	433	0	4	0	5	3	0	0	1817	3	0	0	0	0	2268	2476	
PAPER AND PULP	0	54	130	0	0	0	743	49	1377	2353	18	526	0	4	0	2	0	0	0	2230	0	0	0	0	0	2780	5133	
CERAMICS	0	60	34	0	0	0	1541	0	56	1691	6	392	0	30	0	1	7	0	0	533	13	0	0	0	0	982	2673	
OTHERS	0	255	9	0	0	0	688	4	0	956	116	812	0	52	0	24	21	0	0	5648	16	0	2	0	0	6691	7647	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	144	0	159	0	0	0	0	0	0	0	0	0	0	0	303	303	
ADJUSTMENTS	118	-83	0	0	0	0	0	0	0	35	39	27	-84	-38	0	-28	0	0	0	0	0	0	-46	0	0	-130	-95	

APPENDIX F.22

CONSOLIDATED ENERGY BALANCE - YEAR 1991

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	31518	6386	1919	145	0	63157	26367	19524	2313	151329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151329
IMPORTS	26605	0	0	7886	0	0	0	0	0	34491	1545	226	8	1656	519	119	0	726	0	7855	0	542	0	76	0	0	13272	47763
CHANGES IN STOCKS	68	5	466	-184	1154	0	0	0	0	1509	88	33	-31	-122	-37	16	0	-84	-740	0	0	-688	-2	10	0	0	-1557	-48
TOTAL SUPPLY	58191	6391	2385	7847	1154	63157	26367	19524	2313	187329	1633	259	-23	1534	482	135	0	642	-740	7855	0	-146	-2	86	0	0	11715	199044
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-157	-2290	-1163	0	-4	-552	0	0	0	-2	0	0	0	-119	0	0	-4287	-4287
NON-UTILIZED	0	-962	0	0	0	0	0	0	0	-962	0	0	0	0	0	0	-41	0	0	0	0	0	0	-6	0	0	-47	-1009
RE-INJECTION	0	-1181	0	0	0	0	0	0	0	-1181	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1181
GROSS DOMESTIC SUPPLY	58191	4248	2385	7847	1154	63157	26367	19524	2313	185186	1476	-2031	-1186	1534	478	-417	-41	642	-740	7853	0	-146	-8	-33	0	0	7381	192567
TOTAL TRANSFORMATION	-57638	-1201	-1115	-7672	-1154	-63157	-11185	-7652	-715	-151489	19662	10588	9173	3974	4176	2635	1585	5466	740	67966	5534	6429	2900	2966	268	144062	-7427	
PETROLEUM REFINERIES	-57638	0	0	0	0	0	0	0	-136	-57774	20151	11336	8751	3282	5372	2635	0	0	0	0	0	0	2328	2962	0	56817	-957	
NATURAL GAS PLANTS	0	-847	0	0	0	0	0	0	0	-847	0	0	178	545	4	0	0	0	0	0	0	0	0	4	0	0	731	-116
GASIFICATION PLANTS	0	-138	0	0	0	0	0	0	0	-138	0	0	0	0	-148	0	283	0	0	0	0	0	0	0	0	0	135	-3
COKING PLANTS	0	0	0	-7672	0	0	0	0	0	-7672	0	0	0	0	0	0	1415	5466	0	0	0	0	0	0	0	298	7179	-493
NUCLEAR CYCLE	0	0	0	0	-1154	0	0	0	0	-1154	0	0	0	0	0	0	0	0	1139	0	0	0	0	0	0	0	1139	-15
PUBL. UTIL. POWER PLANTS	0	-1	-1094	0	0	-62237	0	0	0	-63332	-447	-341	0	0	0	0	0	0	-399	64361	0	0	0	0	0	0	63174	-158
SELF-PROD. POWER PLANTS	0	-79	-21	0	0	-920	-117	-417	-670	-2224	-110	-407	0	0	0	0	-113	0	0	3605	0	0	-21	0	-30	2924	700	
CHARCOAL PLANTS	0	0	0	0	0	0	-11068	0	0	-11068	0	0	0	0	0	0	0	0	0	0	5534	0	0	0	0	0	5534	-5534
DISTILLERIES	0	0	0	0	0	0	0	-7235	-45	-7280	0	0	0	0	0	0	0	0	0	0	0	6429	0	0	0	0	6429	-851
OTHER TRANSFORMATIONS	0	-136	0	0	0	0	0	0	136	0	68	0	244	147	-1052	0	0	0	0	0	0	0	0	593	0	0	0	0
LOSSES IN DISTRIB./STORAGE	0	0	0	-175	0	0	0	0	0	-175	0	0	-45	0	0	0	-23	-78	0	-10461	-263	0	0	0	0	0	-10870	-11045
FINAL CONSUMPTION	0	3028	1270	0	0	0	15182	11872	1598	32950	21138	8701	7942	5508	4654	2218	1521	6030	0	65358	5271	6283	2892	2933	268	140717	173667	
FINAL NON-ENERGY CONSUMPTION	0	916	0	0	0	0	0	0	0	916	0	0	0	0	4654	78	0	0	0	0	0	341	216	2933	116	0	8338	9254
FINAL ENERGY CONSUMPTION	0	2112	1270	0	0	0	15182	11872	1598	32034	21138	8701	7942	5508	0	2140	1521	6030	0	65358	5271	5942	2676	0	152	132379	164413	
ENERGY SECTOR	0	690	0	0	0	0	0	7387	0	8077	438	1072	0	23	0	4	362	0	0	2255	0	0	1647	0	0	5801	13878	
RESIDENTIAL	0	5	0	0	0	0	7828	0	0	7833	0	0	0	5002	0	122	142	0	0	14801	598	0	0	0	0	0	20665	28498
COMMERCIAL	0	2	0	0	0	0	107	0	0	109	41	265	0	285	0	0	57	0	0	7065	54	0	0	0	0	0	7767	7876
PUBLIC	0	2	0	0	0	0	2	0	0	4	85	51	0	22	0	1	8	0	0	5439	3	0	0	0	0	0	5609	5613
AGRICULTURE	0	0	0	0	0	0	2081	0	0	2081	3287	21	0	1	0	0	0	0	0	2123	13	0	0	0	0	0	5445	7526
TRANSPORTATION - TOTAL	0	2	2	0	0	0	2	0	0	6	16994	686	7942	0	0	1960	0	0	0	313	0	5942	0	0	0	0	33837	33843
HIGHWAYS	0	2	0	0	0	0	0	0	0	2	16154	0	7898	0	0	0	0	0	0	0	0	5942	0	0	0	0	29994	29996
RAILROADS	0	0	2	0	0	0	2	0	0	4	509	0	0	0	0	0	0	0	0	313	0	0	0	0	0	0	822	826
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	44	0	0	1960	0	0	0	0	0	0	0	0	0	0	2004	2004
WATERWAYS	0	0	0	0	0	0	0	0	0	0	331	686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1017	1017
INDUSTRIAL - TOTAL	0	1411	1268	0	0	0	5162	4485	1598	13924	293	6606	0	175	0	53	952	6030	0	33362	4603	0	1029	0	152	53255	67179	
CEMENT	0	39	792	0	0	0	0	0	54	885	10	873	0	0	0	2	0	15	0	894	244	0	12	0	7	2057	2942	
PIG-IRON AND STEEL	0	351	14	0	0	0	0	0	0	365	40	371	0	21	0	11	899	5828	0	3744	3591	0	0	0	145	14650	15015	
FERRO-ALLOYS	0	7	0	0	0	0	0	0	0	7	0	0	0	0	0	9	26	0	1800	476	0	0	0	0	0	2311	2318	
MINING/PELLETIZATION	0	89	11	0	0	0	0	0	0	100	72	445	0	2	0	3	0	95	0	1658	35	0	0	0	0	2310	2410	
NON-FERROUS/OTHER METALS	0	28	0	0	0	0	27	0	0	55	0	360	0	12	0	10	66	0	8127	199	0	366	0	0	0	9140	9195	
CHEMICAL	0	343	129	0	0	0	208	39	0	719	24	1616	0	9	0	0	1	0	0	3770	28	0	651	0	0	6099	6818	
FOODS AND BEVERAGES	0	121	70	0	0	0	1979	4382	0	6552	18	757	0	23	0	8	12	0	0	3108	0	0	0	0	0	0	3926	10478
TEXTILES	0	59	3	0	0	0	145	0	0	207	3	408	0	3	0	4	2	0	0	1776	3	0	0	0	0	0	2199	2406
PAPER AND PULP	0	63	129	0	0	0	665	59	1494	2410	19	600	0	4	0	2	1	0	0	2461	0	0	0	0	0	0	3087	5497
CERAMICS	0	58	66	0	0	0	1463	0	50	1637	6	372	0	46	0	1	5	0	0	507	11	0	0	0	0	0	948	2585
OTHERS	0	253	54	0	0	0	675	5	0	987	101	804	0	55	0	22	13	0	0	5517	16	0	0	0	0	0	6528	7515
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	-553	-19	0	0	0	0	0	0	0	-572	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	144	-428	

APPENDIX F.23

CONSOLIDATED ENERGY BALANCE - YEAR 1992

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U3O8		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	31861	6753	1762	79	0	64769	24776	19523	2715	152238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152238
IMPORTS	26812	0	0	7622	0	0	0	0	0	34434	1914	507	0	1661	1091	117	0	668	0	6966	0	272	0	11	0	13207	47641	
CHANGES IN STOCKS	1005	-3	260	173	0	0	0	0	0	1435	-95	36	-132	25	-49	25	0	-10	341	0	0	-2	-7	-101	0	31	1466	
TOTAL SUPPLY	59678	6750	2022	7874	0	64769	24776	19523	2715	188107	1819	543	-132	1686	1042	142	0	658	341	6966	0	270	-7	-90	0	13238	201345	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-249	-2322	-1555	-3	-35	-517	0	0	0	-2	0	0	0	-209	0	-4892	-4892	
NON-UTILIZED	0	-881	0	0	0	0	0	0	0	-881	0	0	0	0	0	0	-26	0	0	0	0	0	-73	0	0	-99	-980	
RE-INJECTION	0	-1386	0	0	0	0	0	0	0	-1386	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1386	
GROSS DOMESTIC SUPPLY	59678	4483	2022	7874	0	64769	24776	19523	2715	185840	1570	-1779	-1687	1683	1007	-375	-26	658	341	6964	0	270	-80	-299	0	8247	194087	
TOTAL TRANSFORMATION	-59752	-1288	-1111	-7916	0	-64769	-10309	-6977	-798	-152920	19914	11155	9601	4214	4066	2511	1535	5516	-341	70102	5082	5890	2999	3189	257	145690	-7230	
PETROLEUM REFINERIES	-59752	0	0	0	0	0	0	0	-416	-60168	20521	11969	9438	3539	5107	2511	0	0	0	0	0	0	2635	3189	0	58909	-1259	
NATURAL GAS PLANTS	0	-868	0	0	0	0	0	0	310	-558	0	0	504	52	0	0	0	0	0	0	0	0	0	0	0	556	-2	
GASIFICATION PLANTS	0	-163	0	0	0	0	0	0	0	-163	0	0	0	-110	0	256	0	0	0	0	0	0	0	0	0	146	-17	
COKING PLANTS	0	0	0	-7916	0	0	0	0	0	-7916	0	0	0	0	0	0	1432	5516	0	0	0	0	0	0	286	7234	-682	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	-1	-1073	0	0	-63969	0	0	0	-65043	-593	-428	0	0	0	0	0	0	-341	66326	0	0	0	0	0	64964	-79	
SELF-PROD. POWER PLANTS	0	-150	-38	0	0	-800	-148	-413	-758	-2307	-100	-386	0	0	0	0	-153	0	0	3776	0	0	-202	0	-29	2906	599	
CHARCOAL PLANTS	0	0	0	0	0	0	-10161	0	0	-10161	0	0	0	0	0	0	0	0	0	0	5082	0	0	0	0	5082	-5079	
DISTILLERIES	0	0	0	0	0	0	0	-6564	-40	-6604	0	0	0	0	0	0	0	0	0	0	5890	0	0	0	0	5890	-714	
OTHER TRANSFORMATIONS	0	-106	0	0	0	0	0	0	106	0	86	0	163	171	-983	0	0	0	0	0	0	0	566	0	0	3	3	
LOSSES IN DISTRIB./STORAGE	0	0	0	0	0	0	0	0	0	0	0	0	-14	-57	0	0	-29	-32	0	-10229	-242	0	0	0	0	-10603	-10603	
FINAL CONSUMPTION	0	3213	911	0	0	0	14467	12546	1917	33054	21582	9298	7902	5819	5076	2068	1480	6114	0	66837	4840	6160	2919	2890	257	143242	176296	
FINAL NON-ENERGY CONSUMPTION	0	891	0	0	0	0	0	0	0	891	0	0	0	0	5076	64	0	0	0	0	0	346	161	2890	48	8585	9476	
FINAL ENERGY CONSUMPTION	0	2322	911	0	0	0	14467	12546	1917	32163	21582	9298	7902	5819	0	2004	1480	6114	0	66837	4840	5814	2758	0	209	134657	166820	
ENERGY SECTOR	0	766	0	0	0	0	0	6980	0	7746	488	1090	0	18	0	14	382	0	0	2282	0	0	1688	0	0	5962	13708	
RESIDENTIAL	0	5	0	0	0	0	7847	0	0	7852	0	0	0	5226	0	100	132	0	0	15041	544	0	0	0	0	21043	28895	
COMMERCIAL	0	2	0	0	0	0	100	0	0	102	42	262	0	313	0	0	50	0	0	7522	59	0	0	0	0	8248	8350	
PUBLIC	0	1	0	0	0	0	1	0	0	2	72	60	0	19	0	1	8	0	0	5650	3	0	0	0	0	5813	5815	
AGRICULTURE	0	0	0	0	0	0	1897	0	0	1897	3372	31	0	1	0	1	0	0	0	2186	9	0	0	0	0	5600	7497	
TRANSPORTATION - TOTAL	0	0	0	0	0	0	0	0	0	0	17295	737	7902	0	0	1847	0	0	0	346	0	5814	0	0	0	33941	33941	
HIGHWAYS	0	0	0	0	0	0	0	0	0	0	16443	0	7864	0	0	0	0	0	0	0	0	5814	0	0	0	30121	30121	
RAILROADS	0	0	0	0	0	0	0	0	0	0	526	0	0	0	0	0	0	0	0	346	0	0	0	0	0	872	872	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	1847	0	0	0	0	0	0	0	0	0	1885	1885	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	326	737	0	0	0	0	0	0	0	0	0	0	0	0	0	1063	1063	
INDUSTRIAL - TOTAL	0	1548	911	0	0	0	4622	5566	1917	14564	313	7118	0	217	0	41	908	6114	0	33810	4225	0	956	0	209	53911	68475	
CEMENT	0	34	404	0	0	0	1	0	49	488	10	951	0	0	0	2	0	0	0	828	200	0	10	0	7	2008	2496	
PIG-IRON AND STEEL	0	377	5	0	0	0	0	0	0	382	35	418	0	19	0	6	871	5902	0	3888	3348	0	0	0	202	14689	15071	
FERRO-ALLOYS	0	13	0	0	0	0	0	0	0	13	0	0	0	0	0	9	43	0	0	2178	403	0	0	0	0	2633	2646	
MINING/PELLETIZATION	0	63	22	0	0	0	0	0	0	85	76	501	0	7	0	4	0	107	0	1707	30	0	0	0	0	2432	2517	
NON-FERROUS/OTHER METALS	0	30	0	0	0	0	34	0	0	64	0	397	0	11	0	0	4	62	0	8106	200	0	352	0	0	9132	9196	
CHEMICAL	0	393	134	0	0	0	165	41	0	733	25	1714	0	8	0	0	0	0	0	3911	26	0	594	0	0	6278	7011	
FOODS AND BEVERAGES	0	163	75	0	0	0	1750	5490	0	7478	21	813	0	21	0	9	9	0	0	3203	0	0	0	0	0	4076	11554	
TEXTILES	0	69	3	0	0	0	95	0	0	167	3	392	0	5	0	3	3	0	0	1782	2	0	0	0	0	2190	2357	
PAPER AND PULP	0	77	119	0	0	0	728	30	1825	2779	17	723	0	4	0	2	0	0	0	2603	0	0	0	0	0	3349	6128	
CERAMICS	0	86	65	0	0	0	1336	0	43	1530	7	463	0	80	0	1	1	0	0	503	7	0	0	0	0	1062	2592	
OTHERS	0	243	84	0	0	0	513	5	0	845	119	746	0	62	0	14	11	0	0	5101	9	0	0	0	0	6062	6907	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	114	0	0	139	139	
ADJUSTMENTS	74	18	0	42	0	0	0	0	0	134	98	-78	2	-21	3	-68	0	-28	0	0	0	0	0	0	0	-92	42	

APPENDIX F.24

CONSOLIDATED ENERGY BALANCE - YEAR 1993

UNIT: 10^3 toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE	THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	32551	7120	1752	37	0	68169	24493	18859	2950	155931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	155931
IMPORTS	25713	0	0	8044	0	0	0	0	0	33757	3718	4837	0	1837	2061	372	0	783	0	7992	1	722	0	49	0	22372	56129
CHANGES IN STOCKS	2096	0	38	294	432	0	0	0	0	2860	-41	-3194	-141	-396	-772	-148	0	-32	-290	0	0	156	13	304	0	-4541	-1681
TOTAL SUPPLY	60360	7120	1790	8375	432	68169	24493	18859	2950	192548	3677	1643	-141	1441	1289	224	0	751	-290	7992	1	878	13	353	0	17831	210379
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-670	-2534	-2988	-7	0	-584	0	0	0	-3	-11	-84	0	-163	0	-7044	-7044
NON-UTILIZED	0	-990	0	0	0	0	0	0	0	-990	0	0	0	0	0	0	-29	0	0	0	0	0	-86	0	0	-115	-1105
RE-INJECTION	0	-1325	0	0	0	0	0	0	0	-1325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1325
GROSS DOMESTIC SUPPLY	60360	4805	1790	8375	432	68169	24493	18859	2950	190233	3007	-891	-3129	1434	1289	-360	-29	751	-290	7989	-10	794	-73	190	0	10672	200905
TOTAL TRANSFORMATION	-60360	-1265	-1016	-8203	-432	-68169	-10864	-6604	-836	-157749	19274	10887	11455	4420	3953	2503	1571	5748	290	73072	5348	5713	3106	2690	268	150298	-7451
PETROLEUM REFINERIES	-60360	0	0	0	0	0	0	0	-421	-60781	19800	11648	11204	3773	5150	2503	0	0	0	0	0	0	2671	2690	0	59439	-1342
NATURAL GAS PLANTS	0	-810	0	0	0	0	0	0	257	-553	0	0	0	441	59	0	0	0	0	0	0	0	0	0	0	500	-53
GASIFICATION PLANTS	0	-137	0	0	0	0	0	0	0	-137	0	0	0	0	-115	0	240	0	0	0	0	0	0	0	0	125	-12
COKING PLANTS	0	0	0	-8203	0	0	0	0	0	-8203	0	0	0	0	0	0	1492	5748	0	0	0	0	0	0	297	7537	-666
NUCLEAR CYCLE	0	0	0	0	-432	0	0	0	0	-432	0	0	0	0	0	0	0	0	428	0	0	0	0	0	0	428	-4
PUBL. UTIL. POWER PLANTS	0	-5	-971	0	0	-67192	0	0	0	-68168	-510	-347	0	0	0	0	0	0	-138	69002	0	0	0	0	0	68007	-161
SELF-PROD. POWER PLANTS	0	-149	-45	0	0	-977	-169	-403	-801	-2544	-102	-414	0	0	0	0	-161	0	0	4070	0	0	-163	0	-29	3201	657
CHARCOAL PLANTS	0	0	0	0	0	0	-10695	0	0	-10695	0	0	0	0	0	0	0	0	0	0	5348	0	0	0	0	5348	-5347
DISTILLERIES	0	0	0	0	0	0	0	-6201	-35	-6236	0	0	0	0	0	0	0	0	0	0	0	5713	0	0	0	5713	-523
OTHER TRANSFORMATIONS	0	-164	0	0	0	0	0	0	164	0	86	0	251	206	-1141	0	0	0	0	0	0	0	598	0	0	0	0
LOSSES IN DISTRIB./STORAGE	0	0	0	0	0	0	0	0	0	0	0	0	-15	0	0	0	-32	-34	0	-11123	-210	0	0	0	0	-11414	-11414
FINAL CONSUMPTION	0	3540	774	172	0	0	13629	12255	2114	32484	22281	9996	8311	5854	5242	2143	1510	6465	0	69938	5128	6507	3033	2880	268	149556	182040
FINAL NON-ENERGY CONSUMPTION	0	889	0	0	0	0	0	0	0	889	0	0	0	0	5242	61	0	0	0	0	0	444	197	2880	54	8878	9767
FINAL ENERGY CONSUMPTION	0	2651	774	172	0	0	13629	12255	2114	31595	22281	9996	8311	5854	0	2082	1510	6465	0	69938	5128	6063	2836	0	214	140678	172273
ENERGY SECTOR	0	933	0	0	0	0	0	6721	0	7654	320	1350	0	24	0	12	396	0	0	2302	0	0	1782	0	0	6186	13840
RESIDENTIAL	0	17	0	0	0	0	6855	0	0	6872	0	0	0	5431	0	89	128	0	0	15552	518	0	0	0	0	21718	28590
COMMERCIAL	0	9	0	0	0	0	98	0	0	107	47	274	0	127	0	0	51	0	0	7947	57	0	0	0	0	8503	8610
PUBLIC	0	3	0	0	0	0	1	0	0	4	78	159	0	31	0	1	7	0	0	5954	3	0	0	0	0	6233	6237
AGRICULTURE	0	0	0	0	0	0	1851	0	0	1851	3726	34	0	1	0	1	0	0	0	2321	8	0	0	0	0	6091	7942
TRANSPORTATION - TOTAL	0	21	0	0	0	0	0	0	0	21	17734	879	8311	0	0	1947	0	0	0	348	0	6063	0	0	0	35282	35303
HIGHWAYS	0	21	0	0	0	0	0	0	0	21	16873	0	8268	0	0	0	0	0	0	0	0	6063	0	0	0	31204	31225
RAILROADS	0	0	0	0	0	0	0	0	0	0	534	0	0	0	0	0	0	0	0	348	0	0	0	0	0	882	882
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	43	0	0	1947	0	0	0	0	0	0	0	0	0	1990	1990
WATERWAYS	0	0	0	0	0	0	0	0	0	0	327	879	0	0	0	0	0	0	0	0	0	0	0	0	0	1206	1206
INDUSTRIAL - TOTAL	0	1668	774	172	0	0	4824	5534	2114	15086	376	7300	0	240	0	32	928	6465	0	35514	4542	0	1054	0	214	56665	71751
CEMENT	0	5	326	0	0	0	1	0	40	372	13	1087	0	0	0	2	0	0	0	860	222	0	0	0	4	2188	2560
PIG-IRON AND STEEL	0	373	7	172	0	0	0	0	0	552	36	453	0	22	0	6	907	6150	0	4185	3670	0	0	0	210	15639	16191
FERRO-ALLOYS	0	25	0	0	0	0	12	0	0	37	0	0	0	0	0	9	41	0	2087	488	0	0	0	0	0	2625	2662
MINING/PELLETIZATION	0	71	0	0	0	0	0	0	0	71	104	555	0	1	0	3	0	102	0	1741	3	0	0	0	0	2509	2580
NON-FERROUS/OTHER METALS	0	42	0	0	0	0	35	0	0	77	0	457	0	14	0	0	2	172	0	8266	110	0	388	0	0	9409	9486
CHEMICAL	0	412	125	0	0	0	174	44	0	755	30	1492	0	8	0	0	0	0	0	4224	28	0	666	0	0	6448	7203
FOODS AND BEVERAGES	0	168	79	0	0	0	1767	5453	0	7467	24	830	0	22	0	6	6	0	0	3390	0	0	0	0	0	4278	11745
TEXTILES	0	74	3	0	0	0	100	0	0	177	3	420	0	2	0	2	0	0	0	1905	2	0	0	0	0	2334	2511
PAPER AND PULP	0	86	111	0	0	0	754	30	2027	3008	21	657	0	5	0	2	0	0	0	2793	0	0	0	0	0	3478	6486
CERAMICS	0	96	73	0	0	0	1443	0	47	1659	9	510	0	92	0	1	0	0	0	523	8	0	0	0	0	1143	2802
OTHERS	0	316	50	0	0	0	538	7	0	911	136	839	0	74	0	10	4	0	0	5540	11	0	0	0	0	6614	7525
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX F.25

CONSOLIDATED ENERGY BALANCE - YEAR 1994

UNIT: 10³ toe

ACCOUNT	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	33804	7508	1910	75	0	70384	24547	21337	2967	162532	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162532	
IMPORTS	27957	0	59	8219	0	0	0	0	0	36235	2770	2728	23	1875	2474	333	0	1000	0	9212	4	935	0	103	0	21457	57692	
CHANGES IN STOCKS	51	0	-35	-18	1348	0	0	0	0	1346	-183	-25	174	22	-32	73	0	11	-1306	0	0	-47	-16	60	0	-1269	77	
TOTAL SUPPLY	61812	7508	1934	8276	1348	70384	24547	21337	2967	200113	2587	2703	197	1897	2442	406	0	1011	-1306	9212	4	888	-16	163	0	20188	220301	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-797	-2577	-2315	0	-203	-664	0	0	0	0	-7	-145	0	-162	0	-6870	-6870	
NON-UTILIZED	0	-1044	0	0	0	0	0	0	0	-1044	0	0	0	0	0	0	-48	0	0	0	0	0	-86	0	0	-134	-1178	
RE-INJECTION	0	-1464	0	0	0	0	0	0	0	-1464	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1464	
GROSS DOMESTIC SUPPLY	61812	5000	1934	8276	1348	70384	24547	21337	2967	197605	1790	126	-2118	1897	2239	-258	-48	1011	-1306	9212	-3	743	-102	1	0	13184	210789	
TOTAL TRANSFORMATION	-63687	-1313	-1082	-7976	-1348	-70384	-10955	-7056	-789	-164590	21585	11044	11720	4432	3920	2432	1545	5587	1306	75412	5414	6274	3586	3121	269	157647	-6943	
PETROLEUM REFINERIES	-63687	0	0	0	0	0	0	0	-548	-64235	22213	11856	11325	3910	5338	2432	0	0	0	0	0	2928	3116	0	0	63118	-1117	
NATURAL GAS PLANTS	0	-919	0	0	0	0	0	0	441	-478	0	0	121	320	0	0	0	0	0	0	0	0	0	0	0	441	-37	
GASIFICATION PLANTS	0	-133	0	0	0	0	0	0	0	-133	0	0	0	0	-77	0	159	0	0	0	0	0	0	0	0	82	-51	
COKING PLANTS	0	0	0	-7976	0	0	0	0	0	-7976	0	0	0	0	0	0	1465	5587	0	0	0	0	0	0	286	7338	-638	
NUCLEAR CYCLE	0	0	0	0	-1348	0	0	0	0	-1348	0	0	0	0	0	0	0	0	1328	0	0	0	0	0	0	1328	-20	
PUBL. UTIL. POWER PLANTS	0	-8	-1026	0	0	-69445	0	0	0	-70479	-544	-433	0	0	0	0	0	0	-22	71304	0	0	0	0	0	70305	-174	
SELF-PROD. POWER PLANTS	0	-146	-56	0	0	-939	-127	-463	-751	-2482	-103	-379	0	0	0	0	-79	0	0	4108	0	0	-175	0	-17	3355	873	
CHARCOAL PLANTS	0	0	0	0	0	0	-10828	0	0	-10828	0	0	0	0	0	0	0	0	0	0	5414	0	0	0	0	5414	-5414	
DISTILLERIES	0	0	0	0	0	0	0	-6593	-38	-6631	0	0	0	0	0	0	0	0	0	0	0	6274	0	0	0	6274	-357	
OTHER TRANSFORMATIONS	0	-107	0	0	0	0	0	0	107	0	19	0	274	202	-1341	0	0	0	0	0	0	0	833	5	0	-8	-8	
LOSSES IN DISTRIB./STORAGE	-309	0	-13	-41	0	0	0	0	0	-363	-70	-21	-45	-30	-29	-10	-25	-33	0	-12184	-208	-26	-52	-16	0	-12749	-13112	
FINAL CONSUMPTION	0	3660	839	259	0	0	13592	14281	2178	34809	23185	10241	9102	5970	5921	2141	1472	6591	0	72440	5203	6991	3442	3081	269	156049	190858	
FINAL NON-ENERGY CONSUMPTION	0	959	0	0	0	0	0	0	0	959	0	0	0	0	5917	31	0	0	0	0	0	524	211	3081	74	9838	10797	
FINAL ENERGY CONSUMPTION	0	2701	839	259	0	0	13592	14281	2178	33850	23185	10241	9102	5970	4	2110	1472	6591	0	72440	5203	6467	3231	0	195	146211	180061	
ENERGY SECTOR	0	885	0	0	0	0	0	7393	0	8278	239	1605	0	15	4	5	374	0	0	2249	0	0	1856	0	0	6347	14625	
RESIDENTIAL	0	26	0	0	0	0	6658	0	0	6684	0	0	0	5472	0	76	92	0	0	16226	502	0	0	0	0	22368	29052	
COMMERCIAL	0	13	0	0	0	0	90	0	0	103	68	274	0	126	0	2	30	0	0	8376	57	0	0	0	0	8933	9036	
PUBLIC	0	3	0	0	0	0	1	0	0	4	178	364	0	42	0	0	5	0	0	6224	3	0	17	0	0	6833	6837	
AGRICULTURE	0	0	0	0	0	0	1824	0	0	1824	3909	61	0	1	0	0	0	0	0	2433	6	0	0	0	0	6410	8234	
TRANSPORTATION - TOTAL	0	39	0	0	0	0	0	0	0	39	18332	796	9102	0	0	1991	0	0	0	341	0	6467	0	0	0	37029	37068	
HIGHWAYS	0	39	0	0	0	0	0	0	0	39	17634	0	9051	0	0	0	0	0	0	0	0	6467	0	0	0	33152	33191	
RAILROADS	0	0	0	0	0	0	0	0	0	0	400	0	0	0	0	0	0	0	0	341	0	0	0	0	0	741	741	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	51	0	0	1991	0	0	0	0	0	0	0	0	0	2042	2042	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	298	796	0	0	0	0	0	0	0	0	0	0	0	0	0	1094	1094	
INDUSTRIAL - TOTAL	0	1735	839	259	0	0	5019	6888	2178	16918	459	7141	0	314	0	36	971	6591	0	36591	4635	0	1358	0	195	58291	75209	
CEMENT	0	5	343	0	0	0	1	0	41	390	16	1040	0	0	0	1	0	0	0	884	253	0	2	0	4	2200	2590	
PIG-IRON AND STEEL	0	433	9	259	0	0	0	0	0	701	39	460	0	29	0	10	964	6329	0	4340	3786	0	2	0	191	16150	16851	
FERRO-ALLOYS	0	26	10	0	0	0	0	0	0	36	0	0	0	0	0	2	39	0	0	1842	427	0	0	0	0	2310	2346	
MINING/PELLETIZATION	0	75	0	0	0	0	0	0	0	75	131	605	0	1	0	2	0	137	0	1865	3	0	2	0	0	2746	2821	
NON-FERROUS/OTHER METALS	0	34	67	0	0	0	36	0	0	137	0	369	0	20	0	0	1	86	0	8294	120	0	432	0	0	9322	9459	
CHEMICAL	0	439	121	0	0	0	179	50	0	789	67	1383	0	14	0	0	0	0	0	4334	29	0	890	0	0	6717	7506	
FOODS AND BEVERAGES	0	154	78	0	0	0	1778	6813	0	8823	29	840	0	26	0	9	1	0	0	3482	0	0	0	0	0	4387	13210	
TEXTILES	0	78	4	0	0	0	103	0	0	185	2	341	0	3	0	1	0	0	0	1955	1	0	0	0	0	2303	2488	
PAPER AND PULP	0	89	83	0	0	0	881	17	2092	3162	21	672	0	8	0	2	0	0	0	2821	0	0	23	0	0	3547	6709	
CERAMICS	0	101	82	0	0	0	1476	0	45	1704	7	475	0	132	0	2	0	0	0	545	5	0	0	0	0	1166	2870	
OTHERS	0	301	42	0	0	0	565	8	0	916	147	956	0	81	0	9	3	0	0	6229	11	0	7	0	0	7443	8359	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTMENTS	2184	-27	0	0	0	0	0	0	0	2157	-120	-908	-455	-329	-209	-23	0	26	0	0	0	0	10	-25	0	-2033	124	

APPENDIX F.26

CONSOLIDATED ENERGY BALANCE - YEAR 1995

UNIT: 10³ toe

A C C O U N T	PETRO- LEUM	NATUR. GAS	STEAM COAL	METAL COAL	URAN. U3O8	HYDRO	FIRE- WOOD	S.CANE PRODUC.	OTHER PRIMAR.	TOTAL PRIMAR.	DIESEL OIL	FUEL OIL	GASO- LINE	LPG	NAPH- THA	KERO- SENE	GAS	COAL COKE	URAN. C/UO2	ELECT- RICITY	CHAR- COAL	ALCO- HOL	OTHER OIL P.	N.ENER. OIL P.	BITU- MEN	TOTAL SECOND.	TOTAL	
PRODUCTION	34907	7700	1931	67	0	73632	22970	21216	2887	165310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165310
IMPORTS	25353	0	0	8642	0	0	1	0	0	33996	3604	694	704	2546	2619	521	0	1201	0	10252	10	1215	0	295	0	23661	57657	
CHANGES IN STOCKS	2244	0	0	40	756	0	0	0	0	3040	142	105	-43	-23	60	25	0	-36	138	0	0	-6	15	-39	0	338	3378	
TOTAL SUPPLY	62504	7700	1931	8749	756	73632	22971	21216	2887	202346	3746	799	661	2523	2679	546	0	1165	138	10252	10	1209	15	256	0	23999	226345	
EXPORTS AND BUNKERS	-677	0	0	0	0	0	0	0	0	-677	-554	-1735	-800	0	0	-708	0	0	0	0	-6	-200	0	-91	0	-4094	-4771	
NON-UTILIZED	0	-1043	0	0	0	0	0	0	0	-1043	0	0	0	0	0	0	-35	0	0	0	0	0	-132	0	0	-167	-1210	
RE-INJECTION	0	-1368	0	0	0	0	0	0	0	-1368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1368	
GROSS DOMESTIC SUPPLY	61827	5289	1931	8749	756	73632	22971	21216	2887	199258	3192	-936	-139	2523	2679	-162	-35	1165	138	10252	4	1009	-117	165	0	19738	218996	
TOTAL TRANSFORMATION	-61758	-1338	-1284	-8041	-756	-73632	-10089	-7133	-780	-164811	21026	10874	11570	4191	3423	2670	1542	5632	-138	79924	4983	6393	3784	2796	247	158917	-5894	
PETROLEUM REFINERIES	-61758	0	0	0	0	0	0	0	0	-62345	21902	11706	11205	3715	5012	2670	0	0	0	0	0	0	2933	2788	0	61931	-414	
NATURAL GAS PLANTS	0	-920	0	0	0	0	0	0	0	-437	0	0	116	303	0	0	0	0	0	0	0	0	0	0	0	0	419	-18
GASIFICATION PLANTS	0	-130	0	0	0	0	0	0	0	-130	0	0	0	0	-66	0	139	0	0	0	0	0	0	0	0	73	-57	
COKING PLANTS	0	0	0	-8041	0	0	0	0	0	-8041	0	0	0	0	0	0	1479	5632	0	0	0	0	0	0	270	7381	-660	
NUCLEAR CYCLE	0	0	0	0	-756	0	0	0	0	-756	0	0	0	0	0	0	0	0	740	0	0	0	0	0	0	740	-16	
PUBL. UTIL. POWER PLANTS	0	-6	-1224	0	0	-72632	0	0	0	-73862	-811	-407	0	0	0	0	0	0	-878	75596	0	0	0	0	0	73500	-362	
SELF-PROD. POWER PLANTS	0	-177	-60	0	0	-1000	-123	-515	-750	-2625	-109	-425	0	0	0	0	-76	0	0	4328	0	0	-185	0	-23	3510	885	
CHARCOAL PLANTS	0	0	0	0	0	0	-9966	0	0	-9966	0	0	0	0	0	0	0	0	0	0	4983	0	0	0	0	4983	-4983	
DISTILLERIES	0	0	0	0	0	0	0	-6618	-30	-6648	0	0	0	0	0	0	0	0	0	0	0	6393	0	0	0	6393	-255	
OTHER TRANSFORMATIONS	0	-105	0	0	0	0	0	0	104	-1	44	0	249	173	-1523	0	0	0	0	0	0	0	1036	8	0	-13	-14	
LOSSES IN DISTRIB./STORAGE	-62	-81	-3	-86	0	0	0	0	0	-232	-25	-10	-54	-32	-29	-11	-25	-100	0	-13383	-192	-73	-7	-16	0	-13957	-14189	
FINAL CONSUMPTION	0	3829	644	611	0	0	12882	14083	2107	34156	24548	10831	10885	6321	5760	2457	1482	6673	0	76793	4795	7281	3662	2934	247	164669	199825	
FINAL NON-ENERGY CONSUMPTION	0	819	0	0	0	0	0	0	0	819	0	0	0	0	5731	33	0	0	0	0	0	595	283	2934	65	9641	10460	
FINAL ENERGY CONSUMPTION	0	3010	644	611	0	0	12882	14083	2107	33337	24548	10831	10885	6321	29	2424	1482	6673	0	76793	4795	6686	3379	0	182	155028	188365	
ENERGY SECTOR	0	875	0	0	0	0	0	7039	0	7914	143	1629	0	10	29	1	353	0	0	2407	0	0	1770	0	2	6344	14258	
RESIDENTIAL	0	45	0	0	0	0	6031	0	0	6076	0	0	0	5739	0	69	76	0	0	18438	423	0	0	0	0	24745	30821	
COMMERCIAL	0	26	0	0	0	0	88	0	0	114	70	267	0	125	0	1	27	0	0	9364	55	0	0	0	0	9909	10023	
PUBLIC	0	5	0	0	0	0	1	0	0	6	179	390	0	55	0	5	0	0	0	6693	2	0	16	0	0	7340	7346	
AGRICULTURE	0	0	0	0	0	0	1861	0	0	1861	4164	92	0	1	0	0	0	0	0	2660	7	0	0	0	0	6924	8785	
TRANSPORTATION - TOTAL	0	42	0	0	0	0	0	0	0	42	19515	766	10885	0	0	2324	0	0	0	351	0	6686	0	0	0	40527	40569	
HIGHWAYS	0	42	0	0	0	0	0	0	0	42	18777	0	10837	0	0	0	0	0	0	0	0	6686	0	0	0	0	36300	36342
RAILROADS	0	0	0	0	0	0	0	0	0	0	428	1	0	0	0	0	0	0	0	351	0	0	0	0	0	780	780	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0	2324	0	0	0	0	0	0	0	0	0	2372	2372	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	310	765	0	0	0	0	0	0	0	0	0	0	0	0	0	1075	1075	
INDUSTRIAL - TOTAL	0	2017	644	611	0	0	4901	7044	2107	17324	477	7687	0	391	0	29	1021	6673	0	36880	4308	0	1593	0	180	59239	76563	
CEMENT	0	23	254	146	0	0	2	0	37	462	15	1236	0	0	0	1	0	0	0	947	276	0	24	0	13	2512	2974	
PIG-IRON AND STEEL	0	585	8	266	0	0	0	0	0	859	18	380	0	32	0	8	1016	6474	0	4164	3475	0	13	0	167	15747	16606	
FERRO-ALLOYS	0	0	0	14	0	0	0	0	0	14	0	0	0	0	0	1	34	0	0	1826	372	0	0	0	0	2233	2247	
MINING/PELLETIZATION	0	78	0	171	0	0	0	0	0	249	131	599	0	1	0	2	0	0	0	1830	0	0	2	0	0	2565	2814	
NON-FERROUS/OTHER METALS	0	16	0	14	0	0	40	0	0	70	20	519	0	21	0	0	1	165	0	8278	142	0	448	0	0	9594	9664	
CHEMICAL	0	497	127	0	0	0	144	46	0	814	73	1434	0	14	0	0	0	0	0	4313	23	0	1053	0	0	6910	7724	
FOODS AND BEVERAGES	0	159	87	0	0	0	1742	6984	0	8972	33	950	0	32	0	6	1	0	0	3690	0	0	0	0	0	4712	13684	
TEXTILES	0	92	3	0	0	0	102	0	0	197	1	329	0	3	0	1	0	0	0	1865	1	0	0	0	0	2200	2397	
PAPER AND PULP	0	122	93	0	0	0	897	5	2022	3139	24	743	0	10	0	2	0	0	0	2842	0	0	39	0	0	3660	6799	
CERAMICS	0	111	67	0	0	0	1387	0	48	1613	7	493	0	187	0	2	0	0	0	583	6	0	0	0	0	1278	2891	
OTHERS	0	334	5	0	0	0	587	9	0	935	155	1004	0	91	0	7	2	0	0	6542	13	0	14	0	0	7828	8763	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	-7	-41	0	-11	0	0	0	0	0	-59	355	903	-492	-361	-313	-40	0	-24	0	0	0	-48	2	-11	0	-29	-88	

APPENDIX F.27

CONSOLIDATED ENERGY BALANCE - YEAR 1996

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	39720	8863	1760	84	0	77073	21694	22790	3048	175032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175032
IMPORTS	28826	0	0	9417	1383	0	2	0	0	39628	4161	1631	733	2675	2501	563	0	1160	0	10604	5	655	111	289	0	25088	64716	
CHANGES IN STOCKS	-639	0	105	-147	-1383	0	0	0	0	-2064	-33	-150	-69	5	-132	-73	0	-31	769	0	0	-65	-7	-26	0	188	-1876	
TOTAL SUPPLY	67907	8863	1865	9354	0	77073	21696	22790	3048	212596	4128	1481	664	2680	2369	490	0	1129	769	10604	5	590	104	263	0	25276	237872	
EXPORTS AND BUNKERS	-105	0	0	0	0	0	0	0	0	-105	-347	-2105	-465	0	0	-793	0	0	0	-2	0	-108	-96	-177	0	-4093	-4198	
NON-UTILIZED	0	-1474	0	0	0	0	0	0	0	-1474	0	0	0	0	0	0	-39	0	0	0	0	0	0	0	0	-39	-1513	
RE-INJECTION	0	-1591	0	0	0	0	0	0	0	-1591	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1591	
GROSS DOMESTIC SUPPLY	67802	5798	1865	9354	0	77073	21696	22790	3048	209426	3781	-624	199	2680	2369	-303	-39	1129	769	10602	5	482	8	86	0	21144	230570	
TOTAL TRANSFORMATION	-66541	-1336	-1311	-8032	0	-77073	-8962	-8120	-790	-172165	21799	12184	12648	4061	3149	2917	1539	5649	-769	84461	4594	7117	4074	3292	235	166950	-5215	
PETROLEUM REFINERIES	-66541	0	0	0	0	0	0	0	-554	-67095	22667	13413	12243	3654	4819	2917	0	0	0	0	0	0	3113	3285	0	66111	-984	
NATURAL GAS PLANTS	0	-915	0	0	0	0	0	0	449	-466	0	0	134	266	0	0	0	0	0	0	0	0	0	0	0	400	-66	
GASIFICATION PLANTS	0	-87	0	0	0	0	0	0	0	-87	0	0	0	0	-49	0	132	0	0	0	0	0	0	0	0	83	-4	
COKING PLANTS	0	0	0	-8032	0	0	0	0	0	-8032	0	0	0	0	0	0	1501	5649	0	0	0	0	0	0	258	7408	-624	
NUCLEAR CYCLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PUBL. UTIL. POWER PLANTS	0	-8	-1249	0	0	-75819	0	0	0	-77076	-699	-798	0	0	0	0	0	0	-769	79257	0	0	0	0	0	76991	-85	
SELF-PROD. POWER PLANTS	0	-220	-62	0	0	-1254	-128	-719	-758	-3141	-169	-431	0	0	0	0	-94	0	0	5204	0	0	-222	0	-23	4265	1124	
CHARCOAL PLANTS	0	0	0	0	0	0	-8834	0	0	-8834	0	0	0	0	0	0	0	0	0	0	4594	0	0	0	0	4594	-4240	
DISTILLERIES	0	0	0	0	0	0	0	-7401	-32	-7433	0	0	0	0	0	0	0	0	0	0	0	7117	0	0	0	7117	-316	
OTHER TRANSFORMATIONS	0	-106	0	0	0	0	0	0	105	-1	0	0	271	141	-1621	0	0	0	0	0	0	0	1183	7	0	-19	-20	
LOSSES IN DISTRIB./STORAGE	-323	-51	0	-96	0	0	0	0	0	-470	-25	-11	-63	-33	-28	-12	-24	-67	0	-14534	-156	-76	-38	-17	0	-15084	-15554	
FINAL CONSUMPTION	0	4422	561	1170	0	0	12734	14670	2258	35815	25526	11724	12740	6670	5581	2595	1476	6671	0	80529	4443	7523	4047	3402	235	173162	208977	
FINAL NON-ENERGY CONSUMPTION	0	752	0	0	0	0	0	0	0	752	0	0	0	0	5571	36	0	0	0	0	0	562	89	3402	163	9823	10575	
FINAL ENERGY CONSUMPTION	0	3670	561	1170	0	0	12734	14670	2258	35063	25526	11724	12740	6670	10	2559	1476	6671	0	80529	4443	6961	3958	0	72	163339	198402	
ENERGY SECTOR	0	1085	0	0	0	0	0	7490	0	8575	166	1461	0	10	10	2	362	0	0	2616	0	0	2189	0	2	6818	15393	
RESIDENTIAL	0	62	0	0	0	0	5912	0	0	5974	0	0	0	5989	0	52	74	0	0	20026	385	0	0	0	0	26526	32500	
COMMERCIAL	0	37	0	0	0	0	93	0	0	130	69	272	0	128	0	1	25	0	0	10085	58	0	0	0	0	10638	10768	
PUBLIC	0	5	0	0	0	0	0	0	0	5	79	298	0	66	0	0	6	0	0	6982	1	0	16	0	0	7448	7453	
AGRICULTURE	0	0	0	0	0	0	1846	0	0	1846	4363	80	0	1	0	0	0	0	0	2857	8	0	0	0	0	7309	9155	
TRANSPORTATION - TOTAL	0	31	0	0	0	0	0	0	0	31	20405	976	12740	0	0	2481	0	0	0	334	0	6961	0	0	0	43897	43928	
HIGHWAYS	0	31	0	0	0	0	0	0	0	31	19639	0	12689	0	0	0	0	0	0	0	0	6961	0	0	0	39289	39320	
RAILROADS	0	0	0	0	0	0	0	0	0	0	395	0	0	0	0	0	0	0	0	334	0	0	0	0	0	729	729	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	51	0	0	2481	0	0	0	0	0	0	0	0	0	2532	2532	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	371	976	0	0	0	0	0	0	0	0	0	0	0	0	0	1347	1347	
INDUSTRIAL - TOTAL	0	2450	561	1170	0	0	4883	7180	2258	18502	444	8637	0	476	0	23	1009	6671	0	37629	3991	0	1753	0	70	60703	79205	
CEMENT	0	27	194	277	0	0	4	0	30	532	15	1464	0	1	0	1	0	9	0	1060	356	0	36	0	13	2955	3487	
PIG-IRON AND STEEL	0	721	8	487	0	0	0	0	0	1216	12	376	0	57	0	8	1007	6451	0	4139	3014	0	5	0	57	15126	16342	
FERRO-ALLOYS	0	0	0	15	0	0	19	0	0	34	0	0	0	0	0	0	0	39	0	2000	564	0	0	0	0	2603	2637	
MINING/PELLETIZATION	0	107	0	295	0	0	0	0	0	402	117	599	0	1	0	2	0	10	0	1696	0	0	10	0	0	2435	2837	
NON-FERROUS/OTHER METALS	0	25	0	96	0	0	2	0	0	123	29	685	0	38	0	0	0	162	0	8318	30	0	488	0	0	9750	9873	
CHEMICAL	0	588	114	0	0	0	115	0	0	817	96	1697	0	14	0	0	0	0	0	4385	13	0	1152	0	0	7357	8174	
FOODS AND BEVERAGES	0	247	82	0	0	0	1777	7157	0	9263	34	1035	0	34	0	4	0	0	0	3953	0	0	0	0	0	5060	14323	
TEXTILES	0	181	2	0	0	0	104	0	0	287	3	300	0	2	0	0	0	0	0	1734	1	0	0	0	0	2040	2327	
PAPER AND PULP	0	139	94	0	0	0	743	23	2174	3173	25	920	0	12	0	2	0	0	0	2887	0	0	38	0	0	3884	7057	
CERAMICS	0	87	60	0	0	0	1525	0	54	1726	7	517	0	214	0	1	0	0	0	630	8	0	9	0	0	1386	3112	
OTHERS	0	328	7	0	0	0	594	0	0	929	106	1044	0	103	0	5	2	0	0	6827	5	0	15	0	0	8107	9036	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ADJUSTMENTS	-938	11	7	-56	0	0	0	0	0	-976	-29	175	-44	-38	91	-7	0	-40	0	0	0	0	3	41	0	152	-824	

APPENDIX F.28

CONSOLIDATED ENERGY BALANCE - YEAR 1997

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL
PRODUCTION	42777	9511	2072	57	8229	80902	21392	25261	3242	185214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	185214
IMPORTS	29207	0	0	9444	8229	0	1	0	0	46881	4996	446	302	2804	3572	704	0	1155	0	11738	7	446	406	206	0	26782	73663
CHANGES IN STOCKS	-284	0	-70	-130	-1045	0	0	0	0	-1529	63	175	33	-61	121	61	0	0	-6042	0	0	-905	-22	81	0	-6496	-8025
TOTAL SUPPLY	71700	9511	2002	9371	7184	80902	21393	25261	3242	230566	5059	621	335	2743	3693	765	0	1155	-6042	11738	7	-459	384	287	0	20286	250852
EXPORTS AND BUNKERS	-130	0	0	0	0	0	0	0	0	-130	-507	-2347	-505	-4	0	-865	0	0	0	-2	-3	-87	-212	-125	0	-4657	-4787
NON-UTILIZED	0	-1528	0	0	0	0	0	0	0	-1528	0	0	0	0	0	0	-12	0	0	0	0	0	0	0	0	-12	-1540
RE-INJECTION	0	-1647	0	0	0	0	0	0	0	-1647	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1647
GROSS DOMESTIC SUPPLY	71570	6336	2002	9371	7184	80902	21393	25261	3242	227261	4552	-1726	-170	2739	3693	-100	-12	1155	-6042	11736	4	-546	172	162	0	15617	242878
TOTAL TRANSFORMATION	-71648	-1365	-1560	-7733	-7184	-80902	-8636	-8891	-893	-188812	22541	13765	14063	4021	3485	2857	1468	5514	6042	89315	4418	7821	4805	3689	280	184084	-4728
PETROLEUM REFINERIES	-71648	0	0	0	0	0	0	0	-549	-72197	23677	14923	13788	3522	5239	2857	0	0	0	0	0	0	3698	3689	0	71393	-804
NATURAL GAS PLANTS	0	-972	0	0	0	0	0	0	491	-481	0	0	10	319	135	0	0	0	0	0	0	0	0	0	0	464	-17
GASIFICATION PLANTS	0	-82	0	0	0	0	0	0	0	-82	0	0	0	0	-49	0	115	0	0	0	0	0	0	0	0	66	-16
COKING PLANTS	0	0	0	-7733	0	0	0	0	0	-7733	0	0	0	0	0	0	1441	5514	0	0	0	0	0	0	280	7235	-498
NUCLEAR CYCLE	0	0	0	0	-7184	0	0	0	0	-7184	0	0	0	0	0	0	0	0	7079	0	0	0	0	0	0	7079	-105
PUBL. UTIL. POWER PLANTS	0	-27	-1513	0	0	-79630	0	0	0	-81170	-977	-736	0	0	0	0	0	0	-1037	83766	0	0	0	0	0	81016	-154
SELF-PROD. POWER PLANTS	0	-226	-47	0	0	-1272	-139	-776	-893	-3353	-192	-422	0	0	0	0	-88	0	0	5549	0	0	-246	0	0	4601	1248
CHARCOAL PLANTS	0	0	0	0	0	0	-8497	0	0	-8497	0	0	0	0	0	0	0	0	0	0	4418	0	0	0	0	4418	-4079
DISTILLERIES	0	0	0	0	0	0	0	-8115	0	-8115	0	0	0	0	0	0	0	0	0	0	0	7821	0	0	0	7821	-294
OTHER TRANSFORMATIONS	0	-58	0	0	0	0	0	0	58	0	33	0	265	180	-1840	0	0	0	0	0	0	0	1353	0	0	-9	-9
LOSSES IN DISTRIB./STORAGE	-36	-154	0	0	0	0	0	0	0	-190	-134	-60	-7	-1	-37	0	-12	-66	0	-15591	-149	-37	-77	-21	0	-16192	-16382
FINAL CONSUMPTION	0	4803	440	1638	0	0	12758	16370	2349	38358	26851	11970	13932	6938	6881	2881	1444	6562	0	85460	4273	7238	4851	3646	310	183237	221595
FINAL NON-ENERGY CONSUMPTION	0	713	0	0	0	0	0	0	0	713	0	0	0	6877	27	0	0	0	0	0	0	512	111	3646	216	11389	12102
FINAL ENERGY CONSUMPTION	0	4090	440	1638	0	0	12758	16370	2349	37645	26851	11970	13932	6938	4	2854	1444	6562	0	85460	4273	6726	4740	0	94	171848	209493
ENERGY SECTOR	0	1160	0	0	0	0	0	8448	0	9608	179	1724	0	16	4	1	348	0	0	2652	0	0	2435	0	0	7359	16967
RESIDENTIAL	0	69	0	0	0	0	5986	0	0	6055	0	0	0	6022	0	30	68	0	0	21480	386	0	0	0	0	27986	34041
COMMERCIAL	0	71	0	0	0	0	90	0	0	161	68	279	0	136	0	0	18	0	0	11072	60	0	0	0	0	11633	11794
PUBLIC	0	8	0	0	0	0	0	0	0	8	147	247	0	121	0	0	4	0	0	7492	0	0	0	0	0	8011	8019
AGRICULTURE	0	0	0	0	0	0	1828	0	0	1828	4538	78	0	4	0	0	0	0	0	3132	6	0	0	0	0	7758	9586
TRANSPORTATION - TOTAL	0	40	0	0	0	0	0	0	0	40	21427	728	13932	0	0	2792	0	0	0	331	0	6726	0	0	0	45936	45976
HIGHWAYS	0	40	0	0	0	0	0	0	0	40	20863	0	13874	0	0	0	0	0	0	0	0	6726	0	0	0	41463	41503
RAILROADS	0	0	0	0	0	0	0	0	0	0	321	0	0	0	0	0	0	0	0	331	0	0	0	0	0	652	652
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	58	0	0	2792	0	0	0	0	0	0	0	0	0	2850	2850
WATERWAYS	0	0	0	0	0	0	0	0	0	0	243	728	0	0	0	0	0	0	0	0	0	0	0	0	0	971	971
INDUSTRIAL - TOTAL	0	2742	440	1638	0	0	4854	7922	2349	19945	492	8914	0	639	0	31	1006	6562	0	39301	3821	0	1928	0	94	62788	82733
CEMENT	0	32	90	433	0	0	1	1	61	618	20	1722	0	1	0	1	0	9	0	1250	235	0	97	0	17	3352	3970
PIG-IRON AND STEEL	0	689	5	833	0	0	0	0	0	1527	32	311	0	68	0	5	1005	6441	0	4153	3159	0	83	0	77	15334	16861
FERRO-ALLOYS	0	0	0	4	0	0	38	0	0	42	0	0	0	0	0	0	0	33	0	1824	378	0	0	0	0	2235	2277
MINING/PELLETIZATION	0	150	0	272	0	0	0	0	0	422	144	516	0	4	0	2	0	0	0	1873	0	0	33	0	0	2572	2994
NON-FERROUS/OTHER METALS	0	35	12	96	0	0	2	0	0	145	0	701	0	46	0	0	0	79	0	8068	25	0	403	0	0	9322	9467
CHEMICAL	0	934	110	0	0	0	103	0	0	1147	95	1883	0	17	0	12	0	0	0	4590	6	0	1287	0	0	7890	9037
FOODS AND BEVERAGES	0	145	65	0	0	0	1742	7897	0	9849	35	997	0	37	0	2	0	0	0	4184	0	0	0	0	0	5255	15104
TEXTILES	0	69	2	0	0	0	99	0	0	170	3	320	0	3	0	0	0	0	0	1779	1	0	0	0	0	2106	2276
PAPER AND PULP	0	139	89	0	0	0	711	24	2253	3216	31	874	0	15	0	2	0	0	0	3077	0	0	0	0	0	3999	7215
CERAMICS	0	99	65	0	0	0	1571	0	35	1770	6	533	0	294	0	1	0	0	0	748	9	0	0	0	0	1591	3361
OTHERS	0	450	2	0	0	0	587	0	0	1039	126	1057	0	154	0	6	1	0	0	7755	8	0	25	0	0	9132	10171
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	377	0	0	377	377
ADJUSTMENTS	114	-14	-2	0	0	0	1	0	0	99	-108	-9	46	179	-260	124	0	-41	0	0	0	0	-49	-184	30	-272	-173

APPENDIX F.29

CONSOLIDATED ENERGY BALANCE - YEAR 1998

UNIT: 10³ toe

A C C O U N T	PETRO-	NATUR.	STEAM	METAL.	URAN.	HYDRO	FIRE-	S.CANE	OTHER	TOTAL	DIESEL	FUEL	GASO-	LPG	NAPH-	KERO-	GAS	COAL	URAN.	ELECT-	CHAR-	ALCO-	OTHER	N.ENER.	BITU-	TOTAL	TOTAL	
	LEUM	GAS	COAL	COAL	U308		WOOD	PRODUC.	PRIMAR.	PRIMAR.	OIL	OIL	LINE		THA	SENE		COKE	C/UO2	RICITY	COAL	HOL	OIL P.	OIL P.	MEN	SECOND.	TOTAL	
PRODUCTION	49571	10443	2030	13	23	84498	21233	24966	3385	196162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	196162
IMPORTS	27973	0	0	9502	5312	0	4	0	0	42791	5264	55	162	3020	3666	813	0	1025	0	11429	7	80	4	186	0	25711	68502	
CHANGES IN STOCKS	-230	0	-280	-7	-345	0	0	0	0	-862	-59	-134	180	60	-26	-20	0	55	-3496	0	0	87	6	163	0	-3184	-4046	
TOTAL SUPPLY	77314	10443	1750	9508	4990	84498	21237	24966	3385	238091	5205	-79	342	3080	3640	793	0	1080	-3496	11429	7	167	10	349	0	22527	260618	
EXPORTS AND BUNKERS	0	0	0	0	0	0	0	0	0	0	-458	-3789	-1327	-4	-4	-866	0	0	0	-2	-6	-70	-16	-174	0	-6716	-6716	
NON-UTILIZED	0	-1932	0	0	0	0	0	0	0	-1932	0	0	0	0	0	0	-16	0	0	0	0	0	0	0	0	-16	-1948	
RE-INJECTION	0	-1866	0	0	0	0	0	0	0	-1866	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1866	
GROSS DOMESTIC SUPPLY	77314	6645	1750	9508	4990	84498	21237	24966	3385	234293	4747	-3868	-985	3076	3636	-73	-16	1080	-3496	11427	1	97	-6	175	0	15795	250088	
TOTAL TRANSFORMATION	-77174	-1543	-1477	-7497	-4990	-84498	-8286	-8135	-910	-194510	23473	15923	15576	4083	3531	3109	1416	5348	3496	93261	4237	7140	4662	4069	242	189566	-4944	
PETROLEUM REFINERIES	-77174	0	0	0	0	0	0	0	-558	-77732	24877	17109	15270	3574	5282	3109	0	0	0	0	0	0	3529	4069	0	76819	-913	
NATURAL GAS PLANTS	0	-1030	0	0	0	0	0	0	510	-520	0	0	0	355	138	0	0	0	0	0	0	0	0	0	0	493	-27	
GASIFICATION PLANTS	0	-133	0	0	0	0	0	0	0	-133	0	0	0	0	0	0	119	0	0	0	0	0	0	0	0	119	-14	
COKING PLANTS	0	0	0	-7497	0	0	0	0	0	-7497	0	0	0	0	0	0	1415	5348	0	0	0	0	0	0	265	7028	-469	
NUCLEAR CYCLE	0	0	0	0	-4990	0	0	0	0	-4990	0	0	0	0	0	0	0	0	4918	0	0	0	0	0	0	4918	-72	
PUBL. UTIL. POWER PLANTS	0	-43	-1425	0	0	-83054	0	0	0	-84522	-1230	-759	0	0	0	0	0	0	-1422	87348	0	0	0	0	0	83937	-585	
SELF-PROD. POWER PLANTS	0	-289	-52	0	0	-1444	-138	-796	-910	-3629	-236	-427	0	0	0	0	-118	0	0	5913	0	0	-226	0	-23	4883	1254	
CHARCOAL PLANTS	0	0	0	0	0	0	-8148	0	0	-8148	0	0	0	0	0	0	0	0	0	0	4237	0	0	0	0	4237	-3911	
DISTILLERIES	0	0	0	0	0	0	0	-7339	0	-7339	0	0	0	0	0	0	0	0	0	0	0	7140	0	0	0	7140	-199	
OTHER TRANSFORMATIONS	0	-48	0	0	0	0	0	0	48	0	62	0	306	154	-1889	0	0	0	0	0	0	0	0	1359	0	0	-8	
LOSSES IN DISTRIB./STORAGE	-77	-136	0	-29	0	0	0	0	0	-242	-141	-60	-15	-35	-88	0	-14	-64	0	-15661	-143	-72	-56	-15	0	-16364	-16606	
FINAL CONSUMPTION	0	4964	273	1983	0	0	12951	16831	2475	39477	28071	11855	14651	7117	6891	3167	1386	6352	0	89027	4095	7158	4660	4139	242	188811	228288	
FINAL NON-ENERGY CONSUMPTION	0	771	0	0	0	0	0	0	0	771	0	0	0	0	6887	25	0	0	0	0	0	590	119	4139	185	11945	12716	
FINAL ENERGY CONSUMPTION	0	4193	273	1983	0	0	12951	16831	2475	38706	28071	11855	14651	7117	4	3142	1386	6352	0	89027	4095	6568	4541	0	57	176866	215572	
ENERGY SECTOR	0	1261	0	0	0	0	0	7578	0	8839	208	1559	0	19	4	1	327	0	0	2792	0	0	2445	0	0	7355	16194	
RESIDENTIAL	0	75	0	0	0	0	6161	0	0	6236	0	0	0	6016	0	28	68	0	0	23014	387	0	0	0	0	29513	35749	
COMMERCIAL	0	97	0	0	0	0	85	0	0	182	72	319	0	147	0	0	19	0	0	12056	59	0	0	0	0	12672	12854	
PUBLIC	0	10	0	0	0	0	0	0	0	10	150	239	0	202	0	0	3	0	0	7905	0	0	0	0	0	8499	8509	
AGRICULTURE	0	0	0	0	0	0	1755	0	0	1755	4402	44	0	8	0	0	0	0	0	3368	6	0	0	0	0	7828	9583	
TRANSPORTATION - TOTAL	0	68	0	0	0	0	0	0	0	68	22723	757	14651	0	0	3087	0	0	0	339	0	6568	0	0	0	48125	48193	
HIGHWAYS	0	68	0	0	0	0	0	0	0	68	22086	0	14589	0	0	0	0	0	0	0	0	6568	0	0	0	43243	43311	
RAILROADS	0	0	0	0	0	0	0	0	0	0	344	0	0	0	0	0	0	0	0	339	0	0	0	0	0	683	683	
AIRWAYS	0	0	0	0	0	0	0	0	0	0	0	0	62	0	0	3087	0	0	0	0	0	0	0	0	0	3149	3149	
WATERWAYS	0	0	0	0	0	0	0	0	0	0	293	757	0	0	0	0	0	0	0	0	0	0	0	0	0	1050	1050	
INDUSTRIAL - TOTAL	0	2682	273	1983	0	0	4950	9253	2475	21616	516	8937	0	725	0	26	969	6352	0	39553	3643	0	2034	0	57	62812	84428	
CEMENT	0	45	13	479	0	0	8	0	52	597	21	1747	0	1	0	1	0	66	0	1309	209	0	178	0	0	3532	4129	
PIG-IRON AND STEEL	0	681	3	1139	0	0	0	0	0	1823	27	264	0	86	0	4	968	6138	0	4042	3077	0	88	0	57	14751	16574	
FERRO-ALLOYS	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	0	26	0	1527	316	0	0	0	0	1869	1907	
MINING/PELLETIZATION	0	104	0	259	0	0	0	0	0	363	161	587	0	10	0	3	0	0	0	2085	0	0	38	0	0	2884	3247	
NON-FERROUS/OTHER METALS	0	24	0	106	0	0	2	0	0	132	0	639	0	58	0	0	0	74	0	8047	21	0	366	0	0	9205	9337	
CHEMICAL	0	948	96	0	0	0	96	0	0	1140	80	1861	0	18	0	9	0	0	0	4618	5	0	1339	0	0	7930	9070	
FOODS AND BEVERAGES	0	135	46	0	0	0	1777	9228	0	11186	34	1046	0	45	0	2	1	0	0	4392	0	0	0	0	0	5520	16706	
TEXTILES	0	59	0	0	0	0	96	0	0	155	6	313	0	8	0	0	0	0	0	1773	1	0	0	0	0	2101	2256	
PAPER AND PULP	0	141	67	0	0	0	765	25	2385	3383	23	905	0	20	0	1	0	48	0	3169	8	0	0	0	0	4174	7557	
CERAMICS	0	105	46	0	0	0	1587	0	38	1776	6	566	0	282	0	1	0	0	0	778	0	0	0	0	0	1633	3409	
OTHERS	0	440	2	0	0	0	581	0	0	1023	158	1009	0	197	0	5	0	0	0	7813	6	0	25	0	0	9213	10236	
UNIDENTIFIED CONSUMPTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	0	0	62	62	
ADJUSTMENTS	-63	-2	0	1	0	0	0	0	0	-64	-8	-140	75	-7	-188	131	0	-12	0	0	0	-7	60	-90	0	-186	-250	

COORDINATION AND EXECUTION:

João Antonio Moreira Patusco - CGIE - COORDENADOR
Eliana de Mello Caram - CGIE
Rogelma Sousa Pereira - CGIE
Carlos Teixeira da Silva - CGIE

Desktop Publishing :

Arlindo Gonçalves Vieira Filho
Gisele Fleury Veiga
Iris de Farias Sobral
Patrícia Helena Pinho de Carvalho

Desktop Publishing

Arlindo Gonçalves Vieira Filho
Gisele Fleury Veiga
Iris de Farias Sobral
Patrícia Helena Pinho de Carvalho

EXECUTION:

MINISTÉRIO DE MINAS E ENERGIA- MME
SECRETARIA DE ENERGIA - SEN
COORDENAÇÃO - GERAL DE INFORMAÇÕES ENERGÉTICAS - CGIE
ESPLANADA DOS MINISTÉRIOS, BLOCO U, 5º andar
70065-900 - BRASÍLIA - DF - BRASIL
TELEX: 61-1453 - FAX: (061) 224.8857 - 224.1973
TEL: (061) 319.5436
E-mail: patusco@mme.gov.br

COPYRIGHT: Ministry of Mines and Energy - MME - 1999
All rights reserved
Production permitted provided source is mentioned.