

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF INDUSTRY

THE REPUBLIC OF BULGARIA

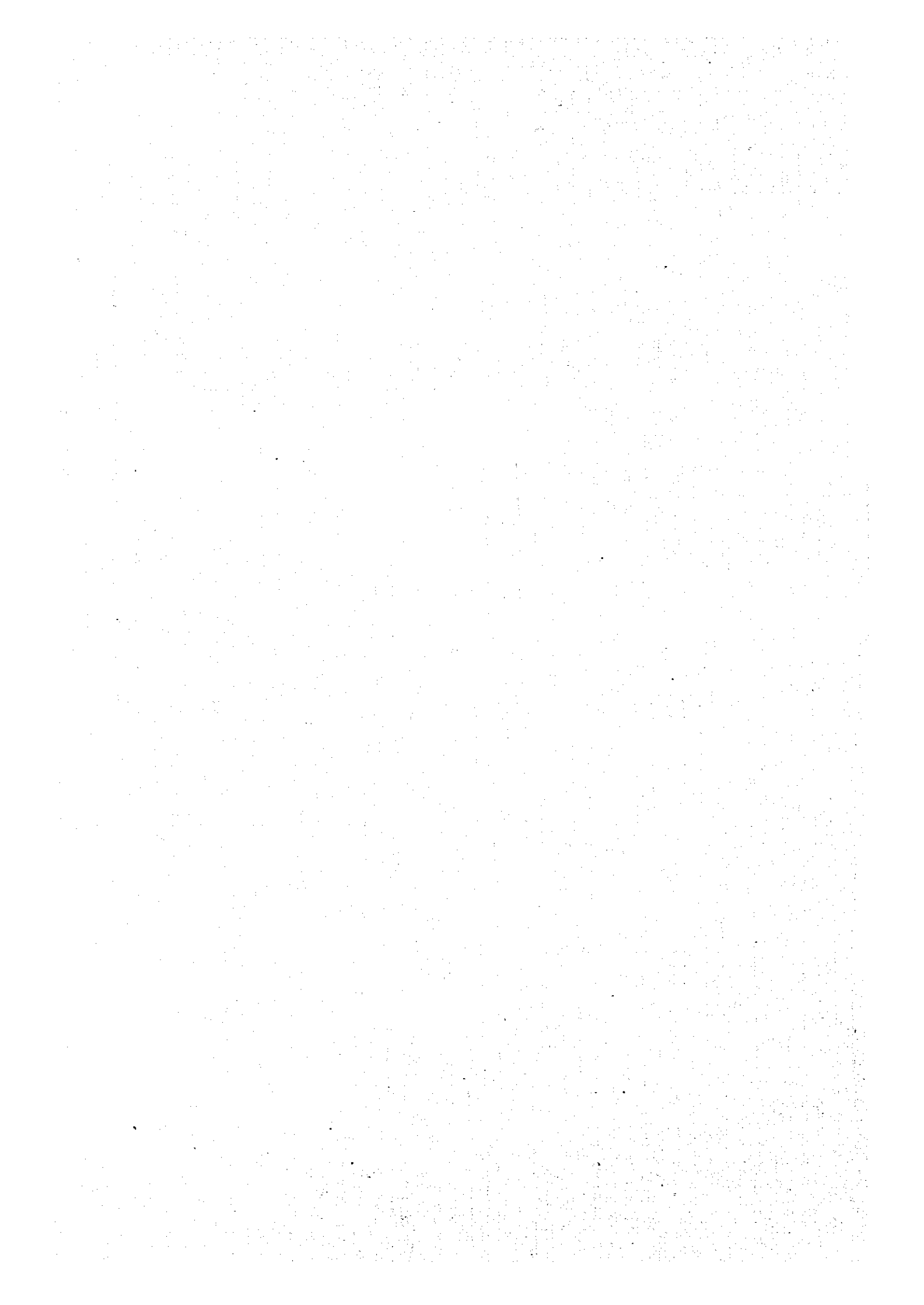
**STUDY ON RESTRUCTURING AND
MODERNIZATION OF THE STEEL INDUSTRY
IN
THE REPUBLIC OF BULGARIA**

MARCH 1996



**KAWASAKI STEEL CORPORATION
SUMITOMO METAL INDUSTRIES, LTD.
KOBE STEEL, LTD.**

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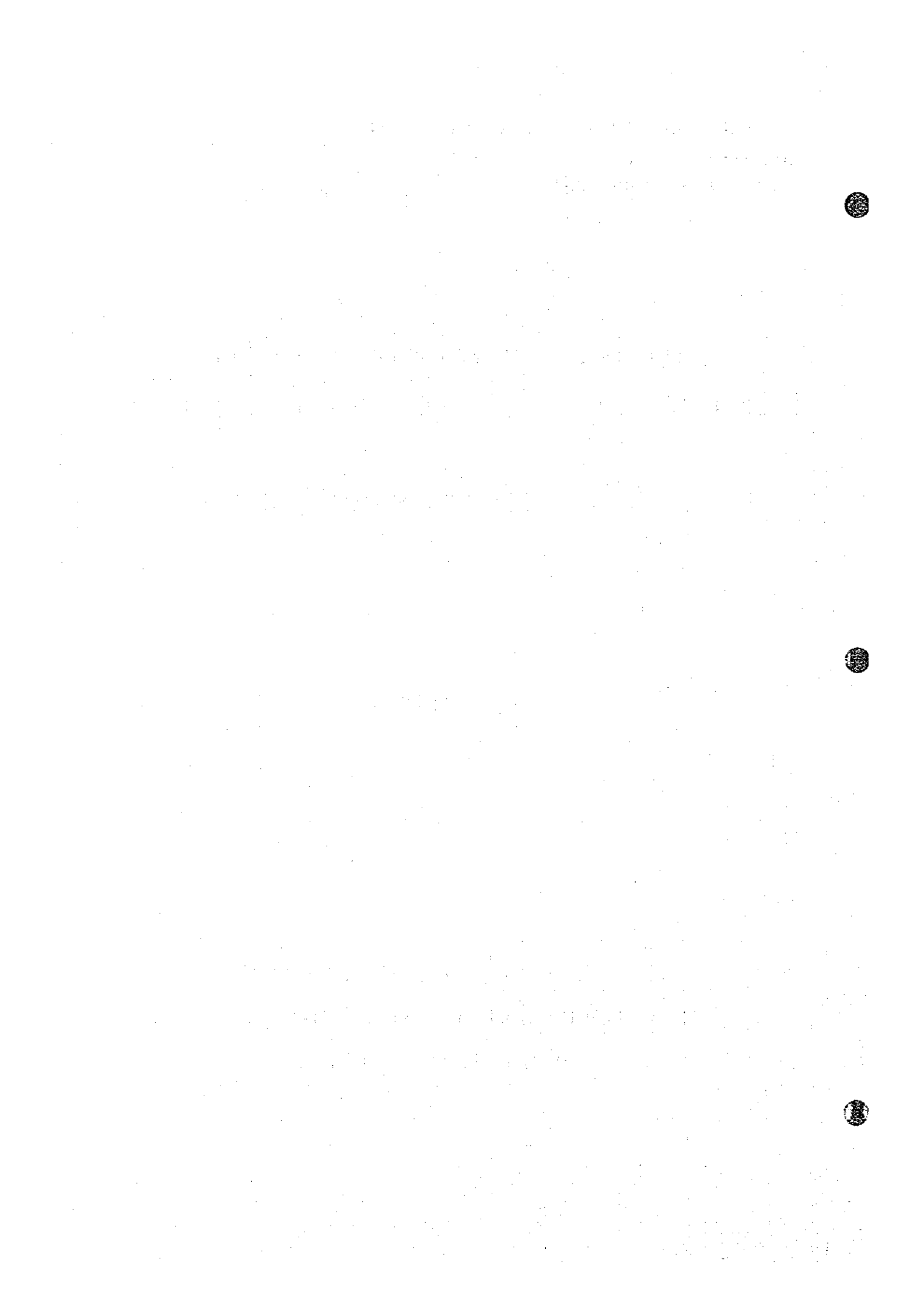
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PREFACE

In response to a request from the Government of Bulgaria, the Government of Japan decided to conduct the Study on Restructuring and Modernization of Steel Industry in the Republic of Bulgaria, and the study was implemented by the Japan International Cooperation Agency (JICA).

JICA sent a study team, headed by Mr. Takayuki Yurino of Kawasaki Steel Corporation and organized by Kawasaki Steel Corporation, Sumitomo Metal Industries, Ltd. and Kobe Steel Ltd., to Bulgaria six times from August 1994 to December 1995.

The team held discussions with the officials concerned of Bulgaria, and conducted field surveys. After returning to Japan, the team conducted further studies and compiled the final results in this report.

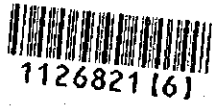
I hope that this report will contribute to the promotion of the steel industry and to the fostering of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of Bulgaria for their close cooperation throughout the study.

March 1996



Kimio Fujita
President
Japan International Cooperation Agency



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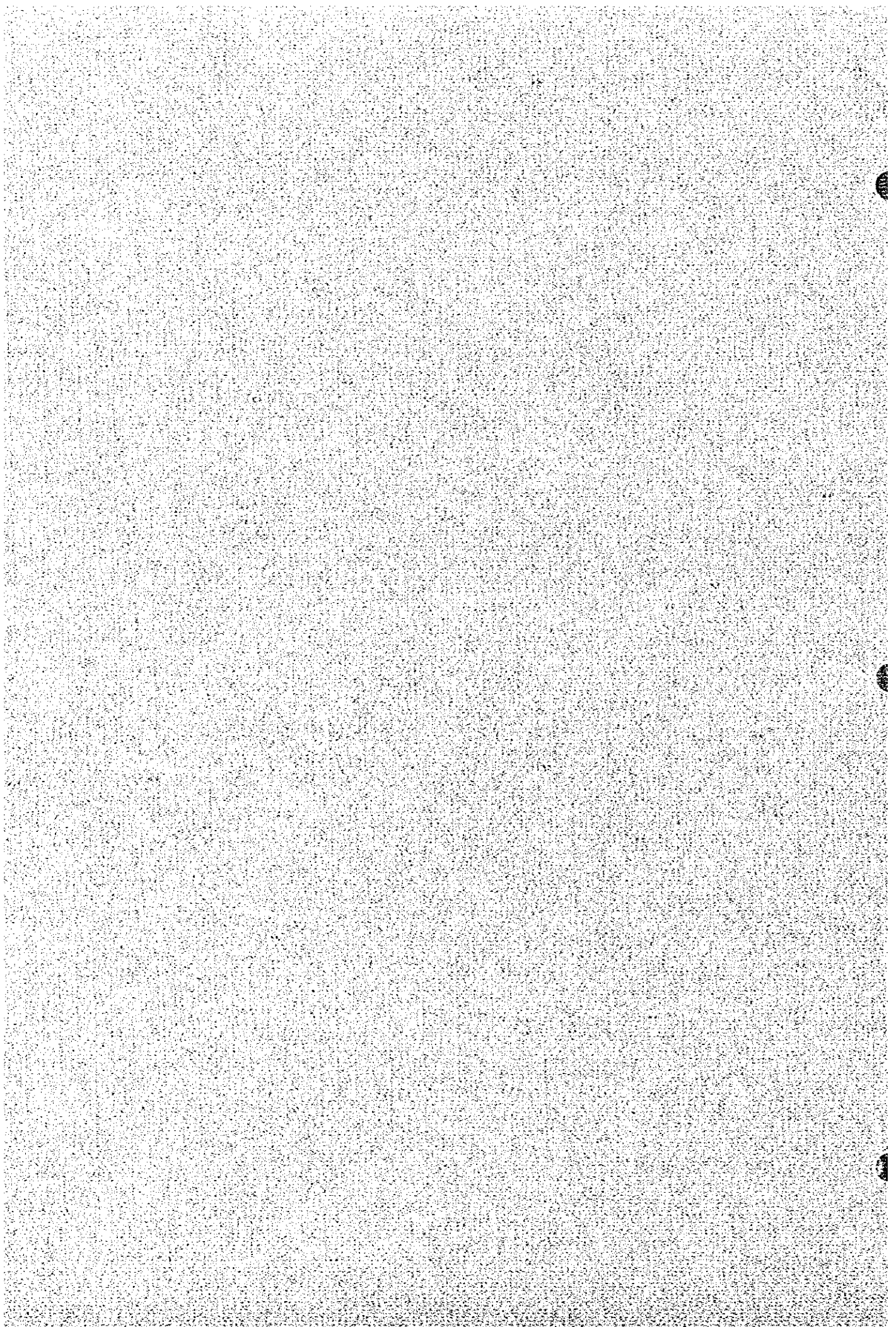
List of Abbreviations

AC	: Alternating Current
BAT	: Best Available Technology
B Gas or BF Gas	: Blast Furnace Gas
C.A.A	: Clean Air Act
CAL	: Continuous Annealing Line
CC or CCM	: Continuous Casting Machine
CGL	: Continuous Galvanizing Line
CIS	: Commonwealth of Independent States
COMECON	: Council for Mutual Economic Assistance
CMEA	: Council for Mutual Economic Assistance
COD	: Chemical Oxygen Demand
COG	: Coke Oven Gas
DRI	: Direct Reduction Iron
DSR	: Debt Service Ratio
EAF	: Electric Arc Furnace
EBT	: Eccentric Bottom Tapping
E.P.	: Electrostatic Precipitator
ETL	: Electrolytic Tinning Line
ERM	: Exchange Rate Mechanism
EU	: European Union
GDP	: Gross Domestic Product
IBRD	: International Bank for Reconstruction and Development
ISI	: International Iron and Steel Institute
IMF	: International Monetary Fund
ISO	: International Standard Organization
JICA	: Japan International Cooperation Agency
LF	: Ladle Furnace
LT	: Long ton
MOE	: Ministry of Environment
MOI	: Ministry of Industry
MT	: Metric ton
NC	: Numerical Control
ND	: Not Detectable
NDI	: Non-Destructive Inspection
NIES	: Newly Industrializing Economies
NMP	: Net Material Product
NO _x	: Nitrogen Oxide

NSI	: National Statistical Institute of Bulgaria
PC	: Personal Computer
PCI	: Pulverized Coal Injection System
QA	: Quality Assurance
SO _x	: Sulfur Oxide
TQC	: Total Quality Control
VAD	: Vacuum Argon Decarburization
VAT	: Value Added Tax
VOD	: Vacuum Oxygen Decarburization
VS	: Venturi Scrubber

Chapter 1 Preface

Chapter 1 Preface



1. Preface

This chapter describes the background of this "Study on Restructuring and Modernization of the Steel Industry in the Republic of Bulgaria" by the Japan International Cooperation Agency (hereinafter called "JICA"), the purpose of the study, the scope of the study and JICA's basic attitude toward the study.

1.1 Background of the Study

- 1) The Republic of Bulgaria had facilitated industrialization based on the sharing of industries among the former COMECON countries, with most of its necessary materials imported from the former USSR since World War II. As a result, new industries such as steel, non-ferrous metals, machinery, electricity and chemical industries developed, and the weight of manufacturing industry in the gross national product increased remarkably to about 47% in 1960 and about 55% in 1970. However, the Bulgarian economy began to slacken in 1980s. In the steel industry, annual crude steel production decreased to 2.9 million tons. Beginning in 1990, Bulgaria began to change from a planned economy to a market economy, but, nonetheless, steel production continued to fall to 1.62 million tons of crude steel and 1.31 million tons of steel products in 1991.
- 2) The steel industry, as one of basic industries in Bulgaria, has been damaged by cooling domestic demand and the loss of its international market after the collapse of the COMECON regime, as mentioned above, and this decline has begun to affect the Bulgarian economy seriously. The problem of environmental pollution attributable to the steel industry has also become serious and solutions for it must be implemented promptly.
- 3) The Japanese government, in response to a request from the government of the Republic of Bulgaria, dispatched JICA experts to Kremikovtzi Steelworks, the largest steelworks in Bulgaria, two times from 1991 to 1992 to conduct a study of environmental protection and energy saving. Based on the study, the JICA experts proposed that the objectives of the steel industry as a whole should be clarified before an improvement plan for individual steelworks is drawn up, even though the latter plan is also important.
- 4) Based on the proposal mentioned above 3), the Bulgarian government requested the Japanese government in March 1993 to conduct a study of restructuring and modernizing the Bulgarian steel industry.
- 5) In response to the request by the Bulgarian government, JICA dispatched a delegation of experts in September 1993 in order to confirm the scope of work. In this mission, the Ministry of Industry mentioned that the most important purpose of this study was that JICA should propose a "picture" of the steel industry as should be in the future.

- 6) In accordance with the above confirmation, a preliminary delegation from JICA was dispatched in January 1994, and an agreement as to the scope of work for the study of restructuring and modernizing the Bulgarian steel industry was signed.

1.2 Purpose of the Study

The purpose of the study is to draw up a future plan for restructuring the Bulgarian steel industry based on the current situation of the steel industry; and further to draw up a master plan which includes basic proposals for modernizing the following five (5) steelworks.

- (1) Kremikovtzi Steelworks
- (2) Stomana Steelworks
- (3) Leko ko Steelworks
- (4) Kamet Steelworks
- (5) Promet Steelworks

1.3 Scope and Contents of the Study

The study was implemented in two phases, Phase I and Phase II.

Phase I : Study of the Bulgarian economy and steel industry, and drawing-up of a future plan (for next 10 years) for the industry

Phase II : Investigation of the five steelworks based on the future plan and drawing-up of a master plan for modernizing the five (5) steelworks

The scope of work, which was specified in the agreement mentioned in section 1.1 6), was as follows;

Phase I

- 1) Background of the study
 - a) Economic situation of Bulgaria
 - b) Mid- and long-term policy for industrial development
 - c) Relevant laws and regulations
- 2) Present situation of the steel industry in Bulgaria
 - a) Present situation and policies of the steel industry
 - b) Present situation and trend of supply and demand of steel (quantity and product-mix)
 - c) Product transportation and distribution
- 3) Present situation of supply of raw materials and energy
 - a) Present situation of supply of raw materials
 - b) Future prospect of supply of raw materials
 - c) Present situation of supply of energy (electricity, coal, natural gas, etc.)
 - d) Future prospect of supply of energy (electricity, coal, natural gas, etc.)
- 4) Formulation of a master plan for restructuring and modernizing the steel industry
 - a) Future strategy

- (1) Future supply and demand of steel products
- (2) Production plan (product-mix and quantity)
- (3) Raw materials (iron ore, scrap, etc.)
- (4) Energy sources
- (5) Pollution control measures
- (6) Overall restructuring plan of the steel industry

Phase II

- 5) Study of present situation of the five steelworks
 - a) Outline of the five steelworks
 - (1) Production and sales records for the past five years
 - (2) Export and import records of steel products for the past five years
 - (3) Organization, administration and manpower
 - (4) Production capacity
 - (5) Utilities (including power, natural gas and industrial water)
 - (6) Supply route for raw materials
 - (7) Pollution control measures and facilities
 - (8) Market for products including sales networks
 - (9) Production cost
 - (10) Financial situation
 - b) Modernization of the five steelworks
 - a) Production plan including product-mix, quantity, material balance, quality, productivity, yield, raw materials used and energy used
 - b) Improvement plan and cost estimation for modernization
 - (1) Improvement plan including layout, flow sheet, energy balance and basic specifications for major plants and equipment
 - (2) Rough estimation of investment cost for plants and equipment
 - (3) Schedule for modernization
 - c) Organization, administration and manpower
- 7) Conclusions and recommendations

1.4 Period of the Study

The study was implemented over a period of 21 months from July 1994 to March 1996.

1.5 Members of the Study Team

Name	Area of Responsibility	Company Affiliation
Takayuki YURINO	Leader	KSC
Fumio TAKEKOSHI	Sub-leader, Administration	KSC
Masayuki IMAI	Steel Industry	KSC
Tatsuo HAGA	Marketing	KSC

Jun KUDOH	Production Control	SMI
Kouhei ASAMI	Raw Materials	KSC
Hiroshi SHIBATA	Energy	KSC
Tanjiro KAWAURA	Environment (Air)	SMI
Asahiro SAKATA	Environment (Waste Water)	SMI
Yasunori SERIZAWA	Ironmaking	KSC
Hideyuki TANAKA	Steelmaking	KSC
Kenji UEDA	Hot, Cold and Plate Rolling	KSC
Susumu AZUMA	Coating	KSC
Zenjiro WATASE	Sub-leader, Bars and shapes	KSC
Takumi YAMANO	Pipes	SMI
Haruki OHIZUMI	Castings and Forgings	COB

KSC : Kawasaki Steel Corporation

SMI : Sumitomo Metal Industries, Ltd.

1.6 Basic Policy for the Study

The study was implemented in accordance with the following basic policies.

- 1) To draw up a "picture" of the steel industry as should be in the future in a market economy in accordance with the mid- and long-term industrial development policies (Note) of the Bulgarian Government and based on which, to set up a production plan for the steel industry; the production plan was to be based on domestic consumption volume, taking into consideration the economic growth and changes in the industrial structure in the future, and on the export volume which will be necessary in order to finance the investment in modernization and possible given relationships with neighboring countries including Western Europe and the former Communist countries. A European consultant was to be hired and the consultant's information on the situations of the neighboring countries added to the study.

(Note) It was found in the study that, at the time of this writing, the Bulgarian Government has not had any mid- and long-term industrial development policies.

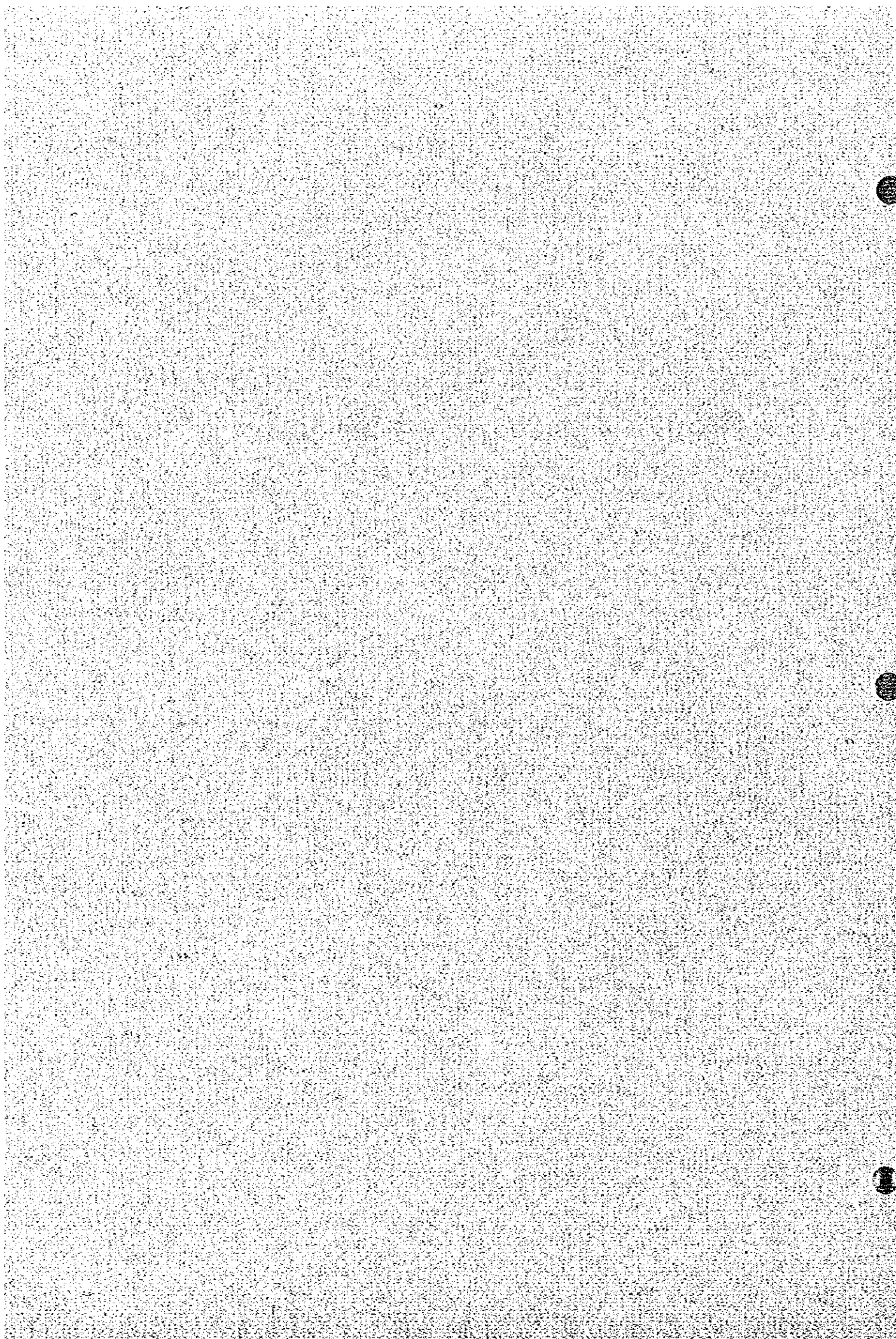
- 2) In drawing up a master plan, to keep close contact with the Ministry of Industry and to give sufficient attention to its opinions and intentions, because any restructuring plan may involve reduction of the number of employees at the steelworks, and many political, economic and social issues affect the neighboring countries through the export of steel products by the Bulgarian steelworks; in case discussions with the other Ministries are indispensable, the Ministry of Industry was always to be involved in arranging such meetings.
- 3) To draw up a master plan which would consist of plural scenarios and make it possible for the Bulgarian steel industry to survive in the future; the selection of scenarios and the execution of selected scenario was to be made by the government of Bulgaria. This study did not extend beyond the proposal of plural scenarios.

- 4) To discuss with and hold seminars for staff and employees of the Ministry of Industry and the steelworks as to the most appropriate form for the steel industry in a market economy; trainees were to be accepted in Japan when necessary. The experts of the study team intended to do their best to win a good reputation for technical reliability and general matters at the time of the site study. They also made their best efforts to transfer technology to their counterparts based on definite technical data. They avoided discussions on labor and political matters.
- 5) To propose a plan which would make it possible to achieve goals with a minimum investment, taking into consideration the utilization of the idle machines and equipment. (Note)

(Note) Machines and equipment which had been bought by the former Communist government and not installed at the steelworks.



Chapter 2 General View of the Bulgarian Economy



2. General View of the Bulgarian Economy

A review of the economic progress of the Republic of Bulgaria, problems such as inflation, the deficits in the national budgets and external debts, which deteriorated after the collapse of COMECON in 1989, and the current status of the transition to a market economy, including the progress of privatization, are presented in this chapter. The economic and industrial development policies of the Bulgarian government are studied, and based on the results, forecasts of the mid- and long-term economic development of Bulgaria, and the position of the steel industry are made.

Bulgaria achieved heavy industrialization between 1950 and 1970 with cooperation from the former Soviet Union. Thereafter, Bulgaria had marked 5 to 6% GDP growth on average every year until 1989, when the COMECON regime collapsed, and the economy began to stagnate. As the GDP growth rate turned to minus, the Bulgarian economy has been suffering from inflation, national budget deficits and a deteriorating balance of payments. The unemployment rate rose to 16%. The government has introduced various kinds of economic measures to facilitate the transition to a market economy since 1990.

Privatization, one of the most important transition measures, has progressed rather slowly, with only 160 companies having accomplished this process as of September 1994.

In the mid- and long term outlook for the Bulgarian economy, the problem of inflation will gradually be resolved by anti-inflation measures through the fiscal and monetary policies of the Government and by revitalization of industrial production and service activities through privatization.

The improvement of the national budget deficit will be difficult in the short term, but should improve in the long term due to increased tax revenues resulting from economic growth, privatization, a reduction of subsidies, and appropriate financial policies of the Government. The trade balance will improve in the near future as a result of a recovery of production in manufacturing companies. However, the improvement of the current balance will take much time due to the enormous interest payments on Bulgaria's huge external debt.

2.1 Trend of Bulgarian Economic Development

2.1.1 Evolution of economy

Bulgaria has already passed through the process of heavy industrialization, and the steel industry has been playing a role as one of the major industries in Bulgaria. The evolution of the Bulgarian economy and how the steel industry has developed in the industrial sector are described in this section.

1) Development plan and evolution of the national economy

a) High growth period (1950-mid 1970s)

Before World War II, the country had been well known for its agriculture and was called as the "garden of the Balkans". During the first five-year development plan of 1949, the development of heavy industry was accelerated.

Notwithstanding the scarcity of energy resources, the country attained high in-

vestment growth of 14% as an annual average from 1950 to 1970 by investing in electricity, steel, non-ferrous metals, and chemical industries, owing to the cooperation of the former USSR, which supplied raw materials and financial assistance. The growth rate of the national product (NMP) during this period is not available (Note).

Added to this, the country maintained a large market in the COMECON countries by concluding various trade agreements.

(Note) NMP; NMP (Net Material Products), a statistical indicator used in the former communist countries, is an economic concept which stands for national products. NMP is equal to GNP (Gross National Product), if depreciation and services such as medical, educational, banking and insurance, and governmental services are deducted from GNP.

b) Declining growth period (mid 1970s ~ mid 1980s)

During the 7th five-year plan from 1976 to 1980, the growth of net material products marked 6.1% as an average annual rate against the planned figure of 8.2%.

The causes are summarized as follows :

- ① Bad harvest due to climatic changes
- ② Oil shocks in 1973 and 1979 causing international economic recession
- ③ Decline in international competitiveness of the country's industry notwithstanding its considerable investment.
- ④ Strict control of imports with the aim of improving the balance of payments.

These factors resulted in the 8th five-year plan of 1981-85, setting a conservative target of 3.7% for average annual growth. The growth rate of total industrial production marked 4.3% against the targeted 5.1%, with high-technology industry, electricity, electronics, and the chemical industry growing at a higher rate than the average. (See Appendix 2-2)

c) Years preceding the collapse of the COMECON (1986-1989)

The 9th five-year plan from 1986 to 1990 fixed the target growth at 4.0 - 6.2%. In 1986 to 87, owing to favorable agricultural conditions, a growth of about 5% was attained. However, since then, the poor condition of agriculture had resulted in a contraction in the country's economy, the real growth of GDP declining to minus 3.3% in 1989. The collapse of the COMECON regime occurred at the end of 1989, and the United Nations restricted trade with Iraq, Libya, and Yugoslavia, with whom Bulgaria had maintained active export markets. The country nevertheless was compelled to adjust to a market economy while con-

fronting these very negative external conditions. (See Appendix 2-2)

d) After the collapse of the COMECON regime (1990 ~)

The GDP growth rate, which turned to minus in 1989, continued to record consecutive minus figures up to 1993; minus 9.1% in 1990, minus 11.7% in 1991, minus 5.7% in 1992 and minus 4.0% in 1993. The growth rate of the industrial and mining sector also showed consecutive annual minus figures beginning at minus 12.5% in 1990; followed by minus 18.6% in 1991, minus 7.0% in 1992, and minus 4.5% in 1993. (See Appendix 2-2)

The Bulgarian economy fell into a deep recession as a result of the collapse of the COMECON regime, as mentioned above, and since then has been struggling with inflation, increasing national deficits and an unfavorable balance of payments. The unemployment rate deteriorated from 11.5% in 1992 to 16% in 1993. (See Appendix 2-16) The investment growth rate has shown consecutive minus growth rates since 1990. (See Appendix 2-3)

2) Development of industrial structure

a) Evolution of industrial structure

The heavy industrialization adopted from 1949 onward brought about remarkable changes in the industrial structure of the Bulgarian economy.

The share of the industrial and mining sector in the national product (NMP) rose dramatically to 60% in 1985 from 34% in 1950. On the other hand, the agriculture and forestry sector lost share in the NMP from 31% in 1950 to 13% in 1985. Toward the end of the 1980s, the industrial and mining sector began to lose momentum gradually and the service sector grew rapidly, replacing the industrial and mining as the leading economic sector. (See Appendix 2-1)

Table 2-1 Evolution of Economic Sectors

	(% of NMP(GDP))					
	1950	1985	1989	1990	1991	1992
Industry and mining	33.8	59.9	51.5	44.3	43.4	39.3
Agriculture and forestry	31.3	13.3	10.9	17.8	15.3	9.6
Others industries	31.5	24.4	24.0	22.6	20.3	17.7
Services	3.4	2.4	13.6	15.3	21.0	33.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Remark : From 1989, NMP was replaced by GDP.

Sources : Statistical Yearbook of Member Countries of CMEA and National Statistical Institute of Bulgaria

At the initial stage of industrial investment, the heavy industry was given a priority. Industrialization was supported by the former USSR as a supplier of cheap raw materials and energy, and by the COMECON markets.

Firstly, the growth of the electric power (industrial infrastructure), steel, and non-ferrous metals and chemical industries played a major role in the country's development. Successively, electrical and mechanical industries were developed.

b) Current situation of the industrial structure

In terms of the share of economic sectors relative to GDP, the service sector has been increasing and the industrial and mining sector has been losing share since the transition to a market economy at the end of 1989. The trend of the number of employees in each industrial sector shows that the share of employees in the industrial and mining sector has been decreasing since 1990. (See Appendix 2-15) The current situation in each industrial sector is as follows.

(1) Agriculture

Agriculture has declined in production and productivity since the end of 1989, due to the change of regime and markets. There has been a problem of land ownership in the transition period to privatization due to the lack of certificates of former ownership. The confusion or delay in privatization procedures has been a disincentive for agricultural labor.

(2) Services

In the service sector, the economic infrastructure, including transport, telecommunications, and electricity, is not sufficient, and the social infrastructure, e.g., water supply, sewerage, housing, and health care facilities, also requires rehabilitation or reconstruction. Other service sector categories such as tourism, which has high potential for development, remain insufficiently active.

However, public services such as electricity, gas and water supply, etc., the banking industry and governmental services have been rapidly increasing in weight in the GDP, as the industrial and mining and agricultural sectors have stagnated. Retailing has been also activated through the process of privatization as described later.

(3) Industry

Although this sector decreased its share from 50% in the 1980s, it still occupied 35.3% of the GDP in 1992. This fact shows the importance of industrial sector, even though the country originally had a great advantage in the agricultural sector. Under the foregoing circumstances such as the change in the economic system and loss of export markets, the industrial area remained stagnant.

3) Evolution of the steel industry

The steel industry of Bulgaria developed with the cooperation of the former USSR and the formation of COMECON markets from 1950s.

The position of the steel industry in the industrial sector is summarized in Table 2-2; the industry occupied about 6% in 1985, increased to about 14% in 1991 and fell to 9% in 1992. As the industrial and mining sector has been forced to reduce its production level since the collapse of the COMECON regime, the position of the steel industry has been relatively enhanced within the industrial and mining sector.

Table 2-2 Evolution of Industry and Steel Share in NMP (or GDP)

	1960	1985	1990	1991	1992
% of industry in GDP	47.3	59.9	44.3	43.4	39.3
% of steel in industry	3.7	6.3	6.8	13.6	9.2

(Note) From 1989, NMP was replaced by GDP.

Sources: Statistical Yearbook of Member Countries of CMEA, National Statistical Institute (NSI) yearly book

As mentioned in Section 2.1.1 2) a), the GDP share occupied by the industrial and mining sector has been decreasing. However, the investment share of this sector has maintained almost the same level of about 50%. The industrial and mining sector has been enjoying a very high position in the Bulgarian economy. (See Appendix 2-4)

Five steelworks have been established as follows.

Kamet Steelworks in 1933

Stomana Steelworks in 1953

Kremikovtzi Steelworks in 1961

Leko ko Steelworks in 1984

Promet Steelworks in 1987

2.1.2 Current situation of the Bulgarian economy

When we look at price indexes, the national budget deficit and balance of payments of Bulgaria, the Bulgarian economy has been in very serious condition.

1) Inflation

Bulgaria has suffered from very high inflation during the last four years, as shown in Table 2-3.

Table 2-3 Annual Consumer Price Index

(%)

Year	1990	1991	1992	1993
Index	100.0	483.5	786.6	1,227.5

Source: Statistical Yearbook, NSI

This problem has mainly arisen not from cost inflation in the domestic market, but from external causes. In the transition period, the deficit in the current account and the accumulated debt caused the exchange rate to considerably worsen. This has resulted in high prices for imported goods, especially consumer items. The government has been forced to increase the money supply, which has further affected demand inflation.

The IMF has proposed in its conditionality that the first priority is to overcome inflation. The Government has adopted several monetary policies to achieve this and meet the target. The economy is in a transition period, and the problem will be alleviated when productive activities reach a normal level and recover a balance between supply and demand after the government's financial and monetary measures have brought about a stable economy.

2) Deficit in the national budget

The Government has suffered a budget deficit (See Appendix 2-5~2-8 National Budget), which has been compensated by borrowing from the Central Bank and issuing national bonds. One of the IMF conditions is that the Government should improve its budget situation particularly by reducing subsidies to enterprises with poor production records. The Government has tried to take such measures as reducing national expenditures to the greatest possible extent and introducing the VAT system in response to the IMF conditions.

Regarding development investment, there are no specific restrictions on the Government. However, the lack of any authorized medium- to long-term development plan means that there is a debate on choosing the priority industries or projects every year. The infrastructure sector such as transportation and energy has benefited from the foreign loans extended by international organizations for the necessary projects.

3) Accumulated external debts

Since the start of the new market economy at the end of 1989, Bulgaria's international balance of payments has worsened (See Appendix 9).

The current account had a marked deficit in 1993, although the overall account was more secure since debt repayment had been postponed by the Paris Club. The trade

balance itself marked a deficit in 1993, which again caused a decline in the exchange rate of the leva (Bulgarian currency) against the US dollar.

Due to a considerable accumulation of external debt, the debt service amount and ratio (DSR) has reached a high level, as shown below, even after obtaining a consensus on re-scheduling by the Paris Club and London Club.

Table 2-4 Evolution of External Debt (Unit: million \$)

	1986	1989	1990	1991	1992	1993
Public debt	399	1,504	1,662	2,013	2,248	2,364
Private debt	5,467	8,620	*9,206	*9,957	*9,826	10,018
Outstanding total	5,866	10,124	10,868	11,970	12,074	12,382
Debt / Export & Service	58.9	105.3	153.7	285.5	203.2	NA
DSR (%)	15.6	26.8	13.4	27.9	26.9	29.1

*Figures rescheduled

Source: IBRD World Debt Tables, Bulgarian Government

When the above-mentioned situation is analyzed, the following causes can be pointed out :

- ① Decrease in productive activity due to deterioration of Bulgaria's industrial plant and loss of external markets.
- ② Decrease in revenue earned through trade due to lowered competitiveness in the world market.
- ③ Considerable debt accumulation due to devalued exchange rate of leva and shortage of foreign currency on the capital market.

The loss of external markets has principally been due to the loss of \$180 million with Syria, as well as a suspension of trade with Iraq with a loss of \$400 ~ 500 million / year. Secondly, the civil war in the former Yugoslavia has caused a suspension of trade with a loss of \$300 ~ 400 million / year. Fundamentally, the country's trade structure had been based on mutual barter trade, mainly with the former USSR and COMECON countries. After the collapse of these trade structures, it was inevitable during the transition period that the country would face trade barriers. In order to understand precisely the external trade structure of the country, several related statistics are provided in Appendix 2-10 ~ 14. The expected new market, Western Europe, has not completely opened its market to Bulgarian exports.

The current account has declined due to the exodus of payments for services, and the overall account, even after compensation by borrowing external funds, has shown a marked deficit. The debt service ratio (DSR) was at a level below 20% during the period of 1986-90, but increased to 20-30% after 1990, which is considered dangerous.

The most serious external economic problem for the country is the collapse of the value/ the leva, as shown in Table 2-5, lost approximately 90% of its value between 1990 and 1992. This devaluation is still continuing, although the pace has become slower after 1993.

Table 2-5 Evolution of Exchange Rate

(Unit : Leva)

	90/3	90/12	91/3	91/12	92/3	92/12	93	94
Leva / \$ Monthly	2.00	2.82	15.90	21.99	23.60	24.62	28	55
Annual	2.19		17.79		23.3		28	55

Source : Government of Bulgaria, Monthly Economic Monitor

Since the adoption of a floating exchange rate in line with the recommendations by IBRD and IMF, the leva has fallen sharply in the international market. However, the devaluation of the leva is expected to slow in the future.

2.1.3 Current situation of the transition to a market economy

After the collapse of the COMECON regime in 1989, the country began to move to a market economy, and several measures have been adopted.

1) Evolution of market economy

a) Toward the end of 1989 to 1990

(1) In 1990, the Parliament adopted the one-year anti-crisis program with the following measures:

- Priority to production of consumer goods
- 75% of investment in the industrial sector for technical renovation
- Encouragement of exports to countries other than the former COMECON countries

(2) In September 1990, the country joined IMF and IBRD.

b) From 1991 to 1992

(1) In January 1991, the government (Popov Cabinet) submitted to IMF the following revolutionary economic policies:

- (a) Reduce domestic expenditures by 30%
- (b) Liberalize interest rates

- (c) Liberalize market prices
 - (d) Control labor cost increases
 - (e) Legalize new commercial regulations
 - (f) Protect foreign investment
 - (g) Continue democratic policies
- (2) Item (e) was put into effect in February 1991.
The change to a floating exchange rate also took place in February 1991.
 - (3) The Commercial Law and Foreign Investment Law were passed by Parliament in May 1991.
 - (4) The new Foreign Investment Law was passed in January 1992.
 - (5) Amendments to the Agricultural Law were made in March 1992.
 - (6) Privatization Law was passed in April 1992.

c) In 1993

A privatization program was adopted in 1993 with the following features :

- Control of the budget deficit within 8% of GDP
- Control of inflation and liberalization of energy prices
- To compensate for the budget deficit, the issue of national loan bonds was preferred to borrowing from the central bank
- The following industries were given priority.

Agriculture
Tourism
Light industry
Machinery & engineering
Chemicals

- The rate of return of agricultural land to private owners would be accelerated to 50% by the end of 1993.
- Procedures for privatization would be increased (Note).
- Increase of credit to agricultural industry
- Each industry would harmonize with those of Western Europe and participate in European economic cooperation organizations such as EU.

(Note) The New Privatization Law was passed in May 1994, the essential points being presented in Section 2.1.3 2) d).

d) After 1994

In the country at present, the following four categories of privatization have been established.

- ① Registration of newly created private firms
- ② Privatization of property, particularly of agricultural land ownership, by transferring from public to private individuals or former owners

- ③ Privatization of previously state-and municipality-owned enterprises through available domestic and foreign capital investment
- ④ Mass privatization through investment funds.

2) Current situation of privatization

a) Growth of private firms

Privatization has been advanced in the field of retailing and service which would not require, in general, a large investment or capital. The new freedom of the people has encouraged independent businesses in retailing, commerce, distribution, etc.

b) Privatization of land ownership

This category of privatization has encountered such barriers as the lack of title deeds pre-dating the old regime, and confusion has arisen during the procedure. Legalization of privatization will contribute to smooth executions in this field.

c) Privatization by domestic and foreign private capital

Cooperation with the Foreign Investment Commission has enabled the Privatization Agency, which has the major responsibility for promoting the privatization of public enterprises, to implement program. As recorded, in the first year of the new law (1992), 61 enterprises, and 84 in the second year, for a total of 145 enterprises, were privatized at a relatively slow pace, and by September 1994, 160 enterprises had been privatized. During the first two years or so, the Government has set priority on the specific sectors of tourism, commerce, and light industry, and in the initial stage, basic industries like steelmaking were not targeted for privatization. However, at the beginning of October 1994, the Agency began to study the privatization of these basic industries.

As explained by a spokesman for the Agency, there has arisen the comment for certain that privatization should definitely be limited to say, 20 or 30% of shares of each enterprise, and the subject began to become a political issue. This fact shows the difficulties of introducing private capital into public enterprises and of making decisions for each case.

d) Mass privatization by investment funds

Mass privatization has been studied by the Center for Mass Privatization.

The fundamental concepts are as follows :

- ① Firstly, "vouchers" will be available from the Center for Mass Privatization. Individual purchasers need not buy a voucher at face value, but instead pay only 500 (five hundred) leva as a procedural fee to obtain property worth 25,000 (twenty five thousand) leva. (This concept is to return to the population the property originally belonging to individuals that was later state-owned under different regimes.)

- ② Secondly, the Center will hold an auction in order to identify the book-value of each enterprise. The results of the auction and the registration will be handled by a computer system which is now in the final planning stages.
- ③ Thirdly, the vouchers will be transferred to Investment Funds. A private individual, having no knowledge about the management of each individual enterprise, could transfer a holding to these funds. The latter will be established with a private bank as the core, collecting private capital from any available source, and the Investment Funds will be charged with the responsibility of owner or of supervising the activities of the enterprise. In November 1995, some steel companies were studied for inclusion in these mass privatization procedures, within a limit of 10 to 15% of their capital.

2.2 Economic Development of the Country in the Medium and Long-term

2.2.1 Recovery from inflation

There appeared once in 1993 an apparent slow-down in inflation. However, in 1994, due to the fall of the leva against the dollar, the increase in public service charges and the introduction of a VAT tax system, the inflation rate had again increased to the previous level by the middle of the year and marked 11% in September 1994.

However, foreign investments in direct form or in credit form will be enhanced and the infrastructure will be improved to a large extent by multilateral and bilateral cooperation. The Government implemented the transfer of the outstanding debt of steel companies amounting to US\$ 200 million as of 1990 to the public account. This measure has no characteristics other than to show the responsibility of the state for debts up to 1990, and aims to revitalize enterprises by alleviating their debt burden to help privatization in the near future. As a result of these actions, industrial production and service activities will be gradually enhanced.

It seems that private capital will appear in the Bulgarian economy through privatization process, even though it might be slow in pace. The Government is willing to introduce financial and monetary countermeasures to control current problems, especially inflation. The revitalization of industrial production will alleviate the current inflation and the balance of consumer commodities could be recovered. As a result, it can be expected that the problem of inflation will be gradually wiped out.

2.2.2 Improvement of national budget deficit

Notwithstanding the sincere efforts made by the Government, such as the introduction of the VAT, which has been more effective than expected, and the control of expenditure to the minimum level (Note 1), the Government will not be able in the short term to recover from the deficit in the national budget. From the beginning of the transition period, the Government has been compelled to rely on domestic debt, which has accumulated both the outstanding and interest amounts. Inflation has also caused an increase in national expenditures, while the external debt has aggravated the budget deficit.

However, it seems that the Bulgarian economy has already passed its worst period during 1993 to 1994. The GDP growth rate has been recovering from minus 5.7% in 1992 to minus 4.0% in 1993 and to around plus 0.5% in 1994. (Note 2) By increased tax revenue resulting from the economic recovery and increasing the VAT etc., the Government could gradually decrease the deficit and maintain stability in the national budget.

(Note 1&2) Explanation by the Ministry of Finance

2.2.3 Improvement of the balance of payments and external debt

Improvement of the current account deficit cannot be eliminated in the short term, mainly due to the large amount of interest payments. The growth of industrial production and the recovery of agriculture both enable the country's exports to be considerably increased in the short term by efforts to enlarge new markets. The export of steel products has increased at least temporarily. The agricultural production has passed the transition period when the landowners were absent and has been expected to recover. The industrial products will also recover the balance of domestic and export supply and demand with economic recovery. This recovery is expected in the near future, and should improve the international trade balance rather sooner.

The debt accumulation and its repayment, even after obtaining the consensus for re-scheduling from the London Club, will burden the country with more than 30% of DSR in the short term, especially in 1995 and 1996. According to the recommendations of the IMF, the country needs to maintain foreign reserves of about one billion dollars, but this would cause some hardship, judging from the current situations. Under such circumstances, the value of the leva against the dollar will fall continuously. In order to maintain a stable exchange rate, which inevitably affects inflation, the country needs to increase its exports strenuously.

2.2.4 Development investment program

There is no mid- and long-term development program authorized by the Government at present. Nevertheless, several development projects or programs which require foreign financial cooperation are underway. The Government at first contacted the international organizations and has followed their advice. IBRD will extend a Financial and Enterprise Structural Adjustment Loan and commit finance for several projects. EBRD will also finance projects mainly in the financial sector or private sector. At the request of the international organizations concerned, the Ministry of Finance, with cooperation from other relevant ministries and committees, has formulated the development investment program, a summary of which is given in Table 2-6. The program incorporates a description of 79 candidate working projects. It is apparent that the allocation is concentrated on the sectors of transport and energy. The relevant international organizations have already been contacted.

This development investment program, which was submitted to the international institutions, is a provisional one and has not been approved by the Government, and the industrial sector is not included in this program. This might be interpreted that the Government, as well as IMF's recommendations, indicates that the industrial sector should find the financial resources from private capital. However, it seems that this sector also needs financial cooperation from outside to strengthen environmental protection and productivity and, in such case, a new program will be formulated and authorized by all the parties concerned.

In May, 1995, the new Government published three-year economic development program from 1995 to 1998. In this program the Government put emphasis on the recovery of industrial production, and raised the steel and non-ferrous industries as well as the high-technical industry as the most important strategic industries in Bulgaria.

Table 2-6 Development Investment Program

(unit: million of Leva)

Agency	Cost	%	Disbursed	Budget of Gov.	External Borrowing *	
					Sovereign Bor. (Note 1)	Others (Note 2)
1 Sofia Municipality	6,350	3.06	1,919	2,224	2,206	
2 Ministry of Environment	2,129	1.09	74	401	1,397	own finance 128 other finance 129
3 Hospital of the Institute Saint Ekaterina	5	0.10	13	49	112	
4 Ministry of Health	2,658	1.40	323	839	1,496	
5 Bulgarian National TV	4,763	2.67	42	616	4,105	
6 Bulgarian Posts & Telecommunication	5,820	3.26	13		company's (3,982)	own finance 1,825
7 Ministry of Transport	84,682	45.42	12,918	1,300	42,673	
8 Committee of Geology Resources	54	0.03			company's (54)	
9 Committee of Energy	66,249	36.10	10,782	-	52,105	own finance 3,450
10 Ministry of Culture	453	2.54	17	132	304	
11 Ministry of Regional Dev. & Construction	2,805	1.57	820	380	1,604	
12 Ministry of Agriculture	4,837	2.71	735	-	3,598	other finance 503
13 Ministry of Education	85	0.05	5	-	80	
Total	176,301	100 %	27,423	5,943	109,684	

*: Borrowing

(Note 1) Expected financial resources.

In external borrowing, there are types of sovereign or company credit by Government guarantee.

(Note 2) Others include own finance and other finance.

Source: Bulgarian Government

**Chapter 3 Present State of the Steel
Industry**

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3. Present State of the Steel Industry

This chapter describes the current situation of the Bulgarian steel industry. The progress of crude steel production in the past, the trend of production of various types of steel products, and the supply and demand of steel products after democratization began in 1989 are described. Reference is also made to import and export results and the apparent steel consumption trend, and to governmental policies toward the steel industry.

3.1 Present State of the Steel Industry and Policies Related to the Steel Industry

3.1.1 Outline

There are five (5) major steelworks named Kremikovtzi, Stomana, Promet, Kamet and Leko ko in Bulgaria. All of them are owned by the Government and under the control of the Ministry of Industry. The total number of employees at these five steelworks was about 26,000 in 1994, steelmaking thus being one of the most important industries in Bulgaria.

3.1.2 Present policies of the Government

The Ministry of Industry does not have an effective policy toward the steel industry. This situation is the same in other manufacturing industries. All managerial matters are left to the executive director and board of directors.

However, in the national development program announced by the new government of the Bulgarian Socialist Party in May 1995, the steel industry was mentioned as one of the most important industries for facilitating investment and production. It is possible that some policies will be introduced for the steel industry. (See Section 2.2.4)

In 1994, the Ministry of Industry ordered each manufacturing company, including steelmaker, to make out its own business plan which extends to 1997. The Ministry has used the results of those plans as basic information to carry out interest-reduction treatment and so on.

3.1.3 Restructuring plans studied in the past

As restructuring plans since 1989, there are the reports by Sofres, a French consultant, and a Bulgarian local consultant which refers to the PHARE plan (Poland-Hungary Aid for Reconstruction of Economy (Note)). However, both of them have not been carried out yet.

(Note) The PHARE plan was not disclosed to the team by the Bulgarian Government.

3.1.4 Constitution of the steelworks

The five steelworks in Bulgaria are all government owned. Kremikovtzi, Stomana and Kamet are formally stock companies. Their shares are not being sold openly and all of them are held by the Government. The Ministry of Industry appoints a board of directors,

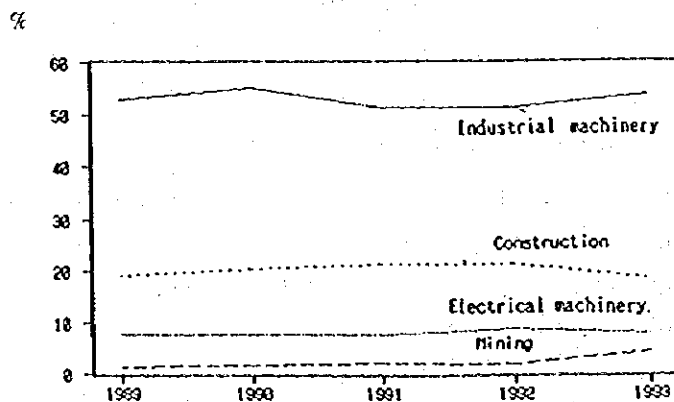
and this board selects an executive director.

Promet and Leko ko are not stock companies, instead being limited companies. The Ministry of Industry directly appoints an executive director.

3.1.5 Characteristics of steel demand

As Figure 3-1 shows, the main steel-consuming domestic sectors are industrial machinery, construction and electrical machinery. Until 1989, the industrial sectors, including industrial machinery and electrical machinery sectors, have maintained a high level production supported by the export to the former COMECON countries. Since 1989, they have lost the markets in the former COMECON countries, and the domestic demand has also drastically decreased. (See Figure 3-2) As a result, production has rapidly declined. The construction sector, since 1989, has also dramatically reduced the investment because of the economic instability and the huge financial deficit. Therefore, the steel demand in each sector has been decreasing rapidly since 1989.

Figure 3-1 Steel Consumption by Demand Categories



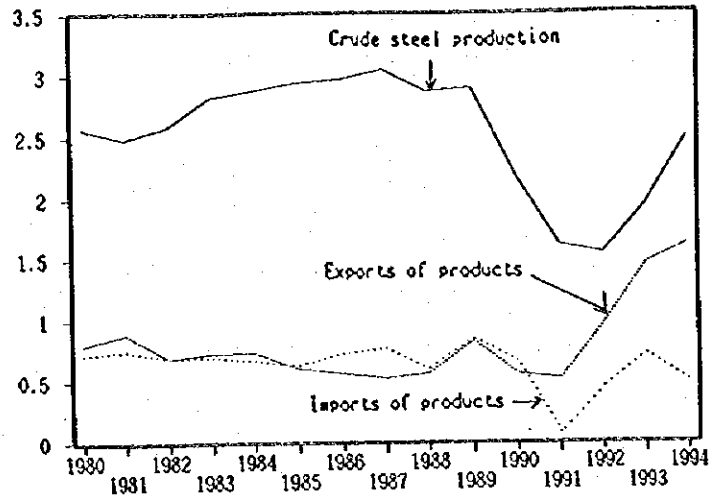
Sources : National Statistical Institute & Ministry of Industry of Bulgaria

3.2 Present State and Trend of Supply and Demand in Relation to Steel Production and Product Types

3.2.1 Supply and demand of steel products in the 1980s

The 1980s, actually up to 1989, saw domestic steel demand and production at a high level, being supported by the relatively stable economic situation. From 1983 to 1989, crude steel production had been over 2,800 thousand tons, peaking at 3,040 thousand tons in 1987 (See Figure 3-2).

Figure 3-2 Crude Steel Production



Sources : National Statistical Institute & Ministry of Industry of Bulgaria

3.2.2 Supply and demand of steel products from 1989 to 1992

However, after 1989, when the planned economy was replaced by a market economy, the Bulgarian economic situation became unstable and many domestic steel-consuming industries started to suffer from decreasing demand. In particular, the exporting industries like industrial machinery and electrical machinery lost the large former COMECON market and capacity utilization decreased dramatically. At the same time, the huge financial deficit has prevented the Government from maintaining sufficient investment in infrastructure. Therefore, the apparent domestic consumption (Note) of finished steel declined from 3,030 thousand tons in 1989 to 800 thousand tons in 1992. Exports of steel increased a little up to 1992, but crude steel production decreased to 1,550 thousand tons, and finished steel production went down to 1,320 thousand tons in 1992.

(Note) Apparent consumption = Production - Exports + Imports

3.2.3 Supply and demand for steel products in 1993 and 1994

The apparent consumption of finished steel recovered slightly to 860 thousand tons in 1993 and 940 thousand tons in 1994, but remained at very low level. Among the steel-consuming sectors, the proportion for industrial machinery was 50%, construction was 25%, and electrical machinery was 8% in 1993. Of the steel products consumed, the proportion of long products was 56%, flat products was 32%, and tubes was 12%. Big industries which use a large proportion of flat products, such as the automobile industry are not developed in Bulgaria, so the proportion of flat products remains low.

On the other hand, exports of finished steel have increased since 1992, and amounted to 1,610 thousand tons in 1994. The main reasons for the increase in exports are their promotion in sales to maintain capacity utilization and the increased price competitive-

ness from the devalued leva. Exports of long products and hot-rolled flat products are increasing, the main destinations now being the Middle East and South East Asia. Imports of steel products also increased a little to 500 thousand tons in 1994, and the resulting net exports of finished steel, equal to exports minus imports, increased to 1,110 thousand tons in 1994.

Finished steel production recovered to 1,600 thousand tons in 1993 and 2,050 thousand tons in 1994, and crude steel production also recovered to 1,940 thousand tons in 1993 and 2,490 thousand tons in 1994, mainly because of the increase in net exports.

Table 3-1 shows the balance of supply and demand for each steel product from 1989 to 1993.

Table 3-1 Balance of Supply and Demand of Steel Products

		(1000MT)				
		1989	1990	1991	1992	1993
Long & flat steel products	P	3009	2156	1309	1315	1602
	E	888	459	477	888	1387
	M	734	805	67	383	588
	AC	3054	2301	899	809	813
	AAC	2174	1642	600	560	629
Long products	P	1211	786	475	527	844
	E	192	118	111	383	817
	M	550	464	42	304	493
	AC	1589	1142	408	447	490
	AAC	1268	901	284	352	418
Joists & seals	P	94	93	116	248	354
	E	120	62	63	183	312
	M	0	2	0	49	106
	AC		33	53	115	128
Railway-track material	P	0	0	0	0	0
	E	0	0	0	11	0
	M	38	78	3	13	3
	AC	38	78	3	2	3
Sections	P	37	13	6	4	6
	E	3	3	0	47	92
	M	72	54	10	87	103
	AC	106	64	16	44	17
Bars	P	453	289	159	127	224
	E	43	40	17	90	200
	M	256	196	15	48	102
	AC	868	445	157	86	127
	AAC	595	393	133	64	104
Wire rods	P	397	200	119	86	195
	E	22	14	19	42	165
	M	27	6	5	95	119
	AC	402	192	105	138	149
	AAC	219	42	25	90	104
Special steel	P	231	202	75	62	55
	E	5	0	14	10	18
	M	157	129	9	12	30
	AC	383	331	71	64	87
	AAC	336	291	54	39	62
Flat products	P	1797	1380	834	788	758
	E	496	341	305	505	570
	M	184	141	25	79	135
	AC	1486	1160	494	362	322
	AAC	907	741	316	208	211
Hot rolled sheets & strip (More than 3mm in thickness)	P	1198	928	568	560	620
	E	422	305	331	402	543
	M	97	83	12	30	47
	AC	873	692	270	188	124
	AAC	571	485	193	129	80
Hot rolled sheets & strip (3mm and less in thickness)	P	31	29	14	18	35
	E	0	0	0	0	0
	M	2	5	0	0	0
	AC	33	34	14	18	35
Cold rolled sheets & strip	P	567	401	231	210	104
	E	74	36	34	101	25
	M	5	5	1	18	60
	AC	498	389	199	127	139
AAC	221	157	97	32	91	
Electrical sheets & strip	P	0	0	0	0	0
	E	0	0	1	0	0
	M	63	53	9	15	12
	AC	63	53	8	15	12
Stainless steel	P	0	0	0	0	0
	E	0	0	0	1	1
	M	12	7	3	4	8
	AC	12	7	3	3	7
Steel for tool	P	2	2	0	0	0
	E	0	0	0	1	2
	M	5	4	1	12	8
	AC	8	6	1	11	6

		(1000KT)				
		1989	1990	1991	1992	1993
Iron products	P	880	660	299	249	184
	E	138	96	41	74	74
	K	112	56	11	83	119
	AC	855	620	270	238	228
Flat	P	76	48	31	36	12
	E	4	5	1	14	7
	K	6	1	1	14	39
	AC	79	44	31	36	44
Galvanized sheets & strip	P	146	123	50	43	27
	E	33	27	4	10	12
	K	0	0	0	0	0
	AC	113	95	47	33	15
Cold tapes	P	55	42	20	16	8
	E	8	6	7	9	3
	K	9	4	2	0	2
	AC	57	40	15	7	7
Sections	P	86	55	17	6	3
	E	11	7	0	1	1
	K	10	0	0	0	3
	AC	84	48	17	5	5
Bars	P	47	39	17	25	5
	E	0	0	0	0	0
	K	0	0	0	0	0
	AC	47	39	17	25	5
Seamless tubes	P	71	52	24	22	23
	E	7	9	5	19	19
	K	45	19	7	32	46
	AC	109	61	26	35	50
Welded tubes	P	216	152	59	54	61
	E		11	4	6	18
	K		6	0	3	9
	AC	216	148	55	51	51
Dravo wires & bars	P	183	150	80	48	45
	E	75	30	20	10	14
	K	42	28	1	14	21
	AC	150	146	61	46	52
Steel products total	P	3009	2156	1309	1315	1002
	E	828	555	517	962	1461
	K	847	681	78	446	717
	AC	3029	2281	870	799	858
Long	AAC	1549	1134	379	429	480
Flat	AAC	1155	921	409	284	278
Tube	AC	325	207	82	86	101
Total	AC	3029	2281	870	799	858
Long	AAC	51.1%	50.1%	43.8%	53.7%	58.9%
Flat	AAC	38.1%	40.7%	47.0%	35.5%	32.4%
Tube	AC	10.7%	9.2%	9.4%	10.8%	11.7%
Total	AC	100.0%	100.0%	100.0%	100.0%	100.0%
Export/Production		27.5%	25.8%	39.5%	73.2%	91.2%
Ret exports		-20	-106	439	516	744

P:Production, E:Exports, I:Imports, AC:Apparent consumption, AAC:Actual apparent consumption

Sources: National Statistical Institute & Ministry of Industry of Bulgaria

Chapter 4 Trends in Neighboring Countries

Chapter 4 Trends in Neighboring Countries



4. Trends in Neighboring Countries

This chapter describes the industrial and economic situation of the neighboring countries of Bulgaria, including the Eastern European countries, EU and former CIS countries. The current production at major steelworks and equipment utilization rates of the Eastern European countries are studied. The forecast of the utilization rates of steel equipment at the major steelworks in the Eastern European countries and the steelworks in the world categorized by region and the possibility of export by the Bulgarian steelworks are analyzed in the next chapter.

4.1 World Situation for Steel Supply and Demand

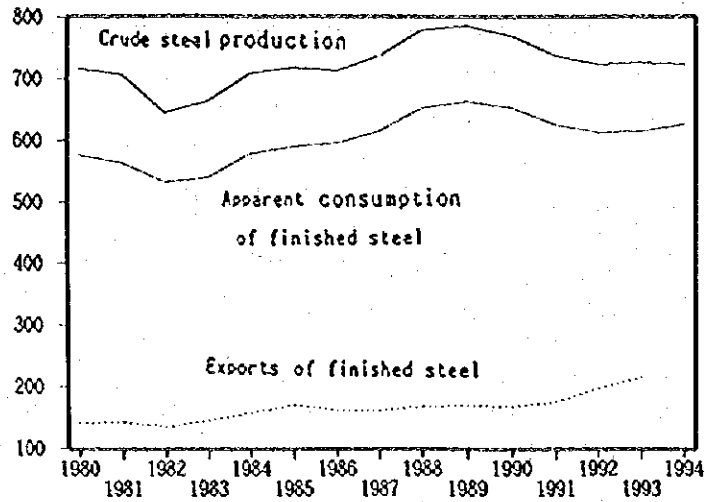
World steel demand (the apparent consumption of finished steel) decreased until 1982 during the world recession after the second oil crisis in 1979. However, it recovered gradually after 1983 (See Figure 4-1).

United States steel demand did not change greatly, but Western European and Japanese demand increased rapidly, especially after 1988, following the economic boom. In China, demand also exceeded 50 million tons with the progress in developing a market economy. As a result, world steel demand reached 660 million tons in 1989. However, since 1989, owing to the economic disorder in the former USSR and Eastern Europe and to the recession in Western Europe and Japan, world steel demand decreased to 630 million tons in 1994. Demand is rapidly increasing in China, supported by economic growth of more than 10% (See Figure 4-2).

Following the trend in steel demand, world crude steel production increased stably from 650 million tons in 1982 to 790 million tons in 1989. Especially in China, production capacity was expanded to keep pace with the growth in demand, and crude steel production grew rapidly. However, since 1989, crude steel production in the former USSR and Eastern Europe has plunged owing to the drop in demand, and world crude steel production decreased to 720 million tons in 1994 (See Figure 4-3).

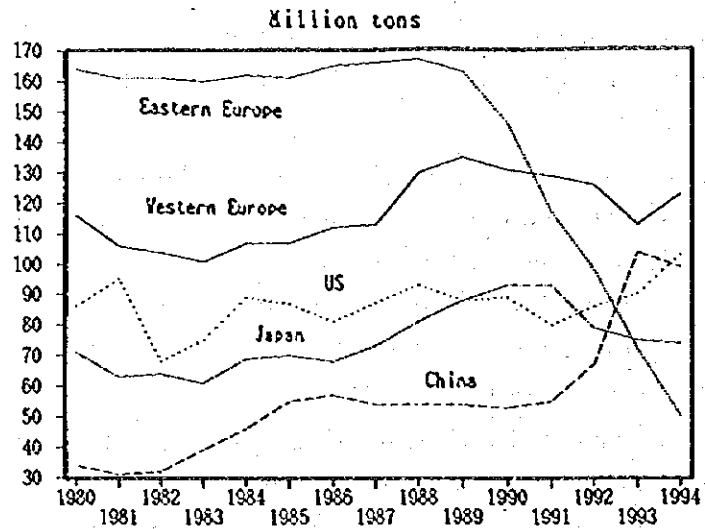
World trade (exports) of finished steel gradually increased from 140 million tons in 1983 to 220 million tons in 1993. The reasons for this increase of exports are demand expansion mainly in China and South East Asia, and aggressive exporting activities of Western and Eastern European and other countries since the latter half of the 1980s.

Figure 4-1 World Balance of Steel Supply and Demand
Billion tons



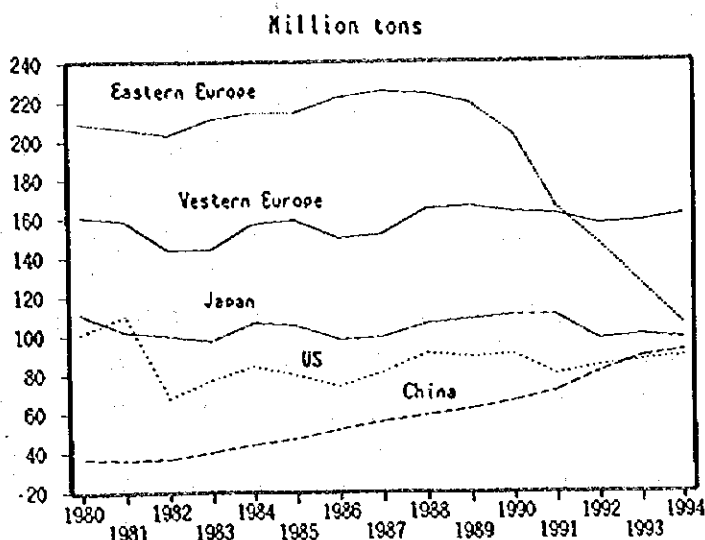
Source : IISI, Steel Statistical Yearbook 1994

Figure 4-2 Apparent Regional Consumption of Finished Steel



Source : IISI, Steel Statistical Yearbook 1994

Figure 4-3 Regional Crude Steel Production

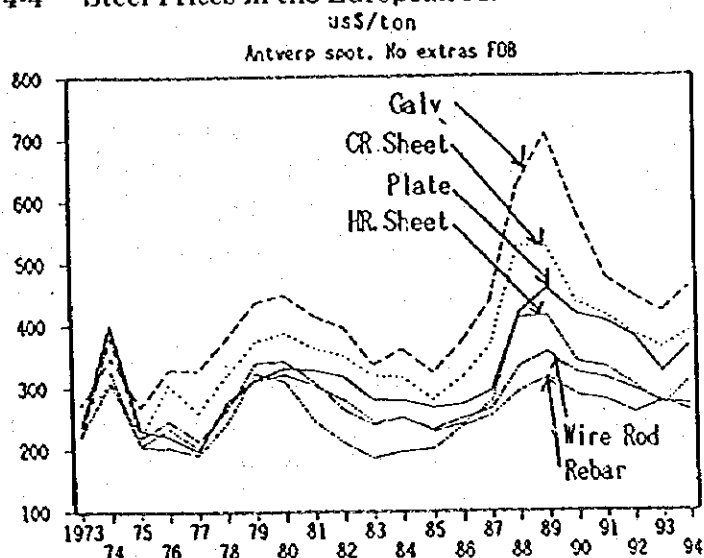


Source : IISI. Steel Statistical Yearbook 1994

4.2 World Changes in Steel Product Prices

World prices for steel products rise and fall in a cycle of about ten years according to the change in steel supply and demand discussed in Section 4.1. Figure 4-4 shows the change in prices on the Western European market, which represents world steel prices. Prices dropped during the world recession after 1981 and rose again rapidly during the world economic boom. They have fallen again since 1990, but are expected to rise gradually following the recovery of steel demand.

Figure 4-4 Steel Prices in the European Market



Sources: Paine Webber, World Steel Dynamics, Steel Strategist, 1994.5
Metal Bulletin, 1994.10