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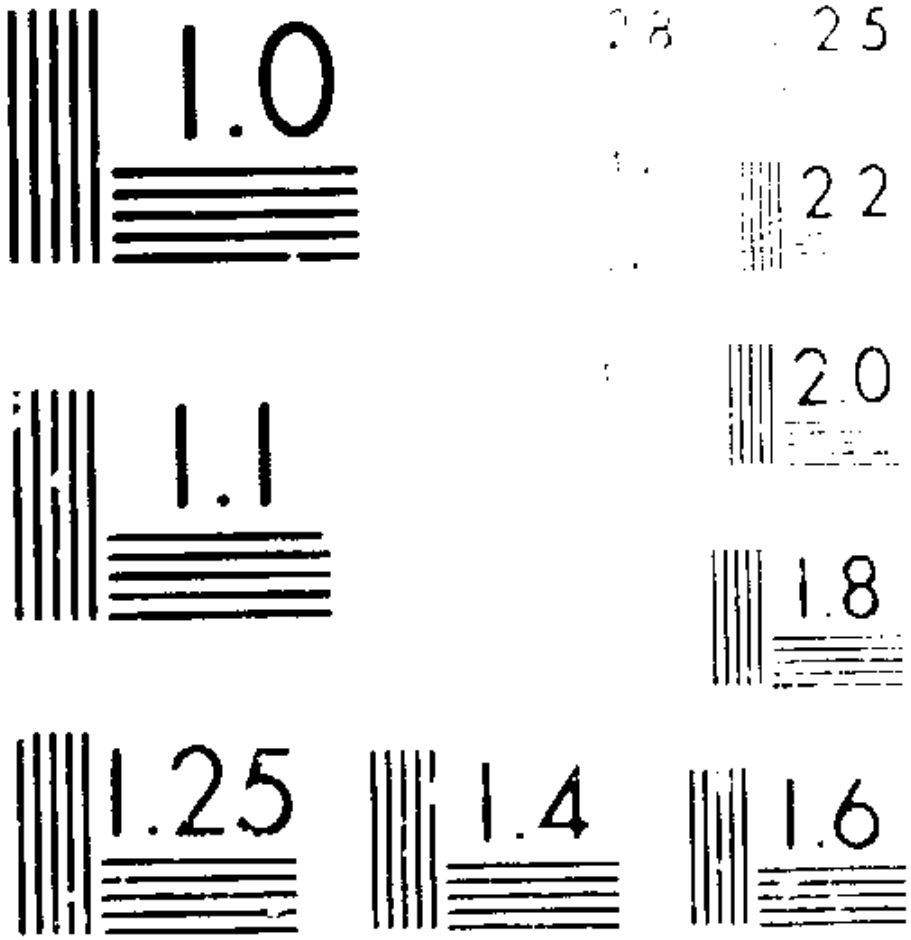
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DEVELOPMENT OF THE CAPITAL GOODS INDUSTRY IN BULGARIA

Summary and Conclusions*

prepared by

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INTRODUCTION

The Sectorial Studies Section of the UNIDO International Centre for Industrial Studies has shown an interest in the working out of a project on the development of the capital goods industry in Bulgaria over the last 30-35 years, and has accordingly approached the Board of the Institute of Economics, Bulgarian Academy of Sciences to effect such a study. Proceeding from the assumption that the experience of Bulgaria might be of some interect as an example for the developing countries in their endeavur for economic development. Representatives of the UNIDO International Centre discussed with research associates of the Bulgarian Institute of Economics the contents and scope of the study envisaged.

It has been agreed upon that particular emphasis should be laid on the evolution of the capital goods industry in Bulgaria and on the specific factors determining the development of this sector. Taking into consideration the importance of the capital goods industry to the economy of any country, particular attention has been devoted to the role and place of this sector for the country's industrialization and for some specific socio-economic problems of the development of Bulgaria.

Recognizing the relatively small size of the country, with respect both to population and territory, and the fact that some of its natural resources are rather limited, an attempt has been made at enclosing the causes and factors accounting for the rapid development of the capital goods industry over the last 20 years and at evaluating the importance of the country's participation in the international division of labour and in internatio-

nal trade. Along with the economic and social aspects of the sector's development and the existing situation of the capital goods industry, some specific technical and technological problems have also been treated.

This study has also been concerned with the importance of the prospects of the development of the capital goods industry, as well as with the sector's organization, its improvements, the training and re-training of personnel, etc.

The summing up of the Bulgarian experience was done with a view to presenting a model for the developing countries and enabling them to make their own conclusions.

The working group encountered some difficulties due to the following:

- The object of the study is rather complex and should treat different lines of inquiry.

- No studies in this line have been made till now in this country. Our national classifications do not correspond to those adopted by ISIC and ISTC.

- The rather short term for pre-investment studies.

- The necessity of summing up the results and working out of recommendations, for testing out of these generalizations.

It is our hope that most of these problems have been successfully solved.

CHAPTER I

THE EVOLUTION OF THE CAPITAL GOODS INDUSTRY

A) The Historical Development of the Capital Goods Industry in Bulgaria within the Framework of the Stages of the Country's Industrial Development

1. Main Economic and Social Objectives.

The insufficient development of the capital goods industry in Bulgaria until 1944 marked to a certain extent the poor development of the remaining industrial sectors in the country as well as that of the agriculture, building and transport. Besides, it lead to an extremely poorly developed infrastructure, did not contribute to the rapid and complex development of the productive forces, created no conditions for the elevation of the material and cultural level of the population, predetermined the backward character of Bulgarian economy and its great economic dependence on the outside, at a very inconvenient structure and orientation of the external economic relations.

Owing to the favourable for the country political, social and economic conditions after World War Two, basic social and economic problems were solved in historically very short time. Significant in this case was the role of the capital goods industry. Thus the main purpose of the development of this branch was realized and namely: on hand of the available natural, labour and material resources with an active participation in the international economic and scientific-technological co-operation to ensure rapid development of economics, to build effective economic structure so that the level of the countries with developed economics in the

world could be achieved, securing economic progress and welfare of the Bulgarian people. The accelerated development of the capital goods industry was considered the motive force of the socio-economic progress of this country.

It has to be pointed out first of all, that this branch favoured the very intensive development of production based on the great needs of the country for machines and apparatuses, automatic machines and other types of equipment in the conditions of the current policy of expanded building of industrial units. The large investments require lots of machinery and equipment for the enterprises under construction. This on its part ensures the realisation of a considerable part of the capital goods produced.

The realisation of the large investment programme of all five-year plans allows the cotinuous expansion of the branch production, whereas conditions are being created for diversification and technological improvement of the range of machinery and equipment produced. Thus this same industrialization and the development of the material production foundation for the remaining sectors is an additional factor for the accelerated development of the capital goods industry.

This way of the accelerated development of the productions included in this branch on the first place aims at the utilization of the favourable potentialities of the accelerated industrialization of this country for the building up of an own capital goods industry. Due to this economic policy the country is now satisfying a great part of its needs of machinery and equipment of local make. In 1978 for example the value of machinery and equipment of local make accounted for 53 per cent of the total volume of the machinery and eoupment investments. This fact

speaks for the grown importance of the capital goods industry for the material production foundation of the country and in particular of the industry. On the other hand it is an illustration of the feed-back - the role of the accelerated industralization policy and the establishment of a production foundation for the remaining branches of the rapidly developing and constantly expanding production of this branch itself.

Second. The accelerated development of this sector especially over the recent years aims to most fully provide with local resources the modernization and reconstruction of the basic funds, on the basis of the rapid introduction of the achievements of science and technology. The machinery and equipment of local make account for about 45 per cent of the total investments for modernization and reconstruction.

Third. What was meant by the intensive development of the capital goods industry was to eliminate the concealed unemployment in agriculture which existed in this country before World War Two To provide occupation and reorient to industry manpower released from agriculture in result of co-operation, amalgamation and mass penetration of mechanization in the agricultural production process.

In Bulgaria now (1978) about 284 thousand people are occupied in the capital goods industry which is 7,3 per cent of the workers and employees in Bulgaria and 21 per cent of those occupied in industry. In comparison to 1960 - 195 thousand people have worked additionally during 1978 in this branch or 34 per cent of the total increase of the personel occupied of the whole industry for that period.

Fourth. It has to be pointed out that the accelerated de-

velopment of this sector aims at creating conditions on the basis of the technical growth of those occupied in industry and the application of modern techniques and technology to use the possibility for accelerating the process of increasing the social efficiency of labour (productivity) within the framework of the economy as a whole and on this basis to additionally increase the efficiency of the economy. It suffices to point out, no matter how conditional the character of such a comparison be, that the level of labour productivity in this branch is about 4 times higher than this in agriculture.

Fifth. A reason for adopting a course towards rapid development of the capital goods industry is the need of ensuring a harmonious development of industry in all regions of the country. The industry which requires less capital investments and is not in such a great dependence of the availability of raw materials in the region where it is being developed, allows the construction of factories at places where there is a more compact mass of free manpower or manpower which is being released from agriculture. Now in our country there are machinebuilding enterprises not only in the large towns but also in comparatively small populated areas. On this basis potential are created for accelerating the building of the infrastructure of the towns and the rural systems, for the improvement of the regional and interregional connections for the complete utilization of the resources of each region and every populated area. Thus the opportunity is given for the expansion of the production in the branch itself on one hand and on the other - the very development of this branch creates conditions for the solving of a number of important social problems. It is in the centre of the process of raising the tech-

nical level of the population in all regions of the country. And as it is known the level of labour efficiency and the rapid increase of the production volume, and at the end the very standard of life of the population depends on the correct and purpuseful realisation of this process.

Sixth. The development of the capital goods industry in this country aims at giving our country the opportunity of a still more active participation in the international labour divi
On this basis potentials are created for receiving basic raw materials and fuel in exchange for machinery and equipment exports which was and still continues to be of a paramount significance for the industrialization of the country and for the development of the remaining branches. In 1978 the machinery and equipment for production needs accounted for 47,1 percent of the total export of the county. In exchange were obtained the greater part of the imports of hard and liquid fuels, ferrous metals, various chemicals and others. Thus despite the difficulties originating from the world material and energy crisis a prerequisite was created for our industry to continue developing in stable rates. During the period 1970-1978 the average annual industrial production of the country increased by 8,9 percent. At the root of this stable rate of expansion and further development of the industrial potential of the country was the capital goods industry which satisfied the needs of the country for machinery and equipment and at the same time provided part of the currency necessary for the import of fuel, raw material and materials.

2. Stages and Level of the Development of the Capital Goods Industry

One of the main features of the socialist transformation of this country is its turning from a backward country with an elementary agriculture and poorly developed industry into a country with modern industry and developing agriculture.

For over 60 years, until 1944 in Bulgaria there were created about 3500 small industrial enterprises with a semi-craftsman technology of production. These were mainly enterprises of the food, textile, leather and furriery industries - a few cast-iron-ware, pipes, several kinds of domestic goods, agricultural tools, nails, stoves, a.o. Practically, there existed during 1939 no capital goods industry. It was represented by 15 industrial steam boilers, 9 threshing machines, 60 waggons, 17 power transformers, several dozens of lathes, drills.

The lack of this industry determined to a certain extent the poor development of the remaining industrial sectors, as well as that of agriculture, building, transport. This brought to a strong unemployment and low labour productivity. According to the statistics of the bourgeois economists the consealed unemployment among the rural population of Bulgaria surpassed 1 million people.

The backwardness in the capital goods industry significantly influenced the standard of life of the population in this country which was among the lowest ones in Europe.

The country's industry including the machinebuilding industry was concentrated mainly in some of the larger towns: Sofia, Rouse, Plovdiv, Varna, Pleven, Kazanluk a.o. This had as a concequence a very weakly built infrastructure of the populated areas which was ineffective and did not create conditions for the elevation of the material and cultural welfare of the population.

Neither did it contribute to the development of the productive forces in the country. Practically the development of the capital goods industry, of this most important branch for the rapid industrialization of the country and for the intensive and harmonious development of economy as a whole, it can be said with no exaggeration that it began immediately after the fundamental change in Bulgaria in 1944*. As early as in 1948 the machinebuilding and the metalworking industries produced already 6,2 times more than in 1939 and in 1952 - 18 times more. In 1952 the capital goods industry accounted for 71 of the production of the machinebuilding and metalworking industry and 7.2 percent of the total industrial output of the country for the same year.

The rapid development of the industrial sector in the course of implementation of our five-year plans for social-economic development contributed for the capital goods industry production to grow by the end of 1978 by approximately 90 times in comparison to 1952 and for its relative share in the industrial output to reach almost one fourth. This growth is shown on Table 1.

In 1978 this industry supplied about 15 per cent of the national income of the country which clearly indicates the primary role of this branch in the national economy, for the rapid industrialization of the country and for the development of the remaining economic sectors.

The development of this branch in such high rates has a fabourable influence on the other branches interlinked with it in the process of production and reproduction of the social product. This influence is bilateral. On the one hand it stimulates

*The government is devoting special attention to this branch in its economic policy.

the development of these branches for which it functions as a final product supplier. On the other hand this influence is displayed in the branches which supply various kinds of materials, raw materials and details, ensuring the expansion of the production in this sector of industry.

Table 1

Relative share (%) of the capital goods industry in the total industrial output of the country and percentage of the persons engaged to the number of persons engaged in industry

1939	0,9	1,6
1952	7,2	12,1
1960	9,5	14,5
1965	12,2	17,4
1970	15,3	20,3
1975	19,2	23,3
1978	23,5	24,6

The intersectorial linkage balance of the economic sectors prove that in the course of time the significance of a given sector both as a supplier and consumer is changing. Following data demostrate this:

Table 2

a) The branch production is distributed mainly among:

as %

	1971	1978
Industry branches total	25,78	26,48
Capital Building	36,00	30,56
Exports	17,62	26,07

b) Participation of the Branches in the material Expenditure of the Branch as consumer:

	1971	1978
Ferrous Metallurgy	21,04	15,31
Machinebuilding and Metalworking industries	47,10	54,94
Chemical and Rubber Industries	3,64	4,13
Other Industry branches	16,13	14,47
Industry Branches-Total	94,98	94,67
Other sectors of the material production	5,02	5,33
Total:	100,00	100,00

The data shown above on the general character of the intersectorial linkage indicate that its importance as supplier of machinery and equipment for the national economy is growing both for industry and for the country's exports. This development

reflects the changes that have taken place in the production structure of the branch and its importance for the investment process of the national economy and its increased participation in the international division of labour. On the other hand, the importance of machinebuilding and metalworking industries is growing both as consumer of industrial production, which is due to the greater specialisation and co-operation among the machinebuilding enterprises as well as of the ever increasing share of the machines of local make, included in the basic funds of machinebuilding, the links of the sector with the chemical and the rubber industries are growing in result of the chemization process of production a.o.

The development of the capital goods industry during the last 30 years is characterized by three approximately delineated phases:

The first phase includes the development till 1960. During this period the creation and development of the enterprises in this sector is carried out on the basis of machines and equipment of mainly universal type. During these years there was initiated the building of production capacities with a narrower specialization of the production: machines and equipment for power generation (for the period 1952-1960 the average annual increase of growth being 25%); electrical machinery and equipment (with annual average increase of 35%); agricultural machines (with annual average increase of 20,60%) production of spare parts (with 38,80%); organization of repair activities under the existing conditions (with 9%); casting and forging machines and equipment (with 30,30%), etc.

During the second phase (which includes roughly the

period 1960-1970) the most intensive development have: the sectors producing lifting and transport equipment (with average annual increment of 44,61% for the period 1960-1970), the increase being especially great in the production of machines and equipment for inner-plant transport and for mechnization of the warehouse activities, which tendencies are characteristic also today as basic specialization of these sectors; the sectors producing accessories and equipment for automation (with an increase of 53,20% annually); the sectors producing metalcutting machines and especially lathes (with 15,40%); the shipbuilding (with 17,60%); electric-technical machines (with 17,75%), etc.

The third phase includes approximately the last decade. It is characterized with a very fast development of the radio-electronic industry (with an average annual increase of about 15% during the period 1970-1978), of the accessories and equipment for automation (with 43,42%), of the lifting and transport equipment and machines (with 15,30%), etc. All these production activities have already established themselves as the basic specialization and characteristic of the capital goods industry in Bulgaria.

The different rates of production growth in the above sectors brought to qualitative changes in the capital goods industry structure. Over the recent years constantly growing is the share of the electronic industry, the automation means production and appliances building, the production of specific machines and equipment for the capital goods producing branches. Despite the clearly marked tendency towards certain decrease of the share of the production of transport vehicles and of energy and electrical machinery and equipment they still continue to occupy a

Table 3

Growth of the capital goods industry output

in the main subsectors in 1978

	compared to	
	1960 as times	1970 as %
T o t a l	16	313
Production of transport		
Vehicles and means of mechanisation of the storage	16	283
Electronic industry, appliances building and automation means production	115	712
Energy and electric machinery and equipment production	11	227
Production of specific machinery and equipment for the capital goods industry branches	7,8	327
Tractors and agricultural machines production	12	186
Production of spare parts and repair of machines and equipment in specialized enterprises	13	246
Production of specific machines and equipment for the consumer goods producing branches (sectors)	76	273

basic place in the branch. Totally from all the quoted about 80 per cent of the capital goods industry was produced in 1978.

Table 4

Structure of the capital goods industry

according to its main specialisation trends

as %

	1960	1970	1978
T o t a l	100,0	100,0	100,0
Electronic industry and appliances building and automation means production	5,0	14,9	29,0
Production of transport vehicles & storage mechanisation means	24,2	24,9	22,5
Production of energy and electrical machinery and equipment	23,7	21,8	16,0
Production of specific machines and equipment for the capital goods industry sectors (metalcutting and forging machines; machines for the mining and heating industry; machines for the metalurgical and woodprocessing industry, for the industry of building materials and the cellulose - paper industry)	24,3	10,6	11,9
Production of tractors and agricultural machines	6,6	8,0	4,5
Production of specific machines and equipment for the consumer goods producing sectors	1,1	5,3	4,0
Spare parts production and machinery repairs and equipment in specialised enterprises	15,1	14,5	11,7

3. Evolution of the main Branches and Production Lines of the Capital Goods Industry

Electronic industry, appliances building and the automation means production are developing very intensively in recent years. Its production is being doubled now in an average of four years.

Typical representatives of this production line are:

- computer techniques: computers, minicomputer systems, external memory units on magnetic tapes and discs, terminals, central processors, programme digital devices for metal-cutting machines;

- various types of appliances and means for automation of the production processes among which: electronic regulators, instruments for control and regulation of the technological processes, operation electrical and pneumatic mechanisms;

- measurement and control devices for electrical quantities;

- telemechanics and teleautomatics devices;

- time reading devices, measurement and regulation of mechanical quantities devices;

- various kinds of apparatuses and factory and other laboratory equipment, etc.

The development of this line is of paramount importance for the capital goods industry. The diversification process has been strongly expressed in it in recent years, and it is of principal importance for the rapid increase of the technical and technological levels both of the machines and the equipment in the whole industry and also for the technical level of the production itself in this branch. The latter is of exclusive significance for the imposing of the production of this branch as a basic one in the export list of the country. This process repeatedly emphacises the enormous significance of the evolution of this essential sector of the industry for the general economic development of the country.

One of the main trends of the capital goods industry

which is of great importance for the development of industry and of the other sector in the country, as well as for the exports, is the production of transport vehicles and of storage mechanisation means. In 1978 the hoisting machinebuilding, which is the most significant representative of this trend of the capital goods industry development, produced 192 times more production than it did in 1952 and 3,1 times more than in 1970. A few large for the scales of our country plants are under construction, among which the "6th September" electrical works, in Sofia; the "Danube" electrical works in Lom, and the "Record" works in Plovdiv. In 1978 the electrical trucks, electric hoists and moto-truck works produced about 12 per cent of this branch production.

Table 5

Electric Trucks, Motor cars and electric hoists Production in

	1960	1970	1975	1978	In 1978 compared to	
	as pieces				1960 as times	1970 as %
Electric trucks	3104	29641	39911	43417	14	146
Moto-cars (special trucks) - nonel	-	2433	11315	21507	-	884
Electric hoists (telphers)	4339	48094	85446	110459	25	230

To illustrate the rates of development and the importance of the country's specialisation in the production of means of the storage mechanisation, factory transport it suffices to point out that in 1978 were produced 14 times more electric trucks and 25 time more electric hoists in comparison to those

produced in 1960. Intensively developing over the recent years is the motor car production - about 9 times more moto-cars special trucks were produced in 1978 compared to those produced in 1970.

Actively developing is also the production of the means of complex mechanisation and automation of the intrafactory hoisting transport processes as well as for the complex storage mechanisation. With the progress of this production conditions have been created for a better mechanisation and automation of the production processes almost in the overall industry of the country as well as for the expansion of the export list, in particular with regard to the developing countries, to many of which Bulgaria has rendered financial aid.

Well developed is also the crane production, which in comparison to 1970 has increased by 1,43 times.

Automobile industry (autobuses, trucks, etc.) is also well in progress. On hand of the co-operation with other countries this production has increase in comparison to 1960 by 33 times and to 1970 - 4,7.

A very important representative of the transport vehicles production are the shipbuilding and shiprepairing yards, among which is the eldest and largest "Georgi Dimitrov" shipyard. The shipbuilding output has increased in comparison to 1960 by 9 times and in comparison to 1970 - 1,78. Bulgarian shipbuilders nowadays design and construct ships of big tonnage and of various designation 25000 tonns oretransporters, 38000 cargo ships a.o.

Bulgaria produces also a number of railroad transport equipment, among which freight cars, tanks, refregirator cars, mechanisation and complex automation means for the railroad transport.

One of the oldest lines of the capital goods industry and of great importance to it is the production of energy and electric machinery and equipment. It was started in the first years after the Socialist revolution of 1944 to meet the needs of the country originating from the rapid electrification. It developed later on mainly to satisfy the needs of energy and electrical machines and equipment for the remaining sectors of the capital goods industry. Its output increase is connected also with the co-operation with other COMECON countries and the exports to the developed capitalist countries as well as to the developing countries, which has become very active recently.

This production is concentrated in two main lines:

- the production of energy machinery and equipment - the output in 1978 increased in comparison to 1960 by 9,3 times and to that of 1970 - by 2,2 times and the

- production of electrical machinery and equipment - the output being by 12 times bigger than that in 1960 and by 2,31 times bigger than that in 1970.

Most typical here are industrial steam boilers and internal combustion engines. The steam boilers produced in 1978 were by 71 per cent more than those produced in 1960 and the internal-combustion engines - by 22 per cent more. In the last years the capacity of the internal-combustion engines considerably increased. Their increase in comparison to 1960, measured in horse powers is 3,9 times.

In connection with the development of the atomic electro-engineering some enterprises are specialised in the production of some kinds of special equipment for the atomic electro-stations.

Typical for the production of energy machinery and equip-

ment are the electric motors. In 1973 their number reached approximately 1,2 million and they are in the centre of the productions of most of the capital goods industry sectors.

Table 6

Electric Machinery Production

	1960	1970	1978	In 1978 compared to 1960	1970
Electric motors - thousand pieces	236	751	1161	4,9 times	155%
Power Transformers - pieces	3294	4807	8495	216%	177%
Batteried - thousand pieces	364	3274	4272	12 times	130%
Units with electric and comustion engines - p.	264	368	1828	6,9 times	5 times
Electric generators - p.	342	515	2230	6,5 times	4,3 times

The rapid development of the battery production is connected on the one hand with the internal market needs, originating from the expansion of the electric truck production and on the other - with the participation of our country in the international labour division, connected with the high export of electric trucks and the automobile building within the framework of the economic integration among the COMECON countries.

Lately, considerably expanding is the production of complete technological lines, equipped with all the necessary electric machinery, of complete low and high tension systems; various kinds of electroisolational materials, power rectifiers, some types of electric funaces a.o.

The rapid development of the heavy industry in Bulgaria - 6,1 times the level of that in 1960 and 2,1 times the level of 1970, made possible the development of some trends of the capital goods industry for satisfying the needs for some specific machines and equipment of socialist Bulgaria's industry.

Significant is the share of the metal-cutting, forging and casting machines. Manufactured also are some types of excavators, and equipment for the building materials industry, the manufacture of machinery and equipment for the mining and thermo-industries, ferrous metallurgy, the timber industry as well as for a part of the remaining capital goods producing sectors.

Table 7

Indicators of the Capital goods industry designated for the heavy industry branches compared to 1960

(%) as percentages

	1970	1978
Manufacture of metal-cutting, forging and casting machinery and equipment	609	19 times
Manufacture of machinery and equipment for the mining and thermoindustry	155	373
Manufacture of machinery and equipment for metallurgy 1/ 1969 = 100	122	482
Manufacture of machinery and equipment for the timber industry	410	655
Manufacture of road and excavation machinery for the building materials industry	510	20 times
Manufacture of other machinery and equipment for the production process	173	593

With regard to the metal cutting and forging and casting machinery best developed is the lathes and drilling machines ma-

nufacture. The People's Republic of Bulgaria produces universal milling machines, camgear machines, finishers, etc. Recently some factories are specialising in the manufacture of agregate machines and of machines with programme devices. Automated and semi-automated lines for the machine building and the metal working industries are being produced.

Table 8

Manufacture of metalworking machines and presses

	1960	1970	1978	In 1978 compared to 1960	In 1978 compared to 1970
Metal cutting machines	3145	13945	15315	mult. by 4,9	as % 110
among them:					
metal cutting lathes	1519	3946	6484	4,3	164
stable and semi-stable drills	1229	6259	4212	3,3	67
Milling machines	15	950	812	54	85
Eccentre presses	166	815	745	4,5	91
Hydraulic presses	43	162	301	7	186

The rapid progress in this sector of the capital goods industry is due to on one hand the increased needs of the machine building itself for metal working machines and equipment for the production of separate parts and details. On the other hand this industry provides enough of these to meet the needs of the country and to export a considerable part of it. For example 1978 Bulgaria exported 5430 lathes in 55 countries and 2960 drills in 48 countries.

One of the important trends of the capital goods industry is the agricultural machinebuilding. The accelerated rates of this production is of a paramount importance for the whole process of the country's economy development, as thus the opportunities are given for to:

- on hand of the rapid complex mechanisation of the production processes in agriculture and in particular in the corn production to increase by several times the labour productivity, to release manpower from agriculture and to eliminate the concealed unemployment in this sector, which predetermined the very low standard of life of the rural population in bourgeois Bulgaria. The labour effectiveness in agriculture in 1978 was 3,4 time the level of that in 1970. For the same period of time the number of the manpower occupied in agriculture dropped by 51 per cent against that of 1960 and by 27,7 per cent against 1970

- drawn in industry manpower from agriculture. This creates additional and significant conditions for the development of the capital goods industry. It meets the needs of both agriculture and the remaining sectors of the country's economy as well as of export goods.

Agricultural machinebuilding manufactured 59 times the level of the 1952 production. Developing is the tractor building, systems and various types of machinery for the plant-breeding, vegetable-growing, vine-growing, animal-breeding a.o. as well as the manufacture of tractor ploughs, tractor cultivators, tractor drill ploughs, forage mills, automotive chassis, various kinds of dessicators and complex mechanisation equipment for cattle-poultrypig- and sheep-breeding farms.

Table 9

as thousand pieces

	1960	1970	1978
Tractors	-	3,5	7.7
Tractor drill ploughs	2,0	22,4	22,00
Forage mills	0,3	18,1	9,5

The tractor production in 1978 increased by 2,2 in comparison to 1970. In comparison to 1960 in 1978 were produced 11 times more tractor drill ploughs and 32 times more forage mills.

Developing is also the production of machinery and equipment for the food and the light industries.

Table 10

Rates of Development of the capital goods industry production for the needs of the food and light industries compared to 1960

	multiplied by	
	1970	1978
Manufacture of machinery and equipment for the food industry	16	43
Manufacture of machinery and equipment for the light industry	28	68

Our industry produces lines for clear and thick fruit juice, bottled fruit lines, autoclaves, meatgrinders, vacuum machines, sunflower seeds shellers, grapes grinders, bread making machines, machinery for the tobacco industry, packing ma-

chinery, refrigeration installation, refrigeration aggregates. There also is a specialisation in the production of some kinds of complete technological lines, shops and factories.

The following machinery and equipment are manufactured for the needs of the light industry:

- textile industry: carding machines, spinning looms, looms, dyeing equipment, as well as complete technological lines, shops, and factories of the textile industry;

- knitwear industry: stockings automatic machines, base knitting machines, flat knitting machines, round-knitting machines;

- sewing: universal industrial sewing machines, steam ironing machines and equipment;

- leather, furriery and shoe-industry: tanning machines, leather cutting machines, and machines for the manufacture of various leather articles;

- polygraphic industry;

- glass and china-faience industry.

The rapid development of the capital goods industry promotes the organisation of spares and maintenance parts in independent industrial units. New in the individual industrial units is the repair work of some kinds of machines.

Manufactured are spare parts for aggregates, tractor and agricultural machines joints, and details for automobile tractors, for machinery and equipment of the: ferrous metallurgy, chemical industry, light industry, timber industry, celulose-paper industry the cement industry and the remaining industry sectors for the production of mining and oregaining machinery

Table 11

Rates of the production development in the units manufacturing spares and maintenance parts and carrying out repair works of machinery and equipment as compared to 1960

as percentaces

	1970, %	1978 mult. by
Manufacture of spare parts	534	10
Repair works of machinery, transport vehicles and equipment	522	15

and equipment, the hoisting-transport machines, electronic and electric equipment, rail, air and sea transport a.o. The diversification in the capital goods industry played a very essential role in the development of the spares and maintenance parts production as well as of the repair works of machinery, transport vehicles and equipment.

Specialised industrial units are built in the Bulgaria for repair works of automobiles, tractors, railway transport vehicles as well as of some specific machines for the metallurgy, cement industry, pottery a.o.

4. Development of Foreign Trade in Capital Goods

The progress of the capital goods industry lead to a rapid development of the foreign trade. Especially over the last 10-15 years the country acquired quite a great popularity on the international markets. Greater part of the manufactured production of the sector is exported to the socialist countries, another- to the industrialized and the developing countries. With a view

to the needs of the country and the securing of a certain kinds and types of machines and also of such, which are not being manufactured at all or have higher and specific characteristics, are imported. Thus, for example, the exports and imports of some basic capital goods in a natural expression are shown on the following tables:

Table 12

Exports of some basic capital goods from Bulgaria in 1965-1978

as pieces

Kinds of G O O D S	1965	1970	1975	1976	1977	1978
Lathes	1599	1750	410	4602	4647	5459
Shaping machines	14	38	130	121	28	6
Eccenter presses	58	129	257	442	444	460
Diesel motors	755	229	393	380	96	230
Electric motors in thousands	215	362	855	936	1051	1285
Threephase Electric motors in thousands..	159	287	250	237	228	270
Power transformers ..	2298	470	27	205	533	786
Electric cars	16589	27799	37215	37764	35985	39698
Electric hoists	17951	45836	76964	82964	92806	97834
Bearings (thous pieces)	2262	3535	3747	3523	2442	4261
Moto-cars (trucks) - nonel	-	-	10253	10867	14759	18708
Milling machines	-	-	310	330	590	434
Drills	-	-	3580	2580	2407	2960

From the data shown on the above table is seen that in a short period of time Bulgaria's export of capital goods for a number of productions like: electric hoists, electric trucks, lathes, electric motors a.o. has increased in the range of 5 to 10 times.

Parallely with the exports of these capital goods Bulgaria has imported significant quantities of capital goods with the purpose of introducing in its industry the achievements of the world technology in this field. The import of capital goods for this same period is as follows:

Table 13

Imports of some capital goods to Bulgaria during the period 1965-1978

as pieces

Kinds of G O O D S	1965	1970	1975	1976	1977	1978
Lathes	274	472	662	620	766	1041
Boring machines	104	75	94	105	74	127
Milling machines	127	348	238	201	380	364
Gear cutting machines.	82	65	72	83	71	125
Drilling machines	17	108	57	91	84	106
Hobblemachines	8	6	5	2	5	12
Planing machines	243	241	289	305	321	349
Grinding machines	103	112	123	169	92	154
Hydraulic presses	42	43	29	64	29	43
Diesel motors	368	284	3439	2728	1565	1809
Water electric stations (in thous, leva)	306	4740	163	138	242	173
Generators	122	56	1	7	-	25072
Electric motors	2185	23086	44248	33927	44990	25072

The data from Table 13 show that for the same period of time no smaller quantities were imported of electric motors, dieses motors, grinders, drilling machines, and lathes and that the increase of this import varies also within the limits of 5 to 10 times. Three basic tendencies are present: the increase of imports is accompanied by not so high exports of the respective type, which means that the needs of the country are met mainly from outside. The second tendency is when exports grow quicker than imports i.e. the home production meets part of the internal needs, but the greater part of it is going to the external market. The third tendency is this at which both the exports and imports of a certain type of capital goods are changing almost equally. This means the specialisation of the country in a certain type and size and the presence of exchange and purchase of other types and sizes from abroad.

No matter how characteristic the natural indices of Bulgaria's foreign trade capacity with the mentioned goods is, the most striking illustration of the export potentials and the needs met by imports are the value indices for groups of goods groups of countries and for several countries. Thus the exports of the country of goods from Section 7 of SITC (machinery, equipment and transport vehicles) is shown on the following table: The exports of Section 7 - capital goods, machinery, equipment and transport vehicles from the PR Bulgaria in the period 1971-1977 was in its greater part concentrated to the socialist countries - COMECON members and accounted in 1971 for 88 per cent and in 1977 - 90,2 per cent of the overall exports. The exports for the Soviet Union only in 1971 accounted for 57,8 and in 1977 - 62,9 per cent.

Exports of Bulgaria of goods from Section 7 Total capital goods in the period 1971-1977

/as mil. $/

Groups of countries Countries	1971	1972	1973	1974	1975	1976	1977
COMECON-TOTAL	584,8	811,7	1141,6	1342,6	1620,9	1946,0	2377,7
incl. USSR	384,1	565,0	796,2	925,0	1118,0	1352,9	1656,5
GDR	77,8	89,2	129,8	133,8	146,5	189,8	256,5
2. OTHER SOCIALIST COUNTRIES	15,0	13,2	19,0	22,0	25,3	22,9	25,1
3. EEC	13,4	9,7	16,3	22,0	24,8	23,4	23,8
incl. FRG	2,1	1,9	2,9	4,0	6,3	5,6	7,9
Italy	3,5	4,8	8,6	9,9	9,1	8,3	7,3
4. EFTA	14,7	13,0	12,4	8,6	11,0	16,8	45,6
incl. Sweden	0,2	0,4	0,5	1,3	1,4	6,9	31,4
5. USA, JAPAN, CANADA, AUSTRSLIA	0,3	0,3	1,0	2,0	1,4	2,1	1,6
6. DEVELOPING COUNT.	36,2	40,5	58,9	83,1	140,2	139,2	161,6
incl.							
Africa	8,1	9,6	21,5	48,3	75,9	91,0	127,8
only Libia	0,1	0,5	4,8	7,5	37,8	60,4	72,9
LATIN AMERICA	0,4	1,2	3,8	0,7	1,4	1,3	2,7
NEAR EAST	17,8	23,0	28,3	25,2	52,8	37,3	18,9
only IRAQ	12,8	17,7	22,7	19,3	47,7	30,4	9,1
MIDDLE EAST	2,4	1,8	2,0	4,3	8,1	7,3	6,7
ASIA	7,5	4,9	3,3	4,5	2,0	2,3	5,5
TOTAL	664,4	888,4	1249,2	1480,2	1823,6	2150,4	2635,4

With regard to the developing countries in structural aspect it grew from 5 per cent in 1971 to 6 per cent in 1977.

Similar are the tendencies of development of the groups of Section 7 exports of Bulgaria. Thus the export of non-electric machinenry and equipment (Group 71) increased from 419 million dollars in 1971 to 1831 mil. dollars in 1977. The share of the COMECON-member countries is about 94% i.e. does not change for this period and is above that of the whole Section. Only for the USSR the export is 65% respectively 66% for the two last years of the period. The exports to the developing countries is increasing slowly - from 9,5 million to 25,0 million dollar. In general the exports of the 72 group (electric machinery and equipment) is smaller in volume and its increase for this period is not so high - from 92 million to 255 million dollars for the same period, but the exports to the developing countries, independently of the small volume increased 5 times their level - from 2 million to 10 million dollars. The group of the transport vehicles exports (group 73) is placed according to its volume between the other two (549 millions in 1977) and also by rates of increase. The volume and the rates of increase of the exports to the developing countries are also quite high (from 24 to 127 mil. dollars for the above period.). The country is also exporting limited quantities, mainly to the COMECON-member countries of group 69 products (other metal articles) and of sub-group 861 (instruments and measuring equipment) especially in the last few years.

Parallel with the development of the capital goods industry and the exports of its products to other countries Bulgaria has always imported capital goods in order to maintain and develop its production foundation and to be competitive at the international markets. Thus for example in the period 1971-1977

according to SITC nomenclature Section 7 the imports of Bulgaria varied in the following limits:

Table 15

Imports of goods from Section 7- total capital goods to Bulgaria (as millions $)

Groups of countries	1971	1972	1973	1974	1975	1976	1977
COMECON - TOTAL	674,6	944,3	1119,6	1315,8	1342,2	1552,2	1814,8
incl. USSR	430,8	577,3	675,2	824,3	812,1	916,6	1172,9
GDR	104,5	137,2	165,7	186,8	196,9	233,6	246,6
2. SFRY	4,2	4,2	6,8	7,2	12,7	12,1	7,4
3. EEC	91,8	76,1	97,5	158,3	392,5	322,7	246,0
incl. FRG	28,4	39,0	50,9	94,7	213,1	196,7	126,2
4. EFTA	18,2	25,2	26,3	37,0	66,2	56,4	47,4
5. USA, Canada JAPAN	8,9	10,4	22,6	30,8	30,5	18,9	29,7
6. INDIA, HONG CONG	0,3	0,1	0,7	0,3	0,9	1,6	0,0
Total:	798,5	1061,1	1275,3	1553,5	1854,0	1970,7	2161,(

The data from Table 15 show that the imports of capital goods to Bulgaria have considerably increased, from 799 mln. dollar in 1971 to 2,162 mln. dollar in 1977 bearing in mind that the scales of imports in the recent years is smaller than those of exports of the same goods. The volume of both the exports and impor is the highest for the socialist countries (COMECON-members) - during this period the overall imports of these goods accout for about 84% and from the Soviet Union only - for about 54%, with

no serious changes in the relative shares.

Similar are the tendencies of development of the imports from Section 7 groups of products and from the remaining groups of capital goods. Greatest is the share of non-electric machinery and equipment imports, next come the transport vehicles, with the difference that the first grow more slowly, especially over the last years and the second have increased about 4 times. The imports of the other metal products and apparatuses show a tendency to decrease with a view of meeting some needs of the home production with a tendency of expanding their exports. Over 2/3 to 3/4 of the imports to the separate groups come from the COMECON member countries. Highest is the growth of the import of electric machinery and appliances from USSR - over 8 times for the period under consideration.

B) Organisation of the Capital Goods Industry, Management Systems, Education and Training Programmes.

1. Analysis of the structure of a basic organisational unit of the system of the capital goods industry over the period 1970-1976

In this part we shall try to treat some important moments in the development of the organization and the structure of the capital goods industry in Bulgaria and to comment this development from positions, which have mot yet been treated in this work. This will help to enrich the conception and to faciliate the treatment of the complicated problems of development of this sector in an young socialistic economy.

1. First of all we should have in mind that under the conditions of the socialistic economies, which are characterized with an organization of labour on socialized foundation, the prevailing of the socialist ownership of the means of production, the growth of the economy of the country to an uniform national economic complex and the whole way of organizational and structural development even of one separate sector and its element, the problems should be treated from the viewpoint of the production-economic organizational structure of the social production. There should be also taken into consideration the strong orientation towards the development of the productive forces, including the acceleration of the contemporary scientific - technological progress, the development of ripe production relations and the growth of the economic efficiency.

In other words, the treatment of the theoretical and practical problems of development of the organization structure

of the capital goods industry as well as of the separate production systems in its structure, has been and will be accomplished in our country, first of all, in national economic aspect, as a macroeconomic problem, which of course does not put awa from the agenda the decisions of the local, inner problems of development of the organizational structures of the separate enterprises of the sector.

2. The development of the structure of management of industry and especially of the sector "Machine manufacturing" (as really existing separate system in the plan management of the Bulgarian industry) should be treated from the viewpoint of the realization of the basic principle of management organization - the democratic centralism. The tasks of development and improvement of the structure have consisted (and now also are concentrated) in pursuing the realization of two tendencies: First, the strengthening of the role of the centralized plan management and the widening of the fuctions of the state organs and the sector organs; Second, in developing the forms of the economic independence of the basic production systems.

All this means that during the past years the improvement of the socialist centralism has had a complex, many - sided character. It should not be in a simplified mechanical manner only as substitution of the decentralized principles with centralized principles. In fact there has taken place a complex transformation of different functions and forms of management.

3. If we follow the meaning of the historical organizational structural development of the menagerial structure of the machine-manufacturing, we could differentiate two different and at the same time interconnected processes, which show a

raising curve of this development in their contradictory unity.

- The first process consists in a continuous effort to a concentration on the level of the centralized management of the system (national or sectorial) in the sense of strategic management It consists also in expanding the circle of the most important decisive problems, which this centre has to solve and in more complete and broader carrying out of an uniform policy of scientific-technological, economic and social development. Such strengthening of the centralism is accomplished in order to ensure the planned uniformity in the dunctioning of all production economic units in the system. But it must be underlined that this is combined with a relative economic independence of the basic units in the frames of the state - plan, with a decentralization of the decisions of local problems, including on the assortment structure of the production. The economic functions of these units are steadily growing. In which way can one realize such a combination, which seems at first glance impossible?

- The second process gives an answer to the question. First of all, this process consists of the efforts to concentrate on the level of the central management a medium form of organizational, economic and business individualisation (medium form, between the Ministry and the enterprise/plant). Through this form are concentrated on this level the other, operational functions, which have been carried out till now by the lower units. This diminishes the centralization on the level of the Ministry since greater rights are given to the new form - the Combine. On the other hand, the economic independence of the basic economic unit is being strengthened (of course now on a higher level of concentration of the production and centraliza-

tion of the management - the Combine). Such a new centralization, but on lower level of management, also leads to one more or less greater limitation of the economic independence of the present parts of the Combine - the former plants (one-plant enterprises).

It becomes clearer that the results of the development of these two processes have found distinct manifestation and now continue to be expressed in the most important transformation of the organizational structure of the social production - the creation and the functioning of the multi-plant enterprises (the Combines), as a basic economic organization in our national economy.

4. When we study the influence of the processes of concentration and specialization on the development of the production structures of the basic production systems in this sector and when we seek to understand the sense, the meaning and the future trends of development of the process of "echelonization" (Lining) of the sectorial production structure, as well as when we speak of diversification as a factor for the development of these structures, we should always have in mind that under the conditions of our national economy the processes of improvement of the production structures have an extraodrinary great impact over the reorientation of the structure of the whole economy and vice versa. The creation of a new enterprise in our country is done not with a decision of the relevant sector Ministry, but only with a decision of the Council of Ministers. This is so, because the improvement of the production structures of the enterprises (as well as of the sector) is always realized under given national-economic limitations (demographic situation, raw material and energy resources, etc.), under which the change of

the structure of a given system leads to redistribution of the resources and to a change in the production programmes of the connected industries. Or (from this point of view) a substancial change of a given production structure may be realized only under strong coordination with the national economic interests.

The limiting conditions of the national economy create also objective preconditions for the formation of bilateral and multilateral international production enterprises with the countries of COMECON as well as with other countries. These enterprises not only will satisfy our needs of missing raw materials, etc., but also will stimulate to a greater competitive power the bulgarian products on the international markets.

5. When we evaluate the Bulgarian way of organizational - structural development in the context of factors, which are forming the structure, such as: concentration and specialization, diversification, echelonization, etc., it is necessary to make a number of remarks, which in fact will delineate the specifics of the Bulgarian way and will define its future.

One of the most important and at the same time least developed problems is the problem of the scientific foundations of management of the processes of creation, formation and individualization of the sectors of the socialistic industry, i.e. the management of the forming of sectorial structure of the industry, respectively of the subsectorial structures of the separate sectors. This problem has not been solved practically. It is even not clarified also in a theoretical aspect. Here we shall try to give some of our evaluations and considerations.

The Bulgarian way is different from the historical way of development of the structures of the industrial enterprises

in the West and especially in the USA, where it developed under the main impact of the process of "diversification" (but there were organizationally no separate sectors). In the Bulgarian economy and especially during the creation of the machine-manufacturing sector (whose creation coincides with the birthday of establishing of socialist order in Bulgaria and this is different in the other socialist countries) another process has initially a basic impact on the structure of the sector. This process (which is different from the diversification, whose object is the enterprise) has as an object the differentiated sector and the name of this process is "sectorial differentiation". The process of sectorial differentiation is in fact a form of the specific division of labour and is expressed in the division of the production into separate economically differentiated sectors. In this way this process serves mainly for the satisfaction of various needs of the national economy. A moving force of the sectorial differentiation is the technological progress as well as the ripe needs of various products or services of the national economy.

A product of the sectrorial differentiation is the one-plant enterprises with universal production structure. And it is natural that after the initial long term phase of the sectorial differentiation and after the formation of the sectrorial and subsectorial structure of machine manufacturing has begun (even parallel with the above processes) the process of concentration and specialization. And here we can make the connections with the remaining processes. Product of the specialization (final product) is the echelonized specialized one-plant enterprises (on one of the three echelons). But the development does

not end here. The creation of the Combine's production structures, the improvement of the economic mechanism towards giving of greater economic independence of the combines, etc. open the doors for diversification (conceived now as penetrating of the process of sectorial differatiation in the very enterprise, the reverse side of this process being the improvement of the specialization, but on the level of inner echelonization).

In fact, not till now there has begun really a certain transition towards some forms of diversified production structure of the Combines and in these directions of the diversification, which are known as enriching the technological or the production "Family". Still in Bulgaria there are no enterprises, which have developed a diversification structure as regards certain functional servicing of the user. That is why (when we speak about echelonization and about creating of future multi-echelon enterprises) we should have in mind that those will be created mainly under the impact of diversification and that the raising of the specialization of the production units of those big enterprises will be accomplished chiefly by means of differentiation of inner echelons by the specialized plants.

As it is well known, all this will break the "purity" of the sectorial and subsectorial structure of the machine manufacturing. This will enforce a change in the very national management, will change the foundation of the different functions, goals and possibilities of the existing sectorial Ministries (since now there will be formed intersectorial enterprises).

6. Therefore, in our economic practice gradually ripens the necessity towards formation of organs for intersectorial management, including associations, joint-stock companies, com-

mercial - production organizations, etc. According to our opinion, it will be purposeful that these organs be of two main kinds:

- organs, which ensure the realization of uniform centralized long-term and medium term programmes - social-economic, scientific technological, construction, etc., that will coordinate the activities of the participants in the relevant programmes and carry the responsibility to full extent. These organs may be permanent or may be created specially for the realization of a given programme;

- organs of management of groups of homogenous and interconnected sectors, which could even represent levels of managerial structure, which are also "above the Ministry".

2. Objectives and Structure of the National System for Professional Training

The grown demands toward the professional training of the workers necessitated the application of a unified system of professional training established in 1972 in Bulgaria. Some difficulties connected with its application required the improvement of a part of the indicators of the system. A result of this are also some of the additionally released enactments aiming at improving of the training machanism, of the distribution and use of the workers in the sectorial systems.

The tasks that have to be solved by our economy are placing greater emphasis on the personal factor of the production. The requirements for independent and creative activities of the workers are growing so as to a quick adaptation to the dynamic changes in the character and content of labour. This fact is once more raising the problem of the professional training and workers' qualification.

c) THE DEVELOPMENT PROBLEMS OF THE CAPITAL GOODS INDUSTRY

The results of the development of the capital goods industry in Bulgaria over the last 30 to 35 years present an opportunity for some generalizing evaluations and for footlighting of the particular instances which have had an impact on this development. It should be emphasized that the accelerated development of the capital goods industry has been a strategically justified line which has stood up the test of time. However there were a number of constraining factors of historically objective character, the necessity of overcoming of which served as an additional driving force for the speeded development of this sector. It is possible to identify some of them and to present them (not observing any order of priority):

First. Once the post war period of restoring the country economy was over, it was generally believed that the speeding of the economical growth did not imply any priority of the capital goods industry. Consequently a policy for rapid development of the consumer goods production was under way up to the beginning of the second half of the fifties, but it was soon discarded as inadequate. A new conception was gathering weight, it was realised that a lasting growth of the consumer goods industries was possible only if a priority was given to the capital goods industry, due to the simple fact that the latter was to supply all the machinery necessary to the consumer goods sectors, to the agriculture and to the other sectors of the national economy.

Second. The development of the capital goods industry in Bulgaria during the first years of the country's industrialization was in the first place interlinked with the priority deve-

lopment of the national raw materials base. The rather limited production rate was directed primarily to meeting the needs of the national economy. It was characterized by an over-expanded production nomenclature, irrespective of the limited production scope. Some political and social considerations were considered more important than purely economic considerations. The active development of the country's international economic co-operation and participation in the international division of labour was also underestimated and neglected. This policy line also proved to be rather inefficient. The development of economic co-operation within the COMECON system contributed a great deal for the overcoming of this isolationist policy. The application of an economic approach to the development of the sector and the higher efficiency of production were the next problems to be solved. The improvement of the economic approach applied to the management of the sector is still on- going.

Third. The complexity of the capital goods industry was also underestimated. Almost no attempts were made at producing assemblies and aggregations and the policy line of production was directed mostly to the production of a definite number of articles with comparatively resticted processing stages. Productio-riented science was a rare phenomenon. By the end of the sixties and the beginning of the seventies, however, the national capital goods industry became increasingly oriented toward the utilization of foreign scientific and technological achievements, studying and implementing of foreign production experience and know-how, purchasing and implementing of patent licences, scientific and technological cooperation, etc. The country's scientific potential is increasingly industry oriented.

Fourth. The early development of the sector was mostly extensive. This policy was determined by the inadequacy of the technical and technological level, by the small scale and limited range production, by the lack of production and organizational experience and - especially in the very beginning, by the exceptional dependency on political values, which nevertheless played a positive role in that period. The last 10-15 years were years of accumulating experience, of improved structures, systems of management and constantly increasing production.

Quality characteristics and some specific indicators complying with the consumer's requirements were becoming increasingly important. The efficiency and complexity of production have become one of the cardinal issues of the Bulgarian capital goods industry, with respect to the requirements of the home and world market.

Fifth. The development prospects of the capital goods industry were rather vague during the first few years. During this period there was lack of long-term evaluations and forecasts which to take into concideration the achievements of the scientific and technological progress, the country's resources and their reproduction, the home-market demand and the capacities of the foreign markets. A move in this direction was made in the seventies, when considerable efforts were devoted to economic forecasts and long term evaluations of the economic development and its relationship with the constantly changing external conditions. The producers, initiative for improving the production planning in the capital goods industry is receiving increased attention. The correlation of planning documents, the provision of resources and the capacities for production and realization of finished goods is also given particular regard. Especially

important for this country is the elaboration and implementation of long term target goal-oriented projects for cooperation with the system of the COMECON countries, established since 1976. Special emphasis is laid on projects for correlative development of machine building industries on the basis of accelerated specialization, concentration and co-operation. A special place is taken by the general programme for specialization and cooperation in the sphere of material production, adopted by Bulgaria and the USSR until the year 1990.

CHAPTER II

DECISIVE FACTORS IN THE DEVELOPMENT OF THE CAPITAL GOODS INDUSTRY

A) The Industrial Policy, Main Instruments and Classification of the Factors

1. Conditions and Factors Supporting the Development of the Capital Goods Industry

The intensive development of production in the capital goods industry requires large scale capital investments, the extent of which should be significant in proportion to other statistical data pertaining to this country. The level of capital investments in this sector in 1960 amounted to 40 million leva, which accounted for 8,4 percent of the overall capital investment in industry and 2.9% of the country's overall capital investments in the national economy. In 1978 the investments in the capital goods industry amounted to 503 million leva, while their share in the overall investments in industry was 19,5% and their share in the country's total investments amounted to 8.1. This was 12.6 times the amount invested in 1960.

The significantly large amount of 4.1 billion leva was invested with the purpose of providing the material production foundation of the machine building industry over the whole of the period 1961-1978.

In 1960 the fixed production capital of the capital goods industrial units came to 296 million leva, which was 10.8 percent of the overall fixed capital in industry. In 1978 the sector's fixed production capital ran up to about 3 billion leva, constituting 12 percent of the overall fixed capital in industry.

In 1977 the capital goods industry exceeded ten times the fixed production capital of 1960. In comparison to 1970 the increase amounted to about 12.6 times as high as in that year.

Along with the extension of the sector's material production foundation some important changes in the composition of its fixed production capital took place over the last few years. Due to the consistently pursued policy of rapid implementation of the achievements of science and technology, the continuously furthered machanization and automation of production processes and labour activities, the number of machines produced, as well as that of industrial equipment and measuring and controlling equipment has been constantly on the rise. In 1978 they came to about 56 percent of the sector's fixed production capital, the share of machines and equipment comprising about 50% of them.

Table 16

Relative share of machinery, equipment, and measuring and controlling equipment in the overall capital stock

	1960	1970	1978
Total	100,0	100,0	100,0
Machinery and equipment	40,0	47,5	48,7
Measuring and controlling equipment	6,1	6,3	7,0

The overall rapid formation of the material production foundation of the capital goods industry in Bulgaria would have been impossible if additional labour force was not drawn in. The accelerated growth of this sector is greatly contributing to the

full employment policy of our country which is accompanied by a relatively limited migration. At the same time the setting up of industrial units in small towns and settlements contributes to the slowing down of urbanization processes and reduces the excessive concentration of labour force in larger towns.

90 thousand were employed in the capital goods industry in 1960, which represented 14% of the labour force and other personnel engaged in all branches of the capital goods industry (CGI). In 1970 their number came to 195 thousand, while in 1978 it ran up to 284 thousand, representing 27 percent of the total number of people engaged in industry in this country.

Along with the rise of employment in the capital goods industry in Bulgaria, there is a significant change of the quality and qualifications of those employed. The most nutshell expression of the results of this objectively taking place process is represented by the increased productivity of labour in industry. In 1978 it exceeded 5,4 times that of 1960 and 2.2 times that of 1970.

2. National resources for the development of the capital goods industry and their utilization

Under particular social needs the development of the capital goods industry is determined by the inner resources of the country. An object of primary importance is the providing of unity and interrelation among the three basic components of the production process, i.e. means of labour, object of labour and living labour. Moreover the country's resources are determine not only by the sum total of the production capacities available at a particular moment, i.e. energy, raw materials, labour force,

etc, but also by their quality and by the extent and level of their utilization. Therefore the extent of utilization of resources which is largely dependent on the advancement of scientific knowledge and technology is no less important a prerequisit for the development of one another branch of the capital goods industry, than the availability of natural wealth, material, labour and financial resources.

A significant portion of the metals necessary for our capital goods industry are being imported. The fact that materials consumption acoounts for 3/4 of the cost of production explains the importance of the economical and efficient us of raw materials, energy and fuel.

The solving of the problem would imply the following:

First: lowering of the gross and net materials consumption per production unit, by means of improving the design and the existing technological process, as well as by introducing innovatory technological proccesses, by using new approaches for pre-production treatment, by rhytmic and complex supply, quality improvement and improving the conditions for transportation and storage, etc.

Second: The use of new materials as substitutes for materials in short supply or materials which are expensive. A considerable move has been made to improving the structure of construction materials used and the increasing share of nonferous material (especially that of aluminium) and plastics, while reducing the SHARE OF ferous metals.

Third. Improvement of the manufacturing structure of end products with the purpose of reducing the materials consumption per output unit and increasing the extent of manufacturing of input materials.

Fourth. To economize on all scraps, i.e. collecting, sorting out and utilization of all scraps and applying of modern specialized technologies.

Another problem of cardinal importance is the availability of labour force. Due to the shortage of labour resources in the country the further input of labour in the capital goods industry is more and more problematic. This shortage is due to almost complete lack of unemployed labour force, the increase in the labour force being considerably lower than the development rates of production. Another reason is that a considerable part of the labour resources are directed to the non-material production and this trend will be even increased in the future. It is expected that a further shortening of the working time will be introduced to all the spheres of our national economy with a view to proving more free time to be used for recreation, sports, cultural life, further studying and training and for evaluating of accumulated production experience.

3. The Progress of Science and Technology and the Development of the Capital Goods Industry

The extremely diverse and complex impact of the scientific and technological progress on the development of the capital goods industry falls into two broad domains. The first of them pertains to the influence of the scientific and technological progress on the final products of the capital goods industry, while the second is expressed by the former's influence on the technical level of the sector's manufacturing activities. Of course there is no marked boundary line between these two domains because part of the sector's final products are utilized within the secor

itself and thus are immediately influencing the technic level of production.

A basic trend of the scientific and technological revolution which has a direct bearing on the prospective development of the capital goods industry is the regular transfer of operational and intellectual functions from man to qualitatively new technical devices, machines and technologies. Therefore the main task of the capital goods industrial development is the provision of the technical means, machinery and technologies necessary for the implementation of a complex mechanization of production processes, for the electronization of the national economy, for the complex automation of production (which is a higher form of automation providing for the bionization of production, i.e. a level at which every production system is functioning as a living organism.

The impact of the scientific and technological progress on the final products of the capital goods industry is contributing to a considerable extent to the raising of the technical level of the sector's output because the sector is at the same time consumer of its own products. Therefore a problem of cardinal importance is the further development and improvement of the technical base of the capital goods industry production; and first of all the improvement of the stock/labour ratio and the electricity/labour ratio.

4. Investment Policy for Construction and Development of Production Capacities for the Capital Goods Industry

The most characteristic feature of the sub-sectorial development of the capital goods industry under the conditions prevailing hitherto was that it was first of all dependent on

new construction. The reproduction of fixed capital was effected mainly by setting up of new industrial capacities and to a considerably lesser extent on extending of existing capacities or installment of new machinery and equipment. This accounts for the big relative quota of new construction and expanding of existing capacities in the total volume of capital investments. The material and technological base established in this sector made it possible for the further development of production capacities to be accomplished mainly by modernizing and reconstructing of capital stock and by improving the technological and reproduction structure of capital investments.

The modernization of machinery is one of the forms applied for preventing and eliminating the wear of the machine stock. It makes possible the adjustment of existing machinery to the technical and economic indices of new machinery with minimum expenditure and the shortest possible terms. The adjustment of the technical and economic indicators of existing machinery and equipment to the most up-dated requirements prevents premature removal from production and leads to an increase of output rates.

Bulgaria has considerable reserves for increasing the production efficiency in the capital goods industry by modernization of machinery, thus raising 1,5 times the labour productivity. The modernization of more than 3,000 machines has been carried out in the machine building industry over the period 1975-1980, which would result in an economic effect amounting to 5,2 million leva.

The reconstruction of production capacities in the subsequent period is another form of extended reproduction of the

capital stock and renovation of existing machinery and equipment.

It is envisaged that the renovation of capital stock by reconstruction will be carried out along two main lines:

- additional installing of new machinery and equipment to the already existing machine stock.

- replacement of obsolete machines and equipment.

Special emphasis is played now on sustaining a considerable quantity of unfinished construction. The concentration of capital investment on a smaller number of objects of great economic importance ensures the most rapid construction of production capacities and shortening of the lacking up period when the national economy has no return from the capacities under construction. Therefore a narrowing of the construction front and diminishing of the unfinished production is being accompished and envisaged and it is expected that the speeded modernization and reconstruction would have a positive impact.

The policy towards shortening the terms for puting into operation the production capacities has the same objective, i.e. acceleration of the economical effect of these capacities for the benefit of the national economy.

On the whole the country's investment policy is guided by the principle that the continuously increasing economical and efficient use of capital investment is the one and only way for accelerated development of the capital goods sector, given the limitations of resources and especially of the part of the GNP earmarked for accumulation.

5. Use of the Production Capacities and the Fixed Capital of the Capital Goods Industry.

The use of the sector's production capacities and fixed

capital is immediately connected with investment policy and the appropriate allocation of capital investments. This connection is twofold. On the one hand the capital investments are determined by the volume, structure and extent of exploitation of capacities and stocks, while on the other hand the efficiency of capacities and of existing and newly introduced capital stock is dependent on the allocation of capital investment.

The intensive development of the capital goods industry is executed along two lines- capital intensity of production and capital saving production. By the first the increase of labour productivity is accomplished by an increase of the capital/labour ratio, resulting in a trend of increasing the capital intensity of production. By the second, the increase of labour productivity outruns the increase of fixed capital per worker, thus reducing the capital intensity of production. Here a most important task would be the transition from capital intensive production to the higher capital saving form. The successful solution of this problem is dependent in the first place on the technique and technology implemented and the extent of its utilization. This preconditions the gradual transition from lower to higher form of production in the capital goods sector on the basis of the fullest possible utilization of extensive and intensive factors.

The extensive factors are of paramount importance to the better utilization of production capacities and capital stock attained by lengthening the exploitation period of machinery within their fixed working regime.

The improved extensive use of production capacities and fixed capital is reducing the necessity of additional capital investments and makes for the shortening of the time necessary for receiving of economic return, as well as for the maintenance of

up-to-date technological level and for reducing the wear of capital stock.

The increased extensive use of production capacities and capital stock necessitates the drawing in of additional labour. This problem can be solved by introducing complexity machanization in the auxilliary and servicing units and by reducing the number of administrative and managerial personnel at all levels.

The intensive factors are making for imporved utilization of production capacities and capital stock by increasing the work load of machinery per time units and raising their efficiency.

The efficient and rational use of production capacities will assume increasing importance with a view to the necessity of allocating more funds for environmental purposes and for the development of production and social infrastucture, for improving the working conditions and living standards.

6. Concentration and Specialization of Production in the Capital Goods Industry

The further development and improvement of the social charater of production is related to the concentration and specialization at all levels of the capital goods industry, i.e. in all systems of shops, works, units, associations, etc. Given the advantages of scientific and technological progress the cooperation (i.e. an organizational form of social production) is one of the factors determining the accelerated and efficient development of this sector.

Over the whole of the period 1960-1975 the level and extent of concentration in the capital goods industry in Bulgaria was increasingly furthered and promoted. The speeded growth of the overall industrial output volume, the increased use of fixed capi-

tal and the number of people employed in industry are indicators serving as a proof of this development. An index of equal importance is the capital goods industry/other industries ratio.

The increasing concentration process is reflected by the growth and expansion of industrial units and associations. The medium size of industrial units estimated on the basis of the number of labour employed has extended most rapidly. The same holds good for estimations done on the basis of fixed capital.

The increase of the number of industrial units exceeds that of labour employed. Therefore, on the average, the number of employees at a given industrial units has shown a reduction bound tendency.

For the purpose of studying the development of concentration, the industrial units have been subdivided into four groups. The medium size units are prevailing, which is shown on the following table, valid for 1975.

Table 17

Structure according to Extent of Concentration

(in %)

Groups of units	Production output volume (Gross Output)	Fixed capital	Number of employees
Small scale units	2,0	4,1	1,9
Medium size units	55,0	69,5	67,0
Big units	19,0	17,9	28,4
Big scale units	24,0	8,5	2,7
TOTAL	100,0	100,0	100,0

The differentiation within the machine-building branch has already been completed. The machine building units are manufacturing 99,2% of the total machine building output.

A basic trend of differentiation within the machine building units is the establishment of different sub- branches and units for linkages, components, partial processes and functional activities.

The relative share of the individual forms of differentiation of manufactured products in industrial units is shown on the table below:

Table 18

Structure according to forms of specialization (in %)

Form of specialization	According to number of units			According to output volume		
	1965	1970	1975	1965	1970	1975
Object	53,9	53,9	56,4	87,1	63,2	60,4
Component	26,1	16,9	26,0	5,8	27,4	30,2
Technological	3,7	3,5	3,7	2,1	2,8	2,9
Functional	16,2	15,7	13,9	5,0	6,6	6,5
TOTAL	100,0	100,0	100,0	100,0	100,0	100,0

The main thrust of the intensive development of concentration and specialization is the establishment of large scale echelon formations (lines) and economic units for semi-finished products, aggregates, linkages, components, assembly of final products, etc.

7. Planning - a basic instrument for the realization of the economic policy of the State and for achieving of the defined goals

The long experience and practice in planning of the National economy in Bulgaria and in the other socialist states have confirmed that the planning activity is one of the most important conditions for fast and purposeful development of the social production, for the realization of the economic policy of the state and for achieving of the goals, defined on the basis of an uniform plan, which includes the planning of the separate economic enterprises as well as the planning of the whole economy and also the realization of the coordination of the plans in the frames of the socialist community.

The material base of the planning is the public property of the capital means of production. The knowledge of the economic laws and their creative use give the possibility for the planned development of the economy and for efficient use of the production resources. The planning is realized by means of the economic and organizational activity of the state, which is based on the purposeful use of the economic laws in the economic practice.
In accordance with the objective operation of the economic laws, in the national economic plans there are deliberately and purposefully established all most important structural changes in the economy, the rates of growth and the economic proportions of the whole economy and its sectors. In accordance with the stages of development and the tasks, which have been set up, there are used in the planning different forms and methods, there are applied different means of economic management and material incentives, which

(under given conditions and by the level of development of the productive forces, which has been reached) give greatest possibilities for efficient and purposeful use of the economic laws.

The industrial production plan has always taken a central place in the national economic plan of the country and this plan has always defined the rates and the proportions of the reproduction process as a whole. The capital goods industry is a substantial part of the industrial production, which defines to a great extent the level of labour productivity and the use of the vements of the scientific-technological progress. For the Bulgarian economy it is of great importance that the delievery of capital funds for the production be realized through economic connections, which constitute a specific part of the national plan. The balancing of the production programme with the needs of the country and the interconnections with the other countries within the frames of the yearly and five-yearly plans, as well as the connection of the capital goods industry with the other sectors of the economy, is a basic task of the planning activity.

An object of planning are not only the indicators of the volume, but also the qualitative characteristics of development, which have a specific technical economic character as well as social and regional aspects. In the planning process are sought relevant interrelations between the current, the concrete and the general, the perspective, etc. There are also solved the problems of the organization and management of the economy by means of relevant forms and methods, as well as of purposeful relations between the centralization and decentralization in the management and the planning, in the seeking and use of the inner-factors and possibilities and in the consideration of the conditions abroad and their probable change, etc.

B) ANALYSIS OF THE INTERNATIONAL COOPERATION, TRANSFER OF TECHNOLOGY, INDUSTRIAL RESEARCH AND THEIR IMPACT ON THE DEVELOPMENT OF FIXED CAPITAL GOODS INDUSTRY. SOME RELATED INFRASTRUCTURAL DECISION MAKING (SOCIAL AND ECONOMIC)

The increase of the complex, long-term and multi-sided character of the relations of specialization in the production and the scientific-technical field strengthens further their role of a main factor for the dynamic and efficient development of the country and especially of the production of fixed capital goods (means of production).

The results of this impact are various. Even their most generalized description indicates that for Bulgaria there did not exist and there does not exist an alternative way of the already realized way (on international basis) for creation and development of the sector fixed-capital goods industry (from the viewpoint of efficiency, time and scale). The comparative analysis of the industrial development and of the export of the economically developed countries indicates that Bulgaria represents in this respect a precedent - not a single country has reached the following results: while during the year 1952 the machines and equipment did not exist in the export structure of Bulgaria, during 1979 they formed a half of the export resourses of the country and 1/4 of these were capital means of production.

The development of the production of the fixed-capital means of production occurs under the direct and continually increasing impact of the integration processes and especially of the international specialization and cooperation in the system of COMECON. In view of the dicisive role of this sector in the national economy, it is through this sector that the basic rela-

tions between the national economic complex and the integration system are formed, it is through this sector that the impact of the integration factors on the economic growth and the development of the structure of the bulgarian economy is mainly manifested.

1. Bulgaria's participation in the specialization, cooperation and scientific and technological cooperation related to the capital goods industry within the framework of COMECON.

The open character of the national economy of Bulgaria is a precondition for the realization of a broad economic and scientific-technological cooperation with all countries in the world. Because of a number of conditions and factors, the national economy is being developed mainly within the frames of COMECON. This is to be explained with the belonging of Bulgaria to the community of the countries - members of COMECON. For this community are characteristic the establishment and the maintainance of international relations of principally new type, the basic contents of which are the equality of the members, the mutual respect and the mutual help of comrades.

Of great importance is the fact, that along with the general common practical goal which the COMECON has set up - the continuous strengthening and inreasing of the economic and the scientific-technological cooperation and the development of the socialist economic integration, there is also the task of supporting in all respects of the countries with less developed economy so that they may realize their industrialization with higher rates of growth. For the solution of this task are used different methods

and means, the most substantial of which are the international specialization and cooperation of production and the realization of an intensive (by rates) and large-scale scientific-technological cooperation.

The fact that now Bulgaria is fulfilling its obligations connected with more than 190 international contracts and agreements and that its exports of specialized machinebuilding production will be about two times more for the year 1980 in comparison with the year 1976 indicates the large scale of our participation in the international socialist division of labour in the sector of the machine-building. The relative weight of the specialized machine-- building production in the total export of machines for the countries - members of COMECON is 64,2% for 1979 (while in 1976 it was 48,2%). The small scales of the needs of our country of different kinds of machine-building production requires the organization of mainly export-oriented machine-building production, predominately for the other countries - members of COMECON. This is the reason why Bulgaria presently takes the second place among the countries - members of COMECON by volume of export of machine-building production per person of the population.

Products and industries, which are developed in Bulgaria under the favourable influence of the international cooperation and specialization (mainly within the frames of COMECON) and ensure a substantial participation of the country in the international division of labour, are as follows:

- Production of electric trucks and electric hoists (telphers) as well as of other lifting (hoisting) and transporting machines for inner-plant transport and for mechanization

of the loading and unloading operations;

- Production of agricultural technology, machines and installations for the food-processing industry, as: vine-growing tractors, type T-54 B, soil - cultivating machines, planting machines, equipment for harvesting of sunflower, combines for harvesting of grapes, electronic devices for the agricultural machines, sets of equipment for primary handling of tobacco, rotor- mowers, sets of pneumatic installations for live-stock, sets of technological lines for the milk-processing, the wine-producing and the canning industries, lines for the distribution and packing of food-liquids, automatic machines for sorting and packing of loose-foods and other kinds of food - products;

- Shipbuilding. The profile of the Bulgarian shipbuilding is defined by the specialized (on a multi-lateral base) vessels as: ships for loose goods of 25000 tons, dry-dock ships of the type "river - sea", small-tonnage tankers, ships for transport of containers, ore-bins, floating ferro-conctrete workshops, etc.

- Production of metal-cutting machines. A special attention is paid to the production of semiautomatic machines, of special accessories, and instruments of automatic lines, of specialized hydraulic machines, of complete sets of equipment for casting with counter-pressure, etc.

- Production of machines andinstallations for the atomic (nuclear) energetics;

- Electrical industry. Bulgaria is a large-scale producer and exporter of separate kinds of electric motors, including micromotors for sound-recording apparatuses, complete sets of electric motors for the metal-cutting machines with digital-prog-

rammed control, complete transformer substations, complete sets of distribution devices, apparatuses with low and high voltage, step regulators, manual electric instruments, separate kinds of non-standard technological equipment, etc.

- Production of machines and equipment for the chemical industry as: production lines for sulphric acid, machine for processing of plastics, apparatuses for chemical products, etc.

- Production of computer technology as: central processors, different kind of peripherial memory units, apparatuses for data processing, etc.

- Production of communication technology as: automatic telephone centrals for institutions, settlements, the railway transport; some kinds of tightening technical means; complete sets of radio-relay apparatusses from 60 to 960 channels; ultra-short waves radio-stations; telephone apparatusses, etc.

- Specialization and cooperation of the production within the frames of COMECOM for different component products - accessories, aggregates, units with general purpose for the sector, radio-components, integral schemes, etc.

We may underline in conclusion that the many-sided and the bilateral international specialization and cooperation in the production of the capital goods industry in the frames of COMECON is a steadily expanding and strengthening process, in which the participation of Bulgaria is becomming more active and greater, which corresponds with the requirements for accelerated development of our economy, for continuous improvement of its structure, for steady improvement of its efficiency. In this respect there is a complete harmony between the national and international interests and this is the fundamental precondition for

the achievement of greater success in this field.

Parallel with the quantitative problems of the production of fixed capital goods in the socialistic community arise also serious problems in connection with the technical-economic and qualitative level of these means of production. In this respect, the countries-members of COMECON realize a many-sided and highly efficient cooperation. It is expressed in the coordination of the research and development activity, in the common realization of constructions, standards, technologies and other documentations, in the common buying of licences, in the exchange of large quantities of scientific-technological, construction, technological and other documentation, in giving technical assistance and in accepting for production training and the raising of the qualification of workers and specialists, etc.

We may indicate the extent of the participation of Bulgaria in the scientific-technological cooperation, which is realized in the frames of COMECON, when we quote some total data for the year 1979. Bulgaria has taken part in the development of about 2900 problems (topics) with practical-application character. About 300 topics have been completed. Of them about 140 topics are on the development of new products, mainly capital means of production, new and more progressive technologies (predominately in the machine manufacturing). The development of standards, in which the experience and the achievements of all sister-countries is accumulated, has given good results: there were accepted about 700 standards of COMECON, of them 590 were introduced in the production. During the year have been received 250 sets of documents - mainly on problems of the machine manufacturing. About 2400 persons were sent abroad in order to master the production experi-

ence of the more developed socialist countries. At the same time 630 highly qualified specialists of these countries have given concrete help in Bulgaria with the purpose of improving the production of basic products.

2. Bulgaria's participation in international cooperation in the field of the capital goods industry with non-socialistic countries.

Bulgaria carries out a policy, which is directed towards expanding of the economic relations with all countries, indepeddently of their social order. In this respect the country realizes international cooperation with non-socialistic countries in the different fields of production, the scientific-technological cooperation, the buying of patents, licences, engineering services, leasing and others.

An expression of the policy of the Bulgarian state for expanding of the economic connections with other countries are a number of laws, regulations, etc. With those the international cooperation has received legal reglamentation. Parallel with these there are a number of measures for overcomming the difficulties and the formalities in making contracts for cooperation and for the stimulation of the Bulgarian enterprises towards the establishment of logn-term and lasting relations with the firms of the other countries.

The main law, on the basis of which are made contracts for international cooperation between Bulgarian and foreign enterprises, is the Law of Foreign Trade. Acoording to this law, all transactions in the sphere of the international economic relations, contracted between Bulgarian economic organizations and

foreign firms, are considered as foreign trade activity, which is realized by the state monopoly of foreign trade.

There has been issued in Bulgaria in 1971 a regulation for the industrial cooperation of the Bulgarian economic organizations with enterprises and firms of the non-socialist countries. In this regulation there has been indicated the order, the way of study, the planning, the financing, the calculation of the economic efficiency, the contract-making and the material interest of the bulgarian economic organizations in the cooperation with non-socialist firms.

Other laws and regulations are directed towards the different forms of incentives, the specific regualtions for giving of premiums, the sanctions for the economi assosiation and their sections and for the foreign trade organizations and their personnel in accordance with the fulfilling or not fulfilling of the measures for industrial cooperation.

Since the middle of 1974 the legal regulation of the international cooperation between Bulgarian economic organizations and foreign firms is carried out on the basis of a special document Nr. 1196 for the economic, production and technical cooperation with foreign juridical and physical persons. In this decree are given the basic legal principles and cases for establishing, continuing and strengthening of the economic, production and technical cooperation. Besides, in this decree are shown the goals, which such cooperation may persue. They are as follows: the first goal is to construct new and to modernize the existing production capacities and to introduce new products, using the most advanced technology and the contemporary scientific-technological achievements; the second goal is to improve the efficien-

cy and the organization of production and to increase the productivity and the quality of production; the third goal is a better satisfying the needs of the country and expanding its possibilities for export; the fourth goal is a more rational use of the material and labour resources of the countries according to the contracts. In the decree are also given the forms through which may be accomplished the economic, production and technological cooperation with foreign firms. They are the following:

a) Common activity for creation of production capacities or for reconstruction and modernization of the existing capacities on the basis of the contemporary scientific-technological achievements

b) Common research, projecting and other activities.

c) Organization of contemporary production of finished and semi-finished products and of documentation of the countries or of the relevant organization, exchange of products, documentation, licences, technical experience, etc.

d) Common participation in the delivery or the construction of comlex objects on the territory of the country and in third countries, common assembly or control of the assembly.

e) Organizing of joint enterprises outside of the territory of Bulgaria for economic or for other business activity, etc.

During the last years Bulgaria realized a significant number of agreements for international cooperation.

The Bulgarian "State economic associations" (SEA) have the possibility to cooperate with foreign firms also in the field of the projecting - construction activity and to carry out common work with forein firms on the projecting and construction of new or on the improvement of the existing aggragates of lif-

ting and transporting machines as well as on other machines for concrete objects. They have also the possibility to give technological and other documentation about such machines, as well as to give patents, licences and technical assistence for their production, assembly, introduction into exploitation, etc.

The development of the international cooperation, as a new form in the international relations between the countries with different social systems is caused by the regularities and laws of the development of the world economy, which are connected with the scientific-technical revolution. This process leads to the internationalization of the production and the productive forces, as well as to the intensification of the economic relations between the countries, and especially to the technological and detail (unit) specialization of the production of the enterprises of the two systems and mostly with the developing countries.

The scientific-technological progress has caused the appearance of a new structure in the international trade, of new forms of economic cooperation. There is a great increase of the commerce with patents, licenses, technologies, etc. There have been created many firms for technical assistance, for engineering, etc. This very process leads to expanding and strengthening of the economic and scientific-technical cooperation between the two systems and to their further development. These new forms of the economic cooperation penetrate into increasing number of sectors. They include an increasing part of the economic activity in the countries of COMECON, as well as of the countries, which are outside this community and especially of the developing countries.

3. Industrial research and scientific, technical and economic cooperation

Independently from the international scientific-technical cooperation, the buying of patents and licenses and the cooperation in the field of the capital goods industry, in Bulgaria is carried out an active policy for the development of industrial research especially in those fields, which take a great share and have great importance in the economy of the country and in which Bulgaria specializes with in the frames of COMECON.

The industrial research in the field of the capital goods industry is concentrated in the sector scientific organizations, which work together with the production units form scientific-industrial organizations and combines, or work independently. The organizational linking of the research with the production has a number of advantages not only from the viewpoint of the problematics and the purposeful orientation, but also from point of view of the personnel potential, the training of personnel, the better use of the technical base, etc.

In this respect one relies on the following:

1. Ensuring of the necessary scientific potential and on this base increasing substantially of the scientific-intensity of the production and raising the science/ labour ratio. As a result of the realized policy during the period 1965-1973 the number of reaserch workers has increased 2,2 fold, of them about 16,14% being engaged in the branches of science, which serve directly the capital goods industry. The personnel engaged in science and in serving of the science in our country reached in 1977 1,51% of the total number of the workers and employees. The persons engaged in science and in serving the science during

1977 are distributed by categories as follows: scientific personnel - 16,6%; scientific - serving personnel - 46,0%; workers - 23,3%; others - 14,14%;

2. The creation of a big stock of scientific decisions and results, which should ensure the continuous innovation of the production and the constant supporting of high technical level of the production.

3. The creation and the implementation in the production processes of principly new highly productive means of labour-machines, equipment, machine-systems with programmed control, robots, etc., based on the broad use of electronics, microprocessors and highly efficient systems of labour management in the production.

The more important elements of the international scientific-technological cooperation are the following:

- coordinating of given research units of the contracting countries;

- carrying out of joint fundamental research investigations;

- exchange of experience and joint activity in the field of the invention and patent work;

- cooperation in the training of highly qualified personnel.

There are created commissions on bilateral basis as organs of the scientific-technological ccoperation. The first commission of this kind was created in Bulgaria in 1959 in cooperation with the USSR. After that there were created such commission also in cooperation with the other socialist countries. Today Bulgaria has signed payment and trade agreements with over 50

countries. In a number of these agreements are included also agreements for scientific-technological cooperation.

The economic cooperation includes the cooperation between the contracting countries in the following fields:

- in commerce;
- in the state and firm credit;
- in the cooperation activities;
- in creating joint firms abroad;
- in the construction activities;
- in the geological investigation activities, etc.

The economic cooperation is almost always accompanied also by scientific-technological cooperation.

4. The evolution of the capital goods industry in Bulgaria and some problems of infrastructural decision making

The strategy of regional balancing, which was adopted in Bulgaria soon after 1944, has had a great impact on the whole industry and on the machine-building industry and its territorial distribution. It has had as a goal to take out of the state of economic depression some regional parts of the country, which had valuable raw materials and labour force, as well as to improve the condition of the underdeveloped territorial units of Bulgaria. In this sense, in almost every settlement of urban type there has been constructed a machine manufaturing enterprise, which (according the sectorial specialization at that time) had an universal production structure with various assortment of the production, without making a substantial difference between the local and national importance of the relevant enterprise.

At the same time, the processes of expanding industrialization and urbanization create some changes in the existing regional structure of the country - significant migration of the working-age population from the villages to the towns, which in some parts takes a sharp character by concentrating in separate bigger settlements a substantial number of work - capable population. The influence of the balancing regional strategy continued a concideably long period and lead to results, which to a certain extent may have a contradictory interpretation.

On the one hand, the creation of professional employment of the population in the different regions of the country has raised the industrialization level of the whole country, has changed the existing economic organization (which was predominately agricultural) and to a certain extent has harmonized the professional social and cultural development of the population in the different parts of the country. The realized regional balancing leads to an improved construction and reconstruction of the main infrastructure (transport facilities and engineering communications) of the whole country, whose infrastructural heritage was very little and grown old. Actually, in Bulgaria was built up an almost new infrastructural base in functional as well as in territorial aspect. The listing of the positive effects of the described strategy of regional balancing may be continued, but the important thing is to underline that this strategy played a really important role for a given historical phase and was objectively a kind of regular tendency of the industrial and territorial development of Bulgaria.

c) The technical and technological levels of complexity development in the sector and in its sub-groups

The problems about the levels of development and their quantative definition, comparison and evaluation are very important, but at the same time very difficult to solve because of their complex character and their specifics in the different countries. The evaluation of the complex development of such a complicated sector as the machine manufacturing, respectively as the capital goods industry, should take into consideration a number of technical, technological and organizational-economic characteristics, which are often heterogeneous and incomparable. This fact makes it necessary first of all to list the aspects in which the complex development of the sector is to be studied and, after that, to choose the methods and the indicators for measuring the relevant levels and for carrying out of analysis and decision making.

1. System and indices used in determining the technical and technological development of the capital goods industry in Bulgaria

The technical and technological development of the machine manufacturing is generally analized and evaluated in the following basic directions:

. Nomenclature - the produced groups of final and component products, the range of their typical lines of products, the share of the produced positions in the totality of positions of the world machine manufacturing (according to relevant classifications).

. Quality of the products - in the broad sense of the word this includes: functionality, productivity, reliability, design, etc.

. Technology of production - the implementation of progressive methods of processing, economy of resources, protection of labour and of the environment.

. Material base - the introduction, modernization and efficient use of highly productive technology and instruments, contemporary plant installations, machinery, communications, production and residential building.

. Division of labour - international, sectorial and subsectorial echelon (line) formation of the machine-building production, concentration of the general-sector products and product groups on the basis of new technologies and standardization of the component products.

Each of these directions have been developed by means of a systems of indicators and means for measuring, planning and comparing of the planned or actual levels. These are regulated by state normative documents, connected with the economic mechanizm of the national economy. All this is coordinated with the existing systems for evaluation in the countries - members of COMECON. The combination of the analytical materials on the development in technical and technological direction with the analysis of the economic characteristics as: level of the production costs and of the prices, level of the investment, the proportions between the product of the group "A" and group "B", etc. All these analytical data allow to follow and to regulate the complex development of the sector in accordance with the general goals.

A complex evaluation, which can be derived from the evaluations of the levels of the separate factors, is usually not practiced in Bulgaria, because of the conditional character of such a complex evaluation for heterogeneous values. For example, the complex evaluation allows the mixture of the negative results and the low levels of some factors with the positive results and the successes of other factors. It does not allow to see clearly that low level, which should be raised. It does not give the possibility for international comparisons, because the complexity of the evaluations is different in scale and is formed on the basis of different methodologies in the different countries.

Methodologically we avoid the application of different weights (balling) for the different indicators, but use broadly the absolute values, the percentages and the arrangement according quantities and values for the different indicators. In this way the system becomes more flexible and adoptable to the dynamic changes in the technical and technological level of the world production of means of production. The information about the given indicator becomes quickly out of date by the contemporary conditions,. Therefore, it is more rational to follow the absolute values for short periods. By the "balling" (general evaluation by giving relative weights of the factors), where we use an interval for the relevant values of the indicators (indices), we cannot trace the changes and the tendencies of their development.

1.1. Nomenclature

A characteristic indicator about the development of the production of means of production is the relative weight (share) of the produced positions of machines to the total positions of

such machines produced in the world, i.e. the establishing of the diversification of the production. The quantitative measurement of this indicator is, however, in dependence of the completness and the degree of differentiation of the classifier on the bases of which the comparisson is made. Different classifiers may be used: the uniform classifier of the production (ЕКП) - Bulgaria; the soviet classifier (МСПК), the classifier of foreign trade of COMECON (ETHBT); the classifier of UN (SITC, ISIC), etc.

One of our studies about the mastered nomenclature in Bulgaria, according the classification of SITC, has given the following results:

Table 19

Mastered nomenclature in Bulgaria (in numbers)

Group	Designation	Groups	Subgroups	Positions
71	Non-electrical machines and equipment	7	36	60
72	Electrical machines and equipment	6	18	25
73	Transport means	5	25	14
	Total:	18	79	99
	Of them mastered in Bulgaria:			
71	Non-electrical machines and equipment	7	26	34
72	Electrical machines and equipment	6	16	23
73	Transport means	4	14	9
	Total mastered:	17	56	66
	Relative weight of mastering (in %):	94,4	70,9	66,7

As it is seen from the table, the degree of mastering is different for the levels of desagregation. It is more conditional for the aggregated groups, where under "mastered group" should be understood partial mastering.

1.2. The quality of goods

For the comparison of the quality of the products to the world levels there have been introduced three evaluations:

"K" - over the average world level;

"1" - on the average world level;

"2" - under the average world level.

The relative weights to the total production in value terms of the accepted evaluations of the quality, as well as of the different kinds of developments, are to be seen in the following table:

Table 20

Quality indicators and kinds of developments (in %)

Indicators	1978
Quality evaluation "K"	5,1
Quality evaluation "1"	40,8
Quality evaluation "2" and non-evaluated production	54,1
New and improved products (Part of the plan for science and technological progress)	40,4
Structure of the developments: own developments	70,0
Using of foreign experience	8,3
Licences	0,7
Documentation	15,2
Models and samples	2,3
Other developments	8,5

1.3. Production technology

The level and the development of technology (in the broad sense of the word) is to be planned and reported also in the plan for technological progress, as it is done analogically to the products. The difference is in the grounding of the tasks for the raising of the technological level, since the introduction of more progressive technology is economically purposeful under defined conditions. There are carried out periodically for this purpose studies and pre-project investigations as a preceeding phase for forming of technological tasks in the plan for technical progress.

Of the total number of tasks, about 25% annually are for technological studies, new and improved technologies, new and improved raw materials, etc. Analogically to the problems of quality, the quantitative establishment of the level of technology is less important compared with the problem of selecting of those tasks, which will give periodically technological and economic effect in the sector and the sub-sectors of the production of means of production.

1.4. Material foundation

The material foundation is one of the decisive factors for the development of the sector and the sub-sectors and for this reason is an object of analysis of its level.

The main indicators of this evaluation are: fixed capital per person of the industrial production personnel; energy per labourer; production per unit of fixed capital; structure of the fixed capital production means (funds). These indicators serve to carry out a comparative analysis with world known firms

by analogical products or with enterprises of different subsectors with a similar profile of the production process.

1.5. Division of labour

The participation of Bulgaria in the international division of labour has a very great impact on the technical and technological level of the specialized productions, because of the sharp increase of the big series and the possibilities for application of highly productive technique and technology. The relative share of the export of the total production of given groups of machines, as well as the absolute number of the exported products are indications of the necessity of raising of the technical and technological level of the production.

The preconditions for the sector and subsector concentration of products and assembly-parts (details, units) assortment are constantly analyzed. The main indicators for the study of the concentration and the specialization in the sector are coefficient of object specialization; coefficient of unit-assembly specialization (by details and groups of details); coefficient of technological specialization; average size of the enterprises by the volume of production, by fixed capital means of production and by personnel; grouping of the enterprises in intervals by the three indicators; production capacity in physical units for defined delievery products.

In conclusion of the analysis of the Bulgarian experience and practice of establishing the technical and technological development of the sector there should be noted, that the complex development depends on many factors, which are complicated for investigation and bacause of that is necessary a com-

plex system of indicators, which to allow a comparative analysis in depth and breadth. The incomparability of the factors and their values are an obstacle for a global and general evaluation, but the analysis in given directions allows to establish with satisfactory exactness the attained results - positive and negative, and in this way makes it possible to react in time and in accordance with the changing economic and production situations.

2. Results and analysis of the studies on the technical and technological level of this sector according to UNIDO methodology*

2.1. Scope

The technical analysis includes products belonging to the group "Manufactured metal products, machines and equipment" which form Class 38 of the international classification ISIC.

The structure of the products examinded, confermed to the categorization of the products according to Class 38 of the ISIC nomenclature, is presented in the following table(Table 21).

Table 22 contains indices A, B, C, D, E and F. They are used to indicate the following: "A" indicates products manufactured in Bulgaria - "A" indices respond to the consecutive number on the technical list; "B" indicates products which are not manufactured; "C" indicates products which are manufactured in this country, but are not examined; "D" indicated products which have fallen out of manufacture; "E" indicates products which are being

* The following materials have been used: "Paper prepared by UNIDO for the seminar in Algiers, held December 1979"

Table 21

Scope of the studied nomenclature

Class 38 Groups	Determination of the product Metal products machines, equipment	Number of products (UNIDO methodology) Total	(%)	Number of examined products Total	(%)
381	Manufacture of metal products, excent machines and equipment	23	7	5	3
382	Machines, except the electric ones	203	65	120	71,8
383	Electric machines and apparatuse s	28	10	16	9,6
384	Transport equipment	45	14	17	10,2
385	Professional and scientific measuring and control devices	14	4	9	5,4
	T o t a l	313	100,0	167	100,0

adopted by the industry at present and for which there is no avai-- lable data on the assessment of the indices contained in the methods for analysing the production process and on the complexity of the products; "F" indicates products designed to be used in everyday life; they are not included in the scope of this study. In is evident from Table 22 that 83 per cent of the nomenclature manufactured in this country has been examined.

The products examined are characterized by the fact that they are entirely capital goods, machines and equipment for end products. They represent actual groups of products with homogenous parameters. They are indicative of the manufacture of a number of products and do not characterize the production of single, individual products.

Table 22

Nomenclature examined according to the classificator

Groups	Denomination	Measure	Groups exam.		Groups not examined				Total for the groups
			A	B	C	D	E	F	
381	Metal products less machines and equipment	Number of Positions	5	1	10	1	-	6	23
		%	21.7	4.3	43.5	4.3	-	26.2	100
382	Machines and equipment less electric ones	Number of Positions	120	63	8	8	7	2	208
		%	57,7	30.3	3,8	3.8	3.3	1.1	100
383	Electric machines and equipment	Number of Positions	16	8	9	-	-	-	33
		%	48.5	24.2	27.3	-	-	-	100
384	Transport equipment	Number of Positions	17.	22.	3	5	-	2	49
		%	34.7	44.9	6.1	10.2	-	4.1	100
385	Apparatuses and control devices	Number of Positions	9	2	4	-	-	-	15
		%	60.0	13.3	26.7	-	-	-	100
	T o t a l from the classificator	Number of Positions	167	96	34	14	7	10	328
		%	50.9	29.3	10.4	4.3	2.1	3.0	100

The products examined take part and guarantee the production of capital goods, with the exception of the products of Groups 381 and 383. Group 383 products do not represent entire electric machines, most cases they are only individual components of these machines. Electronics is excluded from the present study, being an integral industrial branch.

Two parameters - α and β, are used for the determination of the complexity of the products. The first coefficient denotes the value of 1 kg of a certain product in US dollars. The β coefficient is an assessment of the renovation rate of the products examined. The values of the two coefficients are assessed in 6 classes, and the scope of variation of the parameters of these classes is as follows:

For α - up to 2.5; 2.5 to 5.0; 10 to 20; 20 to 40; over 40 (value of 1 kg of the product in US dollars)

For β - this being the measure of the renovation rate of the product over 50 years; 50 to 35 years; 35 to 25 years; 25 to 15 years; 15 to 10 years; and less than 10 years.

2.2. Technical characteristics of production

It is being drafted on the basis of the 44 factors. These factors are presented in the following order:

- for central production units - 6 factors
- requirements of the semi-finished products - 8 factors
- requirements of the technological processes - 15 factors
- components assembled into finished capital goods - 15 factors.

These factors express only one single production function (mounting-assembly, less the time spent on "know-how") and the most important characteristics of the production apparatuses and their management.

The other production processes are only a part of the items of the semi-finished products, as well as the technological servicing of the process of mounting.

The basic content of the industrial production needed for the manufacture of capital goods is determined by means of the technical factors.

Six levels of development and complexity of the products for the equipment have been used. These levels respond to the historic and technical development of the industry producing capital goods. The information obtained thus, which allows an assessment of the possibilities of industrial production growth, denotes its homogeneity.

The use of data on the direct time expenditure for production and for the needed "know-how" discloses the qualification of labour spent on the production groups.

2.3. Quantitative evaluations of complexity

The standard build-up system is being applied because of lack of criteria or methodology for determining the weight of the variants examined.

Thus, the initial level of each factor is evaluated with the starting value "one". The growth that follows with the transition of one level to the next one is done by a geometrical progression with the rate changing for each one of the factors. The rate has three values: 2, 1.68 and 1.41.

The total value of the index of complexity of a certain product of the capital goods is the arithmetical sum of the weights of the different sectors of the 44 factors, i.e., it is obtained by adding the values responding to the factors of the central production unit, of the sub-mounting of the semi-finished products, the technical servicing and the components. The two factors α and β are not considered when summing the other values because of the above mentioned reasons.

A minumum and a maximum value for complexity of the products is also obtained. As a result, an average complexity value is calculated. It represents the common, combined meaning of the index of complexity.

The factors of the components may not be considered when determining the index of complexity, thus this index is obtained without the effect of the components. This is needed only during the initial development of the production of capital goods in case when they are not produced at home, but are imported from abroad.

In these calculations the complexity is obtained for all 44 factors and they possess levels of complexity in the limits 20 to 240. These groups of products are divided into 6 classes accordirg to the following values:

The examined 167 products are classified as dependent on the above classes. In table 23 is given the division of the products by groups and their relative part in the group and a combined value, as dependent on their complexity. It must be born in mind that their average complexity is being denoted.

The data analysis of this table shows that dominating classes of complexity are III and IV, representing 49.1 and 35.3

Index of complexity by groups and for the

Gourp	D e n o m i n a t i o n	Measure
381	Metal products less machines and equipment	Number of the positions %
382	Machines and equipment less the electric ones	Number of the positions %
383	Electric machines and equipment	Number of the positions %
384	Transporting equipment	Number of the positions %
385	Apparatuses and control instruments	Number of the positions %
	For the whole examined nomonclature	Number of the positions %

Table 23

whole examined nomenclature

Index of complexity						Number of Positions in Total
N 1 I	N 2 II	N 3 III	N 4 IV	N 5 V	N 6 VI	
5	-	-	-	-	-	5
100	-	-	-	-	-	100
-	7	59	47	7	-	120
-	5.8	49.2	39.2	5.8	-	100
-	3	13	-	-	-	16
-	18.7	81.3	-	-	-	100
-	-	6	8	3	-	17
-	-	35.3	47.0	17.7	-	100
-	1	4	4	-	-	9
-	11.0	44.5	44.5	-	-	100
-	16	82	59	10	-	167
-	9.6	49.1	35.3	6.0	-	100

per cent, resp., of all products examined. The first and sixth classes are empty. The second and the fifth classes have similar importance, this being 9.6 and 6.0 per cent, resp., of the total number of examined products.

Table 23 data give opportunities for assessment of the manufactured porducts on the basis of similar indices used in other developed countries, and to denote measures for an increase in their complexity by raising the level of the factors included or not included in the present study.

Table 24 data present the average weighed value by classes and by factors A1, B1, B2 and C of the levels of the infrastructure of products from different groups.

Table 24

Weighed value by groups and factors

Group	Denomination	Measure	Factors				Mean group index
			A	B1	B2	C	
381	Metal products less machines and equipment	Weighed units	11.4	2.4	6.4	1.0	21.2
		%	53.9	11.4	30.0	4.7	100.0
382	Machines and equipment less the electric ones	W.U.	25.3	7.1	13.8	15.1	61.3
		%	41.3	11.6	22.5	24.6	100.0
383	Electric machines and equipment	W.U.	18.3	6.2	15.5	3.7	43.7
		%	42.0	14.0	35.5	8.5	100.0
384	Transporting equipment	W.U.	28.5	9.2	22.2	36.4	96.3
		%	29.6	9.6	23.0	37.8	100.0
385	Apparatuses and control instruments	W.U.	33.9	3.4	11.6	1.0	49.9
			68.0	6.8	23.2	2.0	100.0
	Examined nomenclature mean	W.U.	29.4	7.1	17.4	14.3	68.2
		%	43.0	10.4	25.6	21.0	100.0

Highest average weighed value of factors "A" possess groups 385, 384 and 382, this being explained by the great concentration of production and specialisation of these products.

Moreover, these products are characterised by the great dynamics of their technical development and the speed of their renovation (indice B). This denotes the high value of the factor "konw-how".

Factors "A" have the greatest part with almost all the groups, as compared to the other factors B1, B2 and C. This is specially indicative for groups 385 and 383 and depends largely on the structure of the products.

B2 is the second important factor. Obviously, the manufacture of these products requires more and quite complex technological processes Highest value of this factor possess groups 385, 385 and 384.

Factor "C" is at its highest with the transporting equipment, due to the use of a greater number and more complex composite machine parts and systems. Similar conditions for this factor exist in group 382. For all the rest of the groups the value of this factor is in the limits 2 to 8.5 per cent.

Table 25 shows the numerical values of coefficient α for the examined products. These data show that coefficient α reaches a maximum of class 3 for groups 383, 384, 382 and 381. The only exceptions are about 25 per cent of the products of group 382 and the examined products of group 385, which possess a higher class for coefficient α. These results show that the manufacture of these products has low prime cost per 1 kg. This is highly indicative for the transporting equipment.

In general, for all examined groups, coefficient α is

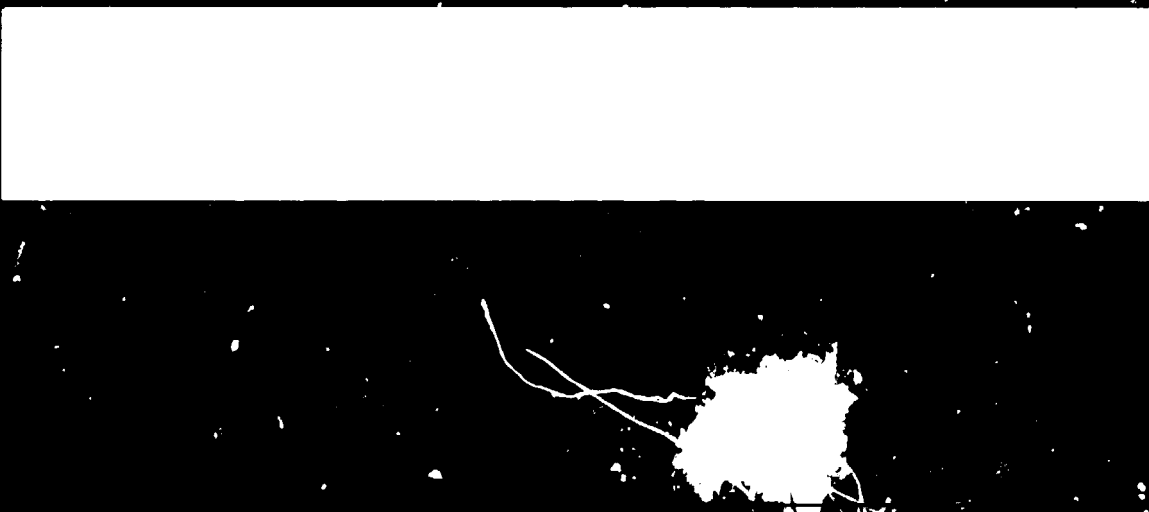
Weighed value of coefficient α by groups

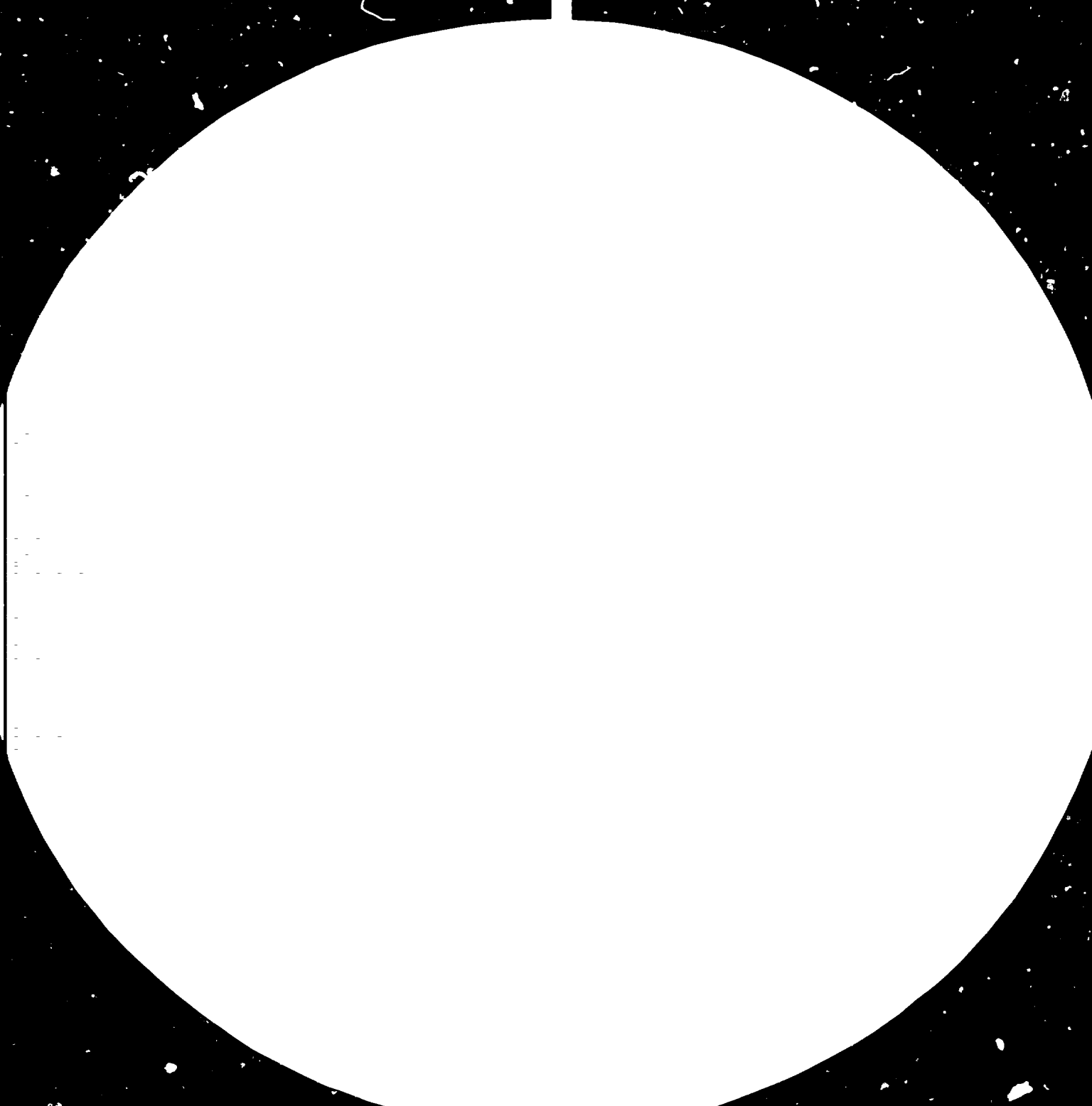
Group	Denomination	Measure
381	Metal products less machines	Number of positions
		%
382	Machines and equipment less electric ones	Number of positions
		%
383	Electric machines and equipment	Number of positions
		%
384	Transporting equipment	Number of positions
		%
385	Apparatuses and control instruments	Number of positions
		%
	For all the examined groups	Number of positions
		%

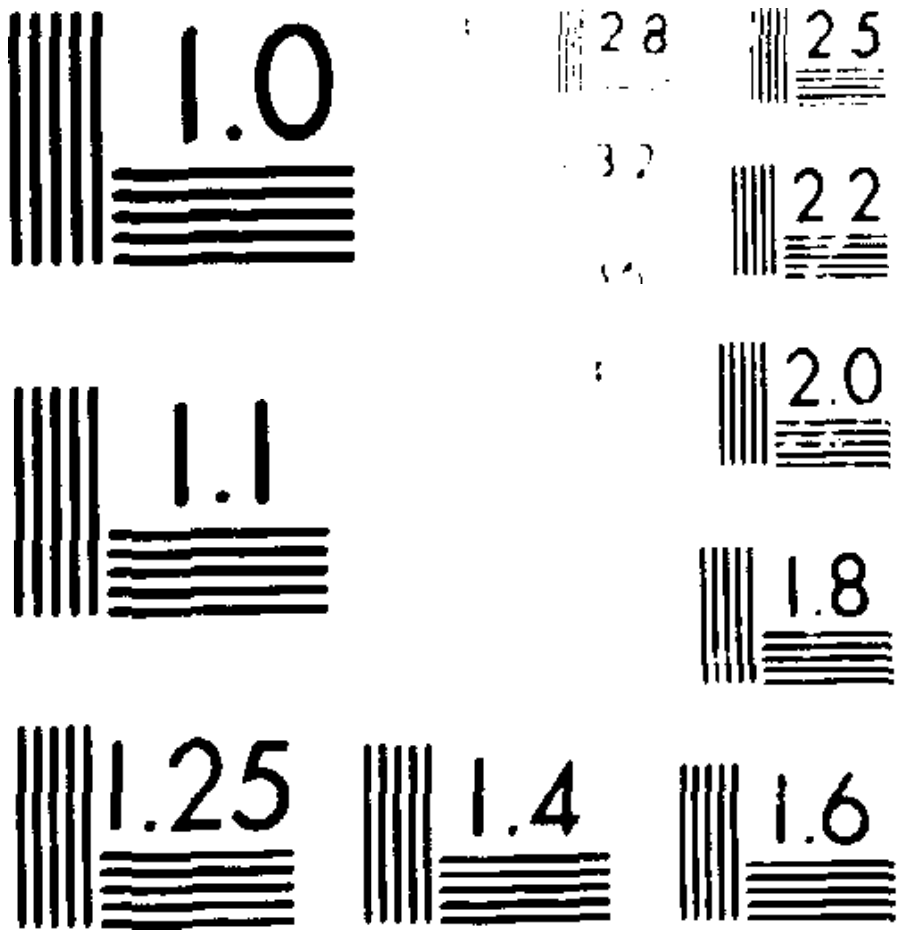
Table 25

and for the whole examined nomenclature

Weighed value (dollars per kg)						Total of number positons
1 to 2.5	2 2.5-5	3 5-10	4 10-20	5 20-40	6 over 40	
-	2	3	-	-	-	5
-	40.0	60.0	-	-	-	100.0
3	39	47	19	7	5	120
2.5	32.5	39.2	15.8	5.8	4.2	100.0
1	2	13	-	-	-	16
6.2	12.4	81.4	-	-	-	100.0
1	8	8	-	-	-	17
6.0	47.8	47.0	-	-	-	100.0
-	-	1	4	2	2	9
-	-	12.0	44.0	22.0	22.0	100.0
5	51	72	23	9	7	167
3.0	30.5	43.1	13.8	5.4	4.2	100.0






1.0
2.8
2.5
3.2
2.2
2.0
1.1
1.8
1.25
1.4
1.6

at its maximum for classes 2 and 3 which indicates that their production has a value of 2.5 to 5.0 dollars per kg and 5 to 10 dollars per kg, resp. Insignificant is the relative share of products, whose coefficient α is from class 1-3 per cent, and classes 4, 5 and 6 - 23 per cent.

The calculated values of coefficient β for the examined products shown on Table 34 indicate a speedy renovation of these products. This is especially true and indicative for the products of groups "apparatuses and control devices", "electric machines and equipment" and "Transporting equipment". Only two of the products belong to classes 3, 4 and 5, which shows that the structure of the products and the technology of their manufacture are continuously improving.

Tables 27 and 28 denote the average weighed values of the technological processes by groups and levels, showing a relative high level of the technological processes.
Level 3 is for almost all technological processes of the products. The relative weight of levels 2 and 4 is almost equal. With lowest level are the processes painting and assembly line for group 382. In very rare cases level one can be met for individual processes of single products. Characteristic levels of the technological processes are three and two, which reflects the mechanization applied, responding to the modern requirements on the manufacture of products for capital goods.

The applied in our study methodology for establishing the technical complexity of the capital means of production, which was developed by UNIDO, may be of actual importance in the several comming years, since the basic factors of the methodology will not be submitted to fundamental change.

Table 26

Weighed value of coefficient β by groups and for the whole examined nomenclature

Group	Denomination	Measure	Weighed value						Total of number position
			1	2	3	4	5	6	
381	Metal products less machines and equipment	Number of positions	-	3	-	2	-	-	5
		%	-	40.0	-	60.0	-	-	100.0
382	Machines and equipment less electric ones	Positions	2	22	39	31	14	12	120
		%	1.7	18.3	32.5	25.8	11.7	10.0	100.0
383	Electric machines and equipment	Positions	-	2	2	9	3	-	16
		%	-	12.5	12.5	56.3	18.7	-	100.0
384	Transporting equipment	Positions	-	2	7	4	4	-	17
		%	-	11.8	41.2	23.5	23.5	-	100.0
	For all the examined groups	Positions	2	29	50	49	24	13	167
		%	1.2	17.4	29.9	29.3	14.4	7.8	100.0

Table 27

Technical characterization of the four levels of complexity average weighed value of the technological processes

Group	Foundry	Forging	Sheet, tube profile working	Heat treating	Assembling	Machining	Assembly line	Painting	Testing and inspection
381	4.0	2.7	2.2	3.0	2.7	3.3	1.5	1.5	2.0
382	2.5	2.7	3.1	2.5	2.7	2.8	2.3	2.1	2.7
383	2.5	3.0	3.0	2.0	2.0	2.6	2.6	2.6	2.6
384	2.3	2.5	2.7	2.4	3.1	3.2	2.2	1.7	2.6
385	2.2	2.2	3.0	2.2	2.0	3.1	2.2	2.8	2.9
Mean	2.54	2.74	2.80	2.45	2.75	3.00	2.34	2.10	2.67

Table 28

Relative share of the average weighed value of the technological processes by groups and levels in %

Group	Technological processes																	
	Foundry		Forging		Sheet working		Heat treatment		Assembling		Machining		Assembly line		Painting		Testing as inspection	
381	1	-	1	-	1	-	1	-	1	-	1	-	1	50,0	1	50,0	1	-
	2	-	2	33,0	2	75,0	2	-	2	33,0	2	25,0	2	50,0	2	50,0	2	100,0
	3	-	3	67,0	3	25,0	3	100,0	3	67,0	3	25,0	3	-	3	-	2	-
	4	100,0	4	-	4	-	4	-	4	-	4	50,0	4	-	4	-	4	-
382	1	-	1	-	1	-	1	-	1	-	1	1,7	1	11,3	1	16,2	1	1,7
	2	57,3	2	36,7	2	12,5	2	66,7	2	40,2	2	41,3	2	54,7	2	51,5	2	58,7
	3	28,9	3	53,1	3	73,3	3	25,6	3	55,9	3	33,6	3	21,7	3	27,3	3	46,6
	4	13,3	4	10,2	4	13,6	4	7,7	4	3,9	4	23,4	4	12,3	4	5,1	4	13,0
383	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-
	2	50,0	2	-	2	6,2	2	100,0	2	91,7	2	37,5	2	45,7	2	35,7	2	37,5
	3	50,0	3	100,0	3	83,5	3	-	3	8,3	3	62,5	3	54,3	3	64,3	3	62,5
	4	-	4	-	4	6,3	4	-	4	-	4	-	4	-	4	-	4	-
384	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-
	2	73,3	2	53,3	2	58,4	2	66,6	2	21,4	2	53,3	2	90,9	2	35,7	2	41,1
	3	20,0	3	40,0	3	16,6	3	26,6	3	42,9	3	76,4	3	-	3	-	3	52,9
	4	6,7	4	6,7	4	25,0	4	6,8	4	35,7	4	23,6	4	9,1	4	7,2	4	6,0
385	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	11,1
	2	83,3	2	80,0	2	-	2	83,3	2	100,0	2	25,0	2	77,8	2	16,7	2	11,1
	3	16,7	3	20,0	3	100,0	3	16,7	3	-	3	37,5	3	22,2	3	83,3	3	55,5
	4	-	4	-	4	-	4	-	4	-	4	37,5	4	-	4	-	4	22,3

However, it would be necessary to reflect continuously the newly created technologies and also the increase the number of factors.

The coefficient α should be stabilized in the course of time or be substituted by another coefficient, which should give a more exact notion for the complexity of the machines and the equipment.

The six factors of the central production unit should be made more precise in order to avoid the influence of the subjective factor.

The applied nomenclature of the groups of products in classes for a longer period shold be supplemented. One should take into consideration the electronics, which penetrates a growing number of classes and it should be differentiated in a separate class. Obviously, without the analysis of the electronics one cannot have an exact idea about the technological level of a given country. With the same purpose it is necessary that the class 385 be expanded by new groups of products from the field of the accessories and instruments, means of automation and control-measuring apparatuses. The group 385 does not exhaust all groups of products in the relevant field. Besides, in this group may be traced groups of products, which do not correspond to the investigated direction. For example, from this class may be excluded the parking meters, the taxi-meters, the drawing machines and other similar equipment, since they are not characteristic for the given class. In the same sense there may be made a more precise defining of the groups of products with the purpose of their classification into the relevant class, which corresponds to the given direction. After a more comlete forming of the clas-

ses groups of products, the nomenclature may become universal and applicable for all countries.

2.4. Evaluation of the dynamics of the technical and technological levels of different industries (productions) of the capital goods industry in Bulgaria

The investigations, which were carried out on the basis of the methodology of UNIDO for defining of the complexity of the products, can establish this statically (for a given moment of time). However, this complexity and technical level have been attained as a result of long-term research and development activity, which has different intensity in the course of time and in respect to different groups of products.

The development of the capital goods industry in Bulgaria during the last 20 years is characterized with a dynamic increase of the technical and the technological level of those groups of products, which define the structure of industry. Most of these groups of products are objects of specialization of our country in the frames of COMECON. Such groups of products are for example: electric trucks, moto-cars (special nonelectric trucks), electric hoists (telphers), shelving machines, special cranes, machines for processing of plastics, machines for the food processing industry, units for computers, electronic apparatuses, automatic telephone centrals, special regulators, etc. For the production of those machines there have been set apart resourses for research and development activity: qualified engineering personnel, means and apparatuses for research, capital investment for development of production capacities.

It should be noted, that the intensive development of

the decisive (for the structure) groups of products leads to the raising of the level and the intensive development of the production of the component aggregates, units and elements. An example of those in Bulgaria are the following: Hydraulic elements, diesel motors, batteries, semiconductors, integral schemes, etc. In this way there is a parallel development of the finished products as well as of the base of elements, which is a prerequisite for a sound production rear and for diversification of the sector.

The basic share of the renovation activity have the own developments of the specialized institutes and development bases, a number of products are being improved through free of charge exchange of documentation and samples between the socialist countries or through buying of licenses from firms in the developed capitalistic countries. By this adoptation of foreign experience, the level of the products reaches the level of the leading firms in short terms.

A notion for the qualitative evolution of the products in the course of time can be received by the analysis of different indicators, which cahracterize the specific features of the development. Such an indicator is, for example, the unit weight of the product. With the improvement of the constructions it is usual that the weight per unit of product is decreased, despite the increase of the parameters, the complexity and the functional possibilities.

In the following table are indicated some of the typical examples of the evolution of concrete products of the hoisting (lifting) and transporting machine building:

Table 29

Diminishing of the weight per unit of product for the period 1970-1978

Products	Type and weight per unit: 1970	1978	Decrease: kg.	%
1. Electric truck-highlifter, with capacity of 1 ton and with H = 3200 mm.	EB 676-4 2500 kg	EB 687.32 2250 kg.	250	10
2. The same, but with H = 2240 mm.	EB667.22-4 2600 kg.	EB687.22 2160 kg.	440	17
3. The same, but with H = 4500 mm.	EB677.45-4 2680 kg.	EB687.45 2225 kg.	445	17
4. The same, but with H = 2500 mm.	EB638-4 2500 kg.	EB687.25 2170 kg.	330	13
5. Moto-car (spec. nonel. truck) - highlifter with capacity of 3,2 tons, with H = 3300 mm.	DB1733-1 4900 kg.	DB1733.33 4600 kg.	300	6
6. The same, but with H = 4500 mm.	DB1733.45-1 5000 kg.	DB1733-45 4700 kg.	300	6
7. Electric truck with platform - 1 ton	EP001 900 kg.	EP001 850 kg.	50	5
8. The same, but with, 2 tons	EP006 1420 kg.	EP006 1350 kg.	70	5
9. Electric truck, dumper, 2 tons	EC301 2250 kg.	EC301 1950 kg.	300	13

The dynamic evolution may be evaluated also by means of other indicators: the change in given parameters, the productivity, the installed capacity, etc. For the motors with internal combustion, for example, is characteristic as an indicator- the mass related to 1 horse-power, which for the given period is decreased in Bulgaria from 4,2 kg/hp in 1970 to 3,55 kg/hp in 1978.

The dynamic analysis shows changes also in the use of materials in the production. The relative weight of the highly efficient materials is growing. Thus, for example, in the lifting units of the trucks now are applied special profiles of hot-rolled high-tensile steel. There are applied widely also plastics in the production of accumulators. There are substantial changes in the component elements of the different generations of electronic apparatuses and of the computers.

All this shows that the analysis of the technial and technological level of the products gives a picture of a complex and dinamic process of improvement.

D) LONG-TERM PROSPECTS FOR THE CAPITAL GOODS INDUSTRY IN BULGARIA, THE IMPORTANCE AND PROBLEMS OF THIS INDUSTRY IN THE COUNTRY'S OVERALL SOCIAL AND ECONOMIC DEVELOPMENT.

1. Basic quidelines of the development of Bulgarian economy until the year 1990 and forecasts for the development of production and resources in the capital goods industry.

For the coming decade, main directions in the development of the country's economy may be expected. They are the following:

First, accelerated introduction of the most modern achievements of science and technology, realised in this country and abroad, into all branches of the national economy, intergration of science and production aimed at a speedied up utilisation of the scientific-technological achievements in practice, thus ensuring a further development of the material-technological basis of socialism.

Second, expanding and intensifying the economic development on the basis of the best achievements of the contemporary scientific-technological revolution, which will guarantee catching-up, with respect to productivity, with the highly developed countries.

Third, improving the structure of the national economy, the concentration of the material and labour resources and the scientific potential of the country upon the development of these production branches, which play a crucial role in the further accelerated building-up of the economy of the developed socialism.

Fourth, a further expanding and strengthening the integ-

ration ties between Bulgaria and the other countries, and especially with the socialist countries, a close integration with the economy of the Soviet Union, which will guarantee a dynamic and effective development of Bulgarian economy.

Fifth, further solving, on a complex basis, the problems related to the living standard of the people and establishing the socialist way of life.

The quoted main guidelines are starting moments for the perspective development of the production of capital goods as well. In the structure of the national economy the production of capital goods occupies an important place and plays a leading role in the fulfilment of the plan for social and economic development of the country. The production of capital goods is the basis for building-up its own material-technical foundations, as well as the material-technical foundations of all the other branches of the national economy. As a carrier and promoter of the technical progress, it ensures materially the increase in the social labour productivity, it helps in the development of the structure of the national economy and in the increase in efficiency of the production, it reveals possibilities for an expanded and effective participation in the international division of labour and in the international socialist economic integration, it promotes the development and establishment of the socialist production relations.

According to preliminary perspective data, a more rapid increase in the volume of production is expected, as compared to the increase in the quantity of the production resources. In other words, there will be a substantial increase in the utilisation of these resources. (See Tables 30 and 31).

Table 30

Indices of the brutto-production (Gross output) and of the basic resources for the development of the capital goods production 1980 = 100

in %

Ser. No	Indices	1985	1990
1.	Brutto-production	163.6	241.4
2.	Capital investments (per 5-year plans)	148.8 148.8	179.0 236.4
3.	Basic production funds	142.6	236.4
4.	Industrial production personnel	104.6	107.8
5.	Production of shaped ferrous metals	125.5	163.1

Table 31

Indices on the parameters for the use of the production resources in the production of capital goods 1980 = 100

in %

	Parameters	1985	1990
1.	Capital intensivity of the gross (brutto) production	91.0	74.2
2.	Fixed capital intensivity of the gross production	87.2	97.9
3.	Labour productivity (total productivity per 1 person from the labour force)	156.4	223.9
4.	Fixed capital means per 1 labourer of the labour force	136.3	219.3
5.	Metal intensivity of the general production (on the basis of shaped ferrous metals)	76.7	67.6

2. Forecasts for the development of the capital goods industry in Bulgaria up to 1990

The accelerated development of the production of new technical means, machine systems, technological lines and complete sites, relevant to the requirements of the scientific-technical progress and the adopted directions for the international specialisation of this country will be the main problem of the production of capital goods to be solved in the 1981-1990 period. During this period the production of the capital goods branch will grow over 2.4 times.

In the following table are given some preliminary data concerning the forcast about the volume of production by groups and kinds of products and industries of the sector "Capital goods industry" in Bulgaria up to 1990:

Table 32

Indices of the Gross Output* (Brutto-production) of the capital goods industry, base 1980 = 100

in %

Groups and kinds of products and industries (subsectors)	1985	1990
1	2	3
1. Nonelectrical machine-building	165.7	240.0
1.1. Heavy investment machine-building	204.5	362.4
1.2. Metalcutting machines and instruments	160.0	232.7
1.3. Construction machines	115.4	181.0
1.4. Tractors and agricultural machines	100.2	255.2
1.5. Computer and organisational technology	201.0	302.7

1	2	3
1.6. Hoisting and transporting machines	125.8	141.8
1.7. Equipment with general purpose	138.5	188.1
2. Electric machine-building	163.9	246.2
2.1. Electric industry	148.9	218.4
2.2. Communication technology (engineering)	209.6	310.6
2.3. Instrument making, automation means and medical technology	177.6	293.9
3. Transport equipment	156.5	241.0
3.1. Railway equipment	123.7	155.1
3.2. Automobile industry	185.2	312.9
3.3. Shipbuilding	174.0	284.9
4. Metal-working	159.3	199.3
4.1. Containers and pallets	100.0	114.3
4.2. Catings and forgings	165.1	201.4
4.3. Instruments for manual use and for machines	147.0	194.4
Capital goods industry - total	163.6	241.4

* Preliminary forcasting data

It is seen in the table t t in perspective the capital goods industry in Bulgaria will develop with accelerated rates, which are different for the different kinds and groups of products of the capital goods industry. The rates are going to be higher from the forcasted rates in some industrially developed countries (See: "Prognos Euro Report", Basel, Nov. 1977). This is imposed by the needs of the national economy, by the require-

ments and the achievements of the scientific-technological progress and by the participation of the country in the international division of labour and in the socialist economic integration within the frames of COMECON, with the purpose of attaining favourable economic results.

CHAPTER III

THE SIGNIFICANCE OF THE BULGARIAN EXPERIENCE TO THE DEVELOPING COUNTRIES

A) GENERALIZATION OF THE ACHIEVEMENTS AND EXPIRIENCE FROM THE PAST AND FUTURE DEVELOPMENT OF THE CAPITAL GOODS INUDSTRY

Bulgaria succeeded for a very short historical period to develope from one underdeveloped, poor, agricultural country with undeveloped industry untill 1944 to a developed industrial nation with well developed agriculture, transport, infrastructure, with advanced system of education, science, public health, tourism, to a country well-known on the international market, to a searched partner for international economic and scientific-technical cooperation. On the place of the dependent, robbed and exhausted by the war economy, after 1944 in Bulgaria was quickly built and developed material-technical foundation, which ensured fast rates of economic growth, favourable economic structure, high level and socially justifiable distribution of the national income.

Two main factors played a decisive role for these successes: the establishment of the domination of the socialistic production relations in the country, which are characterized first of all with the public property of the means of production in all spheres of the economic life, and the big and unselfish help from abroad (first of all from the USSR and from the other more developed socialistic countries, especially in the frames of the socialistic economic community - COMECON). A favourable role in this connection played the global economic strategy and economic policy of the country, based on the conception of the industrialization and the development of the most important sectors of the in-

dustry as: production of electrical energy, mining, metallurgy, machine-manufacturing, chemical industry, etc. We mentioned already that a characteristic feature of the development of the industry in Bulgaria is that this process is realized under the conditions of mutual help and the specialization and cooperation in the socialistic economic community. This has given the possibility to develop those sectors, for which exist most-favourable conditions in the country, which the country needs mostly and which ensure for the country export resources, necessary for the import of machines, raw materials , etc., with the purpose of fast development of the remaining sectors and of the economy as a whole and the satisfaction of the needs of the people. One of the key-sectors, whose development was incorporated in the economic policy of the country, was the production of fixed capital means of production.

The national economic policy as regards the development of the bulgarian industry, respectively of the sector of capital goods industry, has two basic concretely historical periods. The first period begins in the initial years of the socialistic reconstruction of the country, the years of its industrialization and its growth from typically agricultural country to a country with fast and predominant growth of the material - technical base of the heavy industry, incuding the capital goods industry. The limits of this phase begin from the years 1946-1947 and continue almost to 1972-1974. There is no doubt that in the frames of this period one may describe some different stages (phases), which are different in quantative and qualitative respect (phases of development of the sector capital goods industry), but when we use the term "industrial policy" in the sense of "leadership and most general directions for action", we shall characterize with it the

most general features of the whole phase. Its global characteristics is as a period of extensive development of the whole industry (including the capital goods industry).

What main goals and tasks habe been set up during this period?

The initial and main goal has been to reorient and to organize the national economy in accordance with the tasks of the socialist construction of the society.

A specific feature of the industrial policy in Bulgaria is, that conrary to most of the remaining countries in Europe, which have inherited a considerable material-technical base of the machine manufacturing and after that have gone the way of socialistic development, Bulgaria after the second world war had an insignificant base of the whole industry. The main accent of the industrial policy has fallen on the strong reorientation of the national economy from agrarian to clearly expressed industrial character. In general, the development of the industry (and especially of the capital goods industry) in Bulgaria has not so many co mon features with the development of this sector in the remaining socialistic countries. This partly explains also the at a first glance contradictory influence of some social and economic factors on this development.

The task set up for the industrial development of the national economy has naturally required the strategically predominant building up and accelerated development of the capital goods industry, parallelly with the building up of such sectors of the industry as: chemistry, metallurgy, production of electricity and energy, etc. This period is to be characterized mainly with the production of machines and equipment of a more universal

type.

The industrial policy in the field of the capital goods industry during the following period is in accordance with the general economic strategy of the country. Its goal and contents is the satisfying of the needs of the national economy of capital means of production and the attainment of high quality and efficiency on the basis of the complex and massive intensification of the national economy, and of high productivity and attaining the level, which have the economically most advanced countries of the world.

Preconditions for the fulfilment of the above task are the grown economic potential of the country and the big (for our scales) material - technical base, which not only create the possibility, but also require the ensuring of fast raising of the productivity. During this phase, the fastest development have those capital means of production, which will lead to the fulfilment of the above strategic tasks in the near future.

For a period of about 30 years the volume of production of the capital goods industry in Bulgaria has grown 90 fold and the relative share of this industry in the total industrial production of the country has grown threefold, reaching, almost one fourth (25%). Over 1/4 of the production of this industry goes to the remaining sectors of the industry and about 1/4 for export. About 1/3 goes to the construction industry. All this underlines the importance of the sector for the investment process in the country and for the formation of export resources in Bulgaria.

Over 1/2 milliard (billion) leva are invested annually in the capital goods industry. The fixed capital production funds

of this industry are about 3 billion leva and 56% of them are invested in production machines, equipment, control devices and instruments. In this sector work about 300 thousand persons, which represents 27% of the persons engaged in the industry of the country and the fixed capital per worker and the productivity of labour are constantly increasing. The specialization and cooperation in this sector are high and there is a constant renovation of the production, implementation of new and improved products and technologies. A characteristic feature of the capital goods industry is that in the process of its development the productivity is continuously increasing.

The volume of export of machines, equipment and transport means in Bulgaria has already reached about 3 billion dollars and about 90% of this export is directed to the countries--members of COMECON (2/3 to the Soviet Union). After equalizing the volumes of the export and of the import for Group 7 of SITC in the years before 1975 and during 1975, there has been recorded that the volumes of export of capital goods are bigger (this tendency and this result are yet greater under the condition of including the remaining two groups of SITC - 69 and 861).

The general conclusion of the analysis is that in the commerce with the developing countries the volumes of the capital goods are small - the import is insignificant, while the export is about 300-350 million dollars. A significant part of the foreign trade of Bulgaria with capital goods is realized in the frames of COMECON, where of great importance is the specialization and the cooperation. Characteristic for the commerce within the frames of this economic group is the long-term and stable contract system, the specitic system of price building (characterized with relative stability and taking into consideration

the specific features of the trade with fixed capital means of production (capital goods).

On the basis of the analysis of the technical and technological level of the capital goods industry in Bulgaria (according the methodology of UNIDO) one may come to the conclusion that this sector is characterized with intensive development, a good nomenclature diversification of the final and component products, average complexity of the produced groups, average and high level of technology, production in series, strongly developed concentration of the production and high level of the exported products. Our scales and the existing resources predetermine the diversification within the frames of the mastered groups, while the efforts are directed to the specialization within the frames of COMECON for the assortment of the heterogeneous groups. The products of the capital goods industry in Bulgaria are on average world level and the degree of renovation is over 0,2.

The existing system in Bulgaria for analysis and evaluation of the technical and technological level of the sector includes a complicated complex of influencing factors, which allows a comparative quantative analysis and concentration of the decisive problems of the development. The experiment and the good results of applying the Methodology of UNIDO show that it is purposeful to use this methodology for enriching and improvement of the methodology for defining and studying of the complexity of the products and the evaluation of the level of the products and the technology on the basis of the experience of the different countries. The methodology for defining of the level should be indeed regarded as an "open door and open system" and the described bulgarian experience has as an aim to help in solving

of the complex probelems in this field.

The scientific-technological progress sets up a number of complicated problems to be solved by the capital goods industry. From their solution depends very much the dynamics, the structure and the efficiency of this sector. It should be added that because of the universal revolutionary role of the means of labour, the technological policy for the development of the capital goods industry influences actively the scales, the rates and the proportions of the remining sectors of the economy of the country.

The analysis of the practice thus far in respect of the building up of production structures of the enterprises of the capital goods industry in Bulgaria shows that there have been created object-specialized, with a closed relatively production cycle systems. The greater part of them have an almost universal structure. The universality of the production structures, the building up of own production infrastructure, the construction of individual preparatory establishments are characteristic features of the development of the enterprises of the capital goods industry so far in Bulgaria. The industrial development and especially the development of the capital goods industry require a change in some strategic conceptions as regards the volumes and the scales of the production, the technical means per worker, the regional dislocation, the inner structure of the enterprises and the interrelations among them, etc. In this way there can be realized the transfer from "object-closed principle of specialization" of the enterprises to large open technological systems.

The practical realization of the new approach for improving the structure of the social production started in the

machine-building industry of the country with strengthening of the basic specialization of the enterprises and removing of their universality. This process of echelonization (lining) ensures the possibility for accumulating and realization of positive effects. In Bulgaria there was a tranfer from one-plant machine manufacturing enterprise to the creation of multiplant enterprises (combines) and to growth of the structural elements and the concentration of the production divisions. Parallel with these in the country will remain to function also smaller enterprises. The building of multi-plant and multi-echelon systems is a problem of the future and will be realized by means of expanding of the existing plants and by the systematic, stratigic and mainly by the functional interconnecting of the plants in big machine manufacturing complexes.

B) Conclusions and lessons from the Bulgarian experience to the developing countries

The problems of the developing countries, which are connected with the goals, the perspectives and the mechanism of their economic development are much more complicated now than those of the other countries. These countries are very heterogeneous by their social-economic status and hardly the experience of one country (socialistic or capitalistic) may be adopted as an "universal" standard, even as regards a limited sphere of economic activity, which is our case.

The experience of the other countries (including that of Bulgaria in respect of the development of the capital goods industry) should be connected with the goals of the economic development in the countries of the third world and should be used concretely and purposefully, taking into consideration the concrete conditions and goals, which have been set up for given phases. At the same time there should be taken also into account the development and the interrelation between the contemporary sectors of the economy and the traditional and specific for a given country sectors. In each of these two groups there are specific things as regards the total development and the changes of the social-economic structure, as well as in the interrelations with the outside world. Independently that the capital goods industry may be counted to the contemporary sectors, there should be sought conditions and factors, which determine the specific traditional character of some industries and the new, which may contribute the contemporary achievements in the relevant field.

If there is unity in the basic goal of the economic

development of the developing countries (namely, the attainment of a maximum volume of the produced national income), there may exist differences as regards the goals of the different phases from the viewpoint of the time and scale of their realization, which depend on the size of the country and the specific phase of economic development. As goals for the different phases one may consider: the creation of a minimum industrial complex, taken as condition for stable development, and of relatively high rates of growth; dynamic development of the agriculture and its modernization on the basis of a developed industry; ensuring foods for the population; receiving real economic results (without developing absolutely all sectors and subsectors of the economy). While the discussion years ago was for or against the development of preference to the light or the heavy industry, today the discussion is much more broad - the kind of industrialization in the different countries should be different. The selection of the different sectors of industry should depend on the conditions, possibilities and the time-factor in the different countries. At the same time there should be given greater recognition of the special role of the agricultural industry (economy) in the economic development, naturally not on the basis of archaic conditions, means of production, technology and organization. There should be created production and non-production infrastructure with the purpose of carrying out of uniform economic and social policy.

Independently of some specific political, social and economic conditions, about 30-40 years ago, the economic development of Bulgaria was oriented generally in the right direction and for a short period the basic tasks were solved and the set up

goals were attained. It is characteristic for countries with population like this in Bulgaria, that they can develop a number of sectors of the industry, and specially of the machine manufacturing, the chemical industry, the industry of consumer goods, etc., while in the initial phases of the development the production is oriented to satisfying of the inner-market needs, and after that to developing of intensive connections with other countries. This is especially important the development of the contemporary industries on the basis of imported technology, which may not be on the highest contemporary level (as the technology used in the economically developed countries), but nevertheless raising the economic level of the country and leading to the realization of the planned goals.

The too big enthusiasm for the development of the industry and especially of the manufacturing, while neglecting the development of the agriculture, may lead to breaking some of the objective proportions of the process of reproduction and to crisis in the economy. Definite problems are put forth by the social structure of the production and the tendency of gradual liquidation of the natural and seminatural economy. The liquidation of the economic backwardness and the development of contemporary industrial sectors (as the capital goods industry) is impossible if the precapitalistic production relations still exist. There is also a number of countries, where the experience has shown that the private capitalistic enterprising is not able to develop efficiently such sectors. A good foundation for solving this problem may be the economic policy of the state, which is capable of accumulating substantial funds, to ensure stable foreign economic connections and to create all conditions for ensuring and developing of the labour factor of production, to-

gether with the realization of other connected measures. Independently from the fact that this relates to a greater extent for the capital intensive sectors of the mining industry, the development of a contemporary capital goods industry also requires a decisive and backed with considerable means intervention of the state.

The role of the state policy in the treated field has not only a private economic character, but it should establish also the long-term character of buiiing and developing of the capital goods industry, which directly influences and defines the development of the other sectors of the economy. It is necessary under these conditions to carry out a purposeful and real structural policy, which takes into account the conditions and the resources of the country, its concrete needs and the possible ways of realization of the economic policy and strategy. Not taking into consideration these condition, leads to harmful tension and unfavourable economic, social and political results.

For the development of the capital goods industry an important role plays the creation of a state sector not only in the sphere of the economic infrastructure, but also in the credit - bank activity, the foreign trade, etc. The concentration of the means for realizing of the decisive objects in the economy by means of economic and financial policy is a task of paramount importance. The substantial thing in the industrial strategy is the policy of the state as regards the enterprizing activity of the foreign capital in the country. There are necessary measures for the maximum lessening of all possible negative consequences in this directions so that the foreign capital can be used in the interese of solving of national tasks with keeping

the leading role of the state. The development of the capital goods industry may be decisive for the overcomming of a number of inner problems and difficulties abroad.

The concentration of the attention on the creation and the development of a narrow circle of interconnected industries and the complex development and delievery of resources is the most-purposeful solution for the small and underdeveloped countries. There should be taken into account the necessity of ensuring of labour engagement and of revenues in foreign currencies from the export by means of developing of labour-intensive subsectors, requiring several times processing in the country. The important principles of graduallity, selectivity and phase by phase development of the political conditions and environment do not require active intervention as regards the solving of some problems of the social infrastructure, although that the development of the transport system, the communications, the different energy systems, etc. is an obligatory condition for all kinds of economic and social prosperity. But these conditions do not always exist and they have a limmited period and sphere of action. That is why the development of institutions, which directly influence the reproduction of the labour force, not only have a favourable influence on the capital goods industry, but, reversely - the development of this sector is directly supported by them.

The technical-economic requirements and the conceptions of efficiency define the capacity so that by the construction of the plants it exeeds substantially the domestic needs, especially of the smaller countries. Part of the production, which exeeds the needs of the domestic market, goes for export, which is not

always ensured because of the growing competition on the international market. The problems of the realization of the production of the capital goods industry are difficult to be solved without existing coordination, agreements, international contracts, specialization, international cooperation and coordination. In this respect, the principles of the internation economic and scientific cooperation (used within the frames of COMECON) and also the cooperation with the countries - members of COMECON, may be very favourable for the developing countries.

An important element of the industrial policy and strategy of the developing countries is the development of their own research and development activities, which relate not only to the direct production and to the realization of the exportprogramme, but also to the mastering of the imported means of production and their adoptation to the specific conditions of the country. A timely policy for training of operative and management personnel is necessary. Every delay in this respect diminishes strongly the realization of the planned potential efficiency of production and the realization of the production of the capital goods industry.

The experience of Bulgaria as well as the experience of the other socialistic countries shows also that besides the mentioned above conditions and factors for efficient development of the capital goods industry, it is very important for the developing countries to organize a central planning as an important political and social-institutional instrument. The existing tendency of concentration and fulfillment by the apparatus of the state power of not only political functions, but also of functions of the management of the social and economic develop-

ment of the country, is already a reality with substantial efect in the socialistic countries and with elements of initial stage in the developing countries. We shall recomend (without treating this subject in detail) the book prepared and issued by UNITAR during 1978 - "Theory and methodology of the planning in the developing countries", which was published in several languages*.

There may be not given universal recommendations as regards the building and the development of national production of means of production in the developing countries. The problems are complicated and the conditions in the different countries and during the different periods of the worlds history are specific and different, the goals of the national economies are not the same. Independent of the fact that the bulgarian experience should be interpreted in accordance with the specific political and social conditions, this experience may prove purposeful for countries, which are analogical by size, resources and needs. A number of difficulties, which Bulgaria met on its way may be avoided by the developing countries, but this does not mean that there cannot arise new difficulties, which are not less unpleasant. However, there exist some more specific lessons, which should be kept in mind. Taking into consideration the Bulgarian experience, it will be purposeful to pay attention on the following preconditions for a quick progress of the developing countries in the treated field:

- development of the production nomenclature on the basis of long-term international specialization, stable needs and realization;

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* One of the authors of this work has taken part in the preparation, the writing and the discussion of the book.

- directing towards groups of products, which use local raw materials and materials, a minimum number of semifinished goods and components and a limited completion of overall dimensions with the purpose of overcomming of communication difficulties and avoiding of capital-intensive capacities for component parts;

- initially directing towards groups of products with low coefficient of complexity, which give the foundation of the production rear for the completion of future more complicated products;

- avoiding the small series and the special orders, for the production of which is necessary a significant engineering potential;

- broad application of the foreign experience for raising of the qualification of the existing labour force.