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Report No. 1601-RO

Romania
The Industrialization of an Agrarian Economy Under Socialist Planning

(In Four Volumes)

Volume II

March 31, 1978

Country Programs Department I Europe, Middle East and North Africa Region

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CURRENCY EQUIVALENTS

1. Official Rate

Lei	4.47	=	US$1.00 1/
Leu	1.00	=	US$0.22

2. Tourist Rate

Lei	12.00	=	US$1.00
Leu	1.00	=	US$0.08

3. Conversion Rate for Traded Goods

Lei	18.00	=	US$1.00 1/
Leu	1.00	=	US$0.06

FISCAL YEAR

January 1 - December 31

1/ Conversions from lei and lei valuta into dollars in the report are made using the exchange rates in force at the time. Exchange rates and the periods in which they were in force are given in the footnotes to pages 37 of the Report.

PART III

GROWTH AND PROSPECTS OF MAJOR SECTORS

CHAPTER TEN

INDUSTRIAL SECTOR DEVELOPMENTS AND PROSPECTS

A. The Pattern of Industrial Development

(1) The Relative Importance of Industry in the Economy

10.01 Romania's perception of industry 1/ as the key to economic progress has, as noted earlier, determined its overall development strategy. This concentratd effort to expand industry has had impressive results. According to the Romanian statistics, gross industrial production grew at an average rate of 13 percent per year during 1951-75, a pace which was one of the highest among developing countries and can be compared with the rates of Japan, Spain and Greece. Worldwide only Korea, Singapore and Iran appear to have showed significantly higher growth rates of industrial production. 2/ As a result of this strong performance, industry's share in social product, expressed in current prices, rose from about 47 percent in 1950 to 65 percent in 1975, about five times the contribution of agriculture. In national income, also

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1/ Industry is defined in Romania to include the following economic activities: (a) the extraction of fuels and mineral resources; (b) the production, transmission and distribution of thermo-and hydroelectric energy, excluding the distribution of such energy by general public utilities enterprises; (c) the processing of materials, except in cottage industries (defined as the processing of raw materials in the same peasant family household that produces them); (d) repairs of machinery and equipment, and of consumer goods; and (e) cold storage plants. On the basis of this broad definition, the Romanian classification of economic activities divides industry into a total of 18 branches, with the individual activities in these branches being further classified according to the predominant destination of their output. Group A comprises the production of producer goods and group B that of consumer goods. The industrial classification is uniform in all published basic Romanian statistics, except foreign trade statistics, and provides the main yardstick for the planning process. Cottage industries are listed in the Romanian classification of economic activities under "Other branches of the economy".

2/ Any growth comparisons with market economies are subject to considerable margins of errors due to the different conceptual and pricing procedures applied in calculating relevant aggregate data.

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expressed in current prices, the share of industry increased more slowly, from 44 percent in 1950 to 56 percent in 1975. This may be explained by a higher rise in the material costs of production which (as is shown in Appendix 4) are not a component of national income. Because of the exclusion of material costs and depreciation, the national income concept reflects the relative weight of industry in the economy better than any other global concept used in Romania.

10.02 In this context, it should be recalled that industry as defined in Romania (see footnote on page 146), comprises mining and the extraction of hydrocarbons. Thus it includes activities that had been rather well established before manufacturing was given the impetus to develop on a broad basis. This and the fact that industrialization in Romania actually began sometime before World War II -- even though on a relatively small scale -- may explain why already in 1950 industry had made a rather significant contribution to the economy. Recognition of this belittles by no means the achievements of the past 25 years.

10.03 Added to these achievements are the two million industrial jobs created since 1950 (discussed in more detail in Chapter Eight). Total industrial employment rose to 3.1 million in 1975 compared to about one million in 1950; industrial labor's share in total labor force grew from 12 percent in 1950 to 31 percent in 1975. Labor force absorption in Romanian industry has been greater than in countries with similar records of industrial growth.

(2) Growth and Structural Change in Industry

10.04 Romania's gross industrial production, calculated in comparable prices, rose at an average annual rate of 13 percent a year during 1951-75, with the output of producers goods growing at an average annual rate of 14.5 percent, faster than that of consumer goods (10.5 percent per annum).

10.05 In Romania, the gross industrial production indicator is the aggregated value of the productive industrial activities. It is calculated from the enterprise level up and comprises mainly the value of finished and semi-manufactured products manufactured for delivery, the value of industrial services rendered to other enterprises, repairs, and changes in stocks of semi-manufactured and unfinished products. It may have an element of overestimation mainly due to the effect of double-counting in the process of adding the productions of the individual industrial units.

10.06 Table 10.1 below compares the index numbers of gross industrial production with those of gross industrial product and net output for the past 25 years. It shows that net production, obtained by deducting material inputs from the value of gross production, has grown more rapidly than gross production and gross product, reflecting increased efficiencies of production, including the effects of vertical integration. However, it may be more appropriate to compare net production and gross product since both are expressed in delivery prices while gross production is expressed in producer prices.

Table 10.1: INDICES OF INDUSTRIAL GROWTH, 1950-75
(in comparable 1963 prices)

	1950	1955	1960	1965	1970	1975
Gross Production (Productia globala) - in comparable producer prices	100	202	340	649	11 times	21 times
Gross Product (Produsul global) - in comparable delivery prices	100	201	338	606	10 times	18 times
Net Production (Productia neta) - in comparable delivery prices	100	218	372	710	13 times	24 times
Average Growth Rates (percent p.a.)	1951-55	1956-60	1961-65	1966-70	1971-75	1951-75
Gross Production	15.2	11.0	13.8	11.9	12.9	13
Gross Product	15.0	10.9	12.4	11.5	12	12
Net Production	16.9	11.3	13.8	12.8	13	13-14

Source: Anuarul Statistic

10.07 The published indices of gross industrial production suggest that the rate of industrial growth has been consistently in excess of 10 percent in each of the five planning periods since 1950, with producer goods industries (group A) maintaining higher rates of growth than the consumer goods branches (group B). Due to the strong emphasis given in industrial policies to basic chemical and engineering goods industries, the difference between the growth rates of group A and group B industries actually widened during the first three five-year plan priods (1951-65). It was only during the last two plan periods (1966-75) that the difference between the growth rates of groups A and B industries diminished as consumer goods industries were given greater scope, although the leading role of the group A industries was maintained (Annex 6.1).

10.08 Table 10.2 below gives an indication of the growth performance of major industrial branches for the five five-year periods since 1950. It shows that the leading growth sectors of industry were chemicals and engineering goods, whose output grew consistently faster than the output of industry as a whole. The chemical industry exceeded other branches of industry for nearly 20 years until about 1970, when it lost its leading position to the engineering goods sector due to lower growth rates of chemical production. Other producer goods industries also showed periods of overproportionate growth. In iron and steel, for example, output grew faster than gross industrial production during the five-year periods of 1956-60 and 1966-70. In other periods under review, including the 1971-75 period, ferrous metallurgy production grew at lower rates

than industry as a whole. This growth pattern is quite usual for such industries as iron and steel since it reflects the various stages in capacity build-up. A similar feature, that is, the erection of comparatively large production units, exists in the particular growth pattern of the construction materials industry. With the exception of the 1956-60 and 1971-75 periods, construction materials output was expanding faster than the output of industry as a whole. Throughout the 25 years under review, it also exceeded the growth of the construction sector, thus permitting the export of a significant proportion of production (e.g. of cement).

Table 10.2: GROWTH OF GROSS INDUSTRIAL PRODUCTION, 1950-1975
(Average Annual Rates in Percent)

	1951-55	1956-60	1961-65	1966-70	1971-75
TOTAL INDUSTRY	15.2	11.0	13.8	11.9	12.9
Electric Power	18.4	12.7	20.6	16.6	9.8
Fuels	13.3	7.6	8.1	6.0	5.3
Ferrous Metallurgy, including Mining and Dressing of Ferrous Ores	8.8	19.8	11.4	12.3	11.3
Ferrous Metallurgy only	(8.5)	(20.2)	(11.7)	(12.3)	(11.5)
Non-ferrous Metallurgy, including Mining and Dressing of Non-ferrous Ores	16.4	12.7	13.4	12.4	10.0
Engineering and Metalworks	22.7	16.1	16.9	15.8	18.1
Chemicals	24.0	17.5	25.5	21.4	15.8
Construction Materials	20.3	10.2	16.0	13.0	10.0
Lumber and Woodworking	12.7	8.0	13.1	6.5	6.4
Woodworking only	(12.7)	(11.7)	(15.1)	(9.0)	(7.9)
Pulp and Paper	6.5	10.9	19.1	14.3	9.1
Textiles	11.7	6.2	10.5	11.1	12.1
Clothing	8.4	10.0	11.2	12.4	17.1
Leather, Furs and Footwear	11.3	7.6	10.2	9.5	9.1
Food Processing	11.1	7.1	8.5	6.5	7.4
Soap and Cosmetics	17.6	4.3	8.5	9.3	10.7
Printing	16.0	10.8	14.8	7.1	1.7
GROUP A	16.8	12.8	15.7	12.9	13.7
GROUP B	13.1	8.4	10.5	9.8	11.1

Source: Anuarul Statistic.

10.09 The table above reflects another important feature of past industrial development in Romania; the lagging growth of some industrial branches that supply basic inputs for expanding industries. In domestic fuels (petroleum, gas, coal) but also in iron ore and timber, the domestic resource base became a major constraint as available raw materials could not fully support the rapid industrial expansion. Particularly in the case of oil and iron ore, where output has been growing more slowly than the main user industries, this has led to a substantial increase in the import dependence of user industries over the years, thereby affecting their cost structure. To cope with this situation, the Government recently introduced a catalog of measures aimed at reducing the specific consumption of basic industrial materials in the manufacturing process. Similar measures were taken earlier with respect to the consumption of electric energy (in late 1973). They were successful in reducing considerably the growth of energy consumption and explain in part the slower growth of power output during 1971-75.

10.10 As stated earlier, the growth of consumer goods industries has on the whole been lagging behind that of total industrial output. This has largely been the result of the relatively slow expansion of food processing activities which weigh heavily on the group's performance and is closely related with the development of agriculture. It should be mentioned that clothing and, since 1966, textiles have represented important exceptions. Expansion of output in these two branches was above the average of the group; in clothing it has even exceeded the average of all industries (since 1966). Since both branches were particularly apt to provide employment for the female labor reserve in Romania -- including areas in which industrialization had lopsidedly promoted the employment of male labor -- and to achieve a better balance in regional development, these industries enjoyed greater government attention than did other consumer goods industries. In addition, both branches have become important convertible foreign exchange earners, owing to considerable labor cost advantages. It is interesting to note that the export potential in clothing and textiles was only recently fully utilized.

10.11 The following table shows the production levels reached in some principal industrial commodities in 1975, expressed on a per capita basis (see also Annex 6.2). In this context it should be pointed out that the favorable picture in basic industrial product is only one aspect. In many consumer goods, particularly in durable items, the gap between levels reached in other countries is still relatively wide and a result of the comparatively low priority that has been given in Romania to non-essential consumer items.

Table 10.3: PER CAPITA PRODUCTION OF SELECTED INDUSTRIAL COMMODITIES, 1975

	Romania	Poland	FR of Germany	Spain	USA
Crude steel (kg)	449	440	653	313	546
Sulphuric Acid, 100% H_2SO_4 (kg)	68	100	66	66	121
Caustic Soda (kg)	27	12	40	10	43
Plastics and Synthetic Resins, 100% (kg)	16	16	82	16	38/1
Synthetic Rubber (kg)	5	3	5	5/2	9
Nitrogeneous Fertilizers (kg of N)	61	43/2	25/3	23/2	41/3
Phosphate Fertilizers (kg of P_2O_5)	19	24/2	15/3	19/2	28/3 /7
Cement (kg)	542	544	542	675	273
Paper and Paper board /4 (kg)	28/2	33/2	97/2	55/2	232/2
Cotton Fabrics (sq.m)	28/5	..	..	..	..
Woolen Fabrics (sq.m)	5/6	..	..	..	..
Shoes (pair)	4	..	2	4	..
Sugar (kg)	24	47/2	40/2	19/2	24/2

/1 Dry basis only.
/2 1974.
/3 1974/75, July 1-June 30.
/4 Except newsprint.
/5 Compares to 7 sq.m in the Republic of Korea, 19 sq.m in Japan, and 26 sq.m in the USSR.
/6 Compares to 0.5 sq.m in the Republic of Korea, 3.2 sq.m in Japan and 2.9 sq.m in the USSR.
/7 Shipments only.

Sources: Anuarul Statistic; UN Statistical Yearbook 1975; UN Monthly Bulletin of Statistics, Oct. 1976; EEC Eurostat No. 2-1976, and Anuario Estadistico de Espana, 1976.

10.12 As a result of the strong growth in the output of producer goods, their share in Romania's gross industrial production, expressed in comparable prices, rose from approximately 50 percent in 1950 to 72 percent in 1975. Chemicals and engineering goods, representing the main components of the producers' goods output, reached a combined share of 44 percent in total industrial output in 1975. Table 10.4, showing structural changes in gross industrial production in greater detail, reflects the relative decline in the share of the production of fuels, iron ore and timber, which was referred to earlier in this chapter. The petroleum sector, in particular, the largest branch of group A industries in pre-war Romania (13 percent of total industrial output in 1938), had its share in gross industrial production dwindle to 2 percent by 1975, following the rapid increase of the processing industries.

The food industry, (with 24 percent) in 1950 had the largest share in total industry (typical of an agrarian economy with a weak industrial sector). As a result of the rapid growth of the other industrial branches and the level of development in agriculture, its share in gross industrial production had declined to 13 percent by 1975. The food industry was then about two-fifths the size of the engineering and metalworking industries and only marginally larger than the chemical industry.

Table 10.4: STRUCTURE OF GROSS INDUSTRIAL PRODUCTION, 1950-75
(in percent)

	1950	1960	1965	1965	1970	1975
	--in 1955 prices--			--in 1963 prices--		
TOTAL INDUSTRY	100.0	100.0	100.0	100.0	100.0	100.0
Electric Power	1.9	2.5	3.2	2.6	3.2	2.7
Fuels	11.3	9.1	7.0	7.0	5.3	3.6
(Petroleum and Methane Gas)	(8.0)	(6.6)	(5.1)	(5.1)	(3.7)	(2.4)
Ferrous Metallurgy, including Mining and Dressing of Non-ferrous Ores	5.4	6.3	5.6	8.3	8.5	7.9
(Ferrous Metallurgy only)	(5.1)	(6.1)	(5.5)	(8.1)	(8.2)	(7.8)
Non-ferrous Metallurgy, including Mining and Dressing of Non-ferrous Ores	2.1	2.1	2.1	3.2	3.3	2.8
Engineering and Metalworks	13.3	24.0	28.3	21.2	25.0	32.4
Chemicals	3.1	6.1	10.0	6.7	10.1	11.3
Construction Materials	2.4	3.2	3.6	3.3	3.4	3.1
Lumber and Woodworking	9.9	7.5	7.1	8.2	6.4	4.7
(Woodworking only)	(5.5)	(5.1)	(5.3)	(5.9)	(5.2)	(4.1)
Pulp and Paper	1.3	1.0	1.2	1.2	1.4	1.2
Textiles	11.1	7.9	6.8	7.4	7.2	6.8
Clothing	7.5	5.6	5.0	4.2	4.3	5.1
Leather, Furs and Footwear	4.0	2.8	2.4	2.4	2.1	1.9
Food Processing	24.2	18.9	14.8	22.0	17.3	13.1
Others	2.5	3.0	2.9	2.3	2.5	3.4
GROUP A	53.0	62.9	70.0	65.2	70.5	72.3
GROUP B	47.0	37.1	30.0	34.8	29.5	27.7

Source: Annex 6.3.

(3) The Size of Enterprises

10.13 The industrialization process in Romania has given rise to generally large-scale industrial enterprises and this trend has not been limited to heavy industries only but is also evident in consumer goods and other more specialized branches of industry. Size considerations have usually turned the scale in investment decisions as large enterprises were considered essential for the application of advanced technologies and for achieving economies of scale. Also, large industrial enterprises are more apt to industrial planning and plan control than a multitude of smaller production units. It was generally considered that any disadvantages such as domestic market constraints and some management difficulties were temporary and that later benefits from economies of scale would justify the investment preference.

10.14 The following data reflect the changes in the size structure of industrial enterprises since 1960 (Table 10.5). Although no information on this subject is available for the period from 1950 to 1960, the general lines of this process of size concentration appear clear. As the table shows, there was only an insignificant change in the number of industrial enterprises between 1960 and 1975 despite the intensive diversification of the industrial structure during this period. However, the average employment per enterprise doubled, from 748 in 1960 to 1,554 in 1975. The trend to larger enterprises appears evident in both state enterprises and handicraft cooperatives. But it has been particularly strong at the level of the handicraft cooperatives, in which the average employment per unit rose to almost 670 persons. An interesting development is the consolidation of local state enterprises in recent years. As a result of sweeping reorganization of local industries in 1973, their number was cut in half. At the same time, average employment in local enterprises has quadrupled to over 2,600, well above the average of other state enterprises. In 1977, the main part of the local industrial units has been transferred to the state enterprise sectors.

Table 10.5: SIZE STRUCTURE OF INDUSTRY

	Total Industry	State Enterprises Republican Industry	State Enterprises Local Industry	Handicraft Cooperatives
No. of Enterprises /1				
1960	1,658	1,001	318	339
1965	1,572	1,065	207	300
1970	1,731	1,126	246	359
1974	1,699	1,251	102	346
1975	1,731	1,276	99	356
Employment ('000) /2				
1960	1,241	1,003	149	89
1965	1,648	1,409	137	102
1970	1,997	1,629	207	161
1974	2,565	2,072	258	235
1975	2,691	2,191	262	238
Average Employment Enterprise				
1960	748	1,002	469	263
1965	1,048	1,323	662	340
1970	1,154	1,447	841	448
1974	1,510	1,656	2,529	679
1975	1,554	1,717	2,646	669

/1 At end of year. Excluded from the number of enterprises are the units without a legal status, which are considered economically independent (see glossary).

/2 In determining the number of employees used by industrial enterprises, the number of employees used in all shifts has been considered (included the number of employees under training for new enterprises).

Source: Anuarul Statistic

10.15 In republican industry, which comprises about 80 percent of total industrial employment and 88 percent of gross industrial production, average employment per enterprise is largest in ferrous metallurgy, including mining and dressing of ferrous ores. In this branch of industry, it reached over 4,700 persons in 1974, up from about 3,700 in 1960. In non-ferrous metallurgy (including mining and dressing of non-ferrous ores) as well as in engineering and chemical industries, enterprises employed an average of 2,000 to 3,000 persons in 1974. Compared to 1960, average employment per enterprise more than doubled in both the engineering and the chemical branches. In lumber and wood-working, pulp and paper, glass and ceramics, textiles, leather goods and shoes, the employment average per enterprise reached a relatively uniform high of 1,600-1,700 persons. Only construction materials, food processing and

printing have remained substantially below the average size of an industrial enterprise in Romania (Annex 6.4). This may be explained by the fact that these branches of industry normally have a more limited scope of operations, both from the point-of-view of the materials they process and the markets they serve. This makes them clearly less suitable for consolidation.

10.16 By international standards, Romania has probably the highest number of employed persons per industrial enterprise. This is illustrated in Table 10.6.

Table 10.6: NUMBER OF EMPLOYED PERSONS PER INDUSTRIAL ENTERPRISE IN SELECTED COUNTRIES, 1973

Socialist Countries		Industrial Market Economies		Developing Countries	
Romania	1,480	FRG /1	149	Yugoslavia	531
Hungary	1,070	Austria /1	96	Colombia /1	71
USSR	712	UK (1972) /1	87	Brazil (1972) /1	54
Bulgaria	520	Sweden	68	Korea /1	49
GDR	297	Canada	58	Greece (1972)	41
Poland	114	Belgium	35	Israel	35

/1 Manufacturing only.

Source: United Nations, Yearbook of Industrial Statistics, 1974 except for Romania, which is based on data from Anuarul Statistic 1974.

10.17 The development in Romania of a concentration of industrial production in large enterprises has several important aspects:

a. In 1975 about 82 percent of gross industrial output and 82 percent of the industrial labor force was concentrated in enterprises employing more than 1,000 persons. These enterprises represented 45 percent of all industrial establishments operating in that year. In 1960, the group of enterprises with employment of 1,000 and over represented only 15 percent of all industrial establishments - but this group accounted for 53 percent of total industrial labor and 52 percent of gross industrial output (for details see Annex 6.5).

b. Large enterprises employing more than 2,000 workers emerged as the main generators of new employment. This development is somewhat unexpected after years of concentrated efforts in building up heavy industries and other capital intensive and technologically advanced production processes. The utilization of large plants for substantial employment generation has meant that industries have remained unusually labor-intensive despite the modernization and automation that has taken place.

c. The concentration of new employment in large industrial plants has also had a significant impact on changes in labor productivity. If the size distribution of Romanian industry is disaggregated (see Annex 6.5), it is found that enterprises in the range of 500 to 3,000 employed persons, and those in the 3,000 to 5,000 bracket until about 1970, have shown inverse labor productivity ratios. This implies that labor productivity changes have been below the industrial average. Only in very large enterprises (over 5,000 workers) and in smaller establishments (up to 500 workers) have labor productivity changes been above the industrial average. For a further discussion of labor productivity in Romanian industry, see paras. 10.35-10.41.

d. The dominance of the large production unit has contributed to quite broad product mixes and to rather limited specialization. Particularly in the more labor-intensive engineering goods plants and in light industries, the great number of simultaneous production lines has frequently overtaxed the capabilities of production management and has made it difficult to achieve increases in productivity. As part of current rationalization efforts in industry, there has been somewhat greater emphasis on specialization.

B. Industrial Investment and Employment

(1) Investment Patterns

10.18 Capital investments have been the main engine of Romania's industrial expansion since 1950. Fixed assets in industry increased by approximately 10.5 percent per year during 1951-75, and industry's share in the total fixed assets of the economy (expressed in inventory values) 1/ rose from 20 percent in 1950 to 42 percent in 1975. At this rate of growth -- which in Romania was surpassed only by the construction sector -- industrial investment grew about twice as fast as industrial employment.

10.19 Investment in industry has been concentrated in iron and steel, chemicals and the engineering sectors. While these three branches combined had absorbed only 17 percent of total industrial investment in 1950, their share in industrial investment has grown rapidly -- from about 28 percent in 1960 and 40 percent in 1970 to about 46 percent in 1975. On the other hand, the investment share of petroleum exploration and development declined as a result of industrial diversification. In 1950, it represented the largest capital outlay of Romanian industry, accounting for almost 40 percent of total

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1/ It should be mentioned that the published industrial investment data include outlays for the replacement of fixed assets. This should be kept in mind in comparing investment data among industrial branches and by type of investment. Net investment figures are not published in Romania.

industrial investment; by 1975, its share in total industrial investment was well below 10 percent. As a result of these major trends of industrial investment, there has been little change in the distribution of investments between producer goods and consumer goods industries. In 1975, the former accounted for about 85 percent of total industrial investment and the latter for about 15 percent (Annex 6.6).

10.20 With respect to the broad types of investment, it is interesting to note that machinery and other equipment have substantially increased their weight in total industrial investment outlays, from 36 percent in 1965 to 51 percent in 1975 (Annex 6.7). This is partly the result of the increasing diversification of industry, which has given rise to new activities with high technological requirements, involving new and costlier types of equipment that had to be largely supplied from specialized firms abroad. Replacement investment has contributed to the larger share of machinery and equipment but statistical evidence of their proportion is not available. On the whole, the growth in industrial investment has been the main factor behind the exceedingly rapid expansion and diversification of equipment manufacturing in Romania, although exports also contributed (para. 10.69).

10.21 The share of civil works in industrial investment has declined from 47 percent in 1965 to 38 percent in 1975, reflecting the Government's policies to reduce construction costs to the necessary minimum and to give more emphasis to the expansion and modernization of existing facilities. In absolute terms, outlays for civil works in industry have shown little growth in recent years and there has even been an absolute decline of such outlays in the consumer goods industries. An explanation of this trend might be the increasing application of simpler construction methods, in part by using prefabricated elements, and, more generally, the recent drive to reduce the specific consumption of materials in construction works (see discussion in Chapter Twelve).

(2) Government Policies Affecting Investment and the Choice of Technology

Basic Policy Orientation

10.22 To achieve maximum utilization of its natural resources as well as an efficient use of its labor potential, Romania from the beginning has placed great emphasis on the creation of basic industries that would use domestic raw materials and also provide a base for more specialized secondary industries with good potential for employment and improved labor productivity. A first priority was to develop chemical industries to utilize Romania's resources of hydrocarbons and other chemical raw materials as well as metallurgical industries using available minerals and energy sources. The pattern of investments in industry clearly shows this sequence, with priorities shifting gradually from basic industries to processing industries, notably engineering. In the course of the past 25 years, it has already been noted that an increasing proportion of national income has been made available for investment by keeping consumption growth below that of national income. Emphasis was put on the creation of producer goods industries and the rapid growth of capital-intensive production. However, since employment generation remained the other

irrevocable objective of industrial policies, there have been situations in several industries where capital-intensive productions did not ensure in all cases the best utilization of labor, as discussed further below.

10.23 In the allocation of investments, priority has for some time been given to those industries oriented mainly to the domestic market since the achievement of certain levels of industrial self-sufficiency has long been an important objective. Until a few years ago, it would have been difficult to identify industrial projects that were primarily developed for the export market. However, because of the rapidly growing import needs of equipment, technologies and material supplies, there has been a greater urgency to develop industrial exports in recent years.

10.24 In investment decisions, regional policy objectives are now being taken into account to a significant extent (see para 2.17). In its regional industrialization efforts, Romania has given increasing preference to the establishment of enterprises within designated industrial platforms (platforme industriale), or industrial areas, to facilitate the common use of utilities and other services, ensure cooperation among enterprises and to restrict the industrial land use to what is strictly necessary. With this orientation, several specific problems have been addressed in recent years, concerning cooperation between industries, use of land better suited for agriculture, public utilities and other services, utilizing industrial waste materials and, finally, an effective treatment of industrial effluents.

(3) Criteria of Investment Selection

10.25 All major investment decisions in Romania are taken autonomously by the highest authorities of party and government 1/ and constitute the basis for the implementation of projects drawn up at the ministry level (ministries, central research and design institutes) with participation of centrals and enterprises. Decisions to invest in particular activities are essentially a matter of policy priorities as spelled out in the Development Plan (the Five-Year Plan) and in the party guidelines of long-term economic and social development. Once priority has been given in the plan or guidelines to the development of a certain industry on the basis of comparative studies on the development of industrial branches, this industry will be given preference in the allocation of investment resources. 2/

1/ See Appendix 5 for the distribution of competencies in the approval of industrial projects and on investment selection criteria.

2/ Notwithstanding the establishment of overall sectoral priorities, Romanian planners adhere quite closely to some basic principles of resource allocation when it comes to the selection of projects. These tenets include (a) the principle of complementarity and diversification; (b) the principle of cost-effectiveness (i.e. the project's objective has to be achieved at minimum cost); and (c) the principle of minimum rate of return.

(4) An Assessment

10.26 Investment decisions are made within the framework of the plan. Projects must contribute to meeting plan priorities and targets. The decision to incorporate a project within the plan implies that there is no alternative use of funds that can provide a higher rate of return. Once a project is approved, resources are released for implementation. Project appraisals are based upon a set of criteria assigned weights which may be changed from project to project in accordance with government priorities. To the extent that prices used in evaluating costs and benefits differ from border prices, the real net benefits cannot be easily determined.

10.27 On the other hand, if the criteria are used to compare different alternative solutions that satisfy a maximum of individual policy objectives this method can be employed with considerable benefit. Besides, many of the economic criteria used in the assessment of project choices become important parameters of the physical and financial planning and execution work that follows after approval. And in aggregated form, they become part of the material balances that have to be established for products of national importance, of manpower balances and the national development and financial plans.

(5) The Choice of Technology

10.28 Investment policies have generally given preference to advanced technological equipment and installations of large processing capacity. This had an important impact on the growth of labor productivity in industry and the utilization of the capital stock. In some branches of industry such as tires, light industry, machinery and parts of the wood processing industry, the selected capacities were of a minimum technical size that not only met domestic market requirements but also provided production for export. Some of the export products were not always in commodity groups in which Romania had a particular comparative advantage and in a number of cases the country had to compete with established name brands in world markets as well as with exports of developing countries. Romania succeeded in selling these products abroad, thereby maintaining a relatively high level of capacity utilization. A number of exports was sold at prices below average foreign market prices. If Romania could not sell products for export as planned, stocks accumulated and output was cut. For these reasons, it has become Romania's concern to conclude foreign long-term contracts in order to secure firm outlets and to increase the productivity of capital.

10.29 Although considerable progress has been made in replacing obsolete equipment -- in fact, over two-thirds of total fixed assets in industry are officially claimed to be less than ten years old -- there is still deadwood in the existing capital stock. Pre-World War II machinery is still operating in some plants of engineering and light industries.

10.30 In the past, policies of industrial modernization and renovation and policies to reduce the wasteful use of capital have not always been well-coordinated; in the latter case, enterprises have been encouraged in the past to keep and maintain equipment long after its economic life has

expired. 1/ Thus, despite the global reevaluations of fixed assets in 1950 and 1964, and the introduction of higher rates of depreciation in 1968, some enterprises existed in which old machinery was used side by side with modern automated equipment and, in some cases, with an adverse effect upon the overall efficiency of the enterprise. Although this machinery required higher maintenance outlays, it has been kept in operation because of the necessity of producing larger outputs and saving investment funds.

10.31 It is interesting to note that some industrial centrals and enterprises with regionally dispersed production units have transferred older and mechanically simpler equipment to other locations. Since this kind of equipment has often been better suited to the skills available in these locations, training costs have been saved and the risk of stoppages due to inappropriate handling of equipment considerably reduced.

10.32 The problem of replacing obsolescent machinery with technologically advanced fixed capital is a permanent concern to ensure an increase of the industrial capital productivity. While the promotion of smaller production units (in part through breaking-up existing large enterprises and specialization) would ease this problem in many cases, other more comprehensive measures may be needed, including measures to improve the depreciation system.

10.33 In several industrial branches it has been difficult to reconcile the need for technological advance with the need to create more jobs in industry. One example is provided by engineering where priority was given both to modernization -- reflected in its rapidly increasing share in total industrial investment -- and to creating as many jobs as possible in the industry. This eventually led to overstaffing. In addition, expensive automated equipment was frequently used to compensate for lower skill levels. As a result, overall factor productivity was low.

(6) Trends in Capital Productivity

10.34 While high growth rates of capital investment have helped sustain the growth of labor productivity, official statistics suggest that capital productivity has been slackening, until the 1971-75 period. This is a phenomenon that also can be observed in other industrializing countries, implying that marginal returns on new investments tend to decline with increasing modernization and sophistication of industrial production. However the prevailing practice of overdesigning productive installations also contributed.

1/ Two factors have in the past contributed to this: (a) equipment that in a formal sense had been written-off could continue to be depreciated at the same linear rate and depreciation allowances could be retained by the enterprise for reinvestment (this regulation was abolished in December 1976) and (b) to a much lesser extent, the 6 percent Production Fund Tax, abolished in January 1977, encouraged the continued use of older equipment. Depreciation amounts imposed on equipment during its established economic life had to be transferred to the industrial central.

10.35 Analysis of capital productivities in Romanian industry is constrained by the existence of index series based on different prices. Investment data are expressed only in initial values (full initial cost) and based on different sets of prices. Questions of comparability also arise with respect to the various published output index series, which are expressed in comparable prices derived from different price series. Because of this, published output and capital series cannot strictly be matched and any findings on capital productivity may have a considerable margin of error. 1/ The point should be made that published Romanian data do not permit any analysis of absolute capital output ratios other than at the aggregate level. However, the published index series can be used to trace relative changes of capital productivity over a period of time, also expressed in an index number.

10.36 There is another difficulty in measuring trends in capital productivity with a reasonable degree of accuracy, arising from the fact that industrial output indices by branches of industry all refer to gross output. Keeping in mind the caveats referred to above, the general findings on capital productivity stated below should only be taken as rough indicators. This applies in particular, to the apparent productivity trends at the disaggregated branch level. Nevertheless, it appears sufficiently clear that capital productivity in industry remained stagnant in the 1966-70 period but increased in the 1971-75 period. Yet there has been increased concern of the Romanian leadership over the recent levels of industrial capital productivity, reflected in the actions taken to improve the situation in this field.

10.37 Estimated by branches of industry, capital productivity appears to be increasing in virtually all basic industries, notably in chemicals, non-ferrous metallurgy, non-metallic minerals and, to a much lesser extent, in ferrous metallurgy. In construction meterials, temporary gains in the 1950's have been followed by a relative decline in capital productivity, reflecting the rising capital intensity of production. A somewhat peculiar case appears to be the engineering subsector, where the increases in capital productivity in the 1950's have been gradually lost as a result of high investments and some changes in the production structure. In pulp and paper, textiles, clothing and in food processing, capital efficiencies showed declines, mainly because of the move towards capital-intensive production.

(7) Employment and Labor Productivity

10.38 Industrial employment expanded most strongly in engineering and metalworks, which accounted for 37 percent of the absolute increase in industrial employment during 1951-75. Employment generation in engineering actually accelerated, and during 1971-75 every second industrial job in Romania was created in this branch of industry. This strong growth of employment has meant an increased need for job preparation and on-the-job training. Other important employment generators were textiles and clothing, which together accounted for about 18 percent of the 1951-75 employment increase in industry. As in engineering, employment growth in textiles and

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1/ Beginning in 1965, Romania has published data for investment and output in comparable prices of 1963.

clothing has accelerated in recent years, in this case reflecting increased employment of women. Annex 6.9 shows details of labor force absorption in industry during the past 25 years.

10.39 As a leading generator of new industrial employment, the engineering branch had an expanded share in Romania's industrial labor force from 21 percent in 1950 (when it was already the most important industrial employer) to 33 percent in 1975. Textiles, lumber and woodworking each accounted for about 11 percent of total industrial employment in 1975, followed by food processing, chemicals and clothing (Table 10.7).

Table 10.7: GROWTH AND COMPOSITION OF INDUSTRIAL EMPLOYMENT

	Absolute Increase in Employment 1950-75		Total Industrial Employment in 1975	
	'000	Percent	'000	Percent
Electric Power	31.6	1.6	41.9	1.5
Fuels	40.3	2.0	101.5	3.6
Ferrous Metallurgy, including Mining and Dressing of Ferrous Ores	62.1	3.1	96.6	3.5
Non-Ferrous Metallurgy, including Mining and Dressing of Non-Ferrous Ores	57.4	2.9	73.7	2.6
Engineering and Metalworks	739.3	37.2	912.2	32.6
Chemicals	170.6	8.6	191.8	6.9
Construction Materials	74.1	3.7	121.5	4.3
Lumber and Woodworking	173.4	8.7	313.5	11.2
Pulp and Paper	26.1	1.3	35.1	1.3
Textiles	213.9	10.8	317.1	11.3
Clothing	145.2	7.3	179.6	6.4
Leather, Furs and Footwear	58.9	3.0	102.7	3.7
Food Processing	125.5	6.3	215.0	7.7
Others	70.2	3.5	99.9	3.4
TOTAL INDUSTRY	1,988.6	100.0	2,802.1	100.0

Source: Anuarul Statistic.

10.40 Despite the rapid growth of industrial employment, labor productivity in Romanian industry improved substantially due to the use of more sophisticated equipment and improvements in production management. Official Romanian statistics indicate increases in labor productivity just under an average 8 percent per year during 1951-75, with iron and steel, engineering, chemicals, and construction materials, as one would expect, recording the largest gains. It should be cautioned that the Romanian practice of expressing labor productivity in gross terms, that is, social product per employed person is only a rough indicator of actual productivity increases in industry.

In particular, it may tend to inflate such gains in branches which in the course of industrial diversification and specialization depend on semi-fabricated inputs from other industrial branches. Because of some double-counting, which is inherent in all gross industrial production data, productivity increases shown for some branches (probably including engineering) may be partly attributable to increases achieved in their supplier industries (e.g. iron and steel). The use of social product as a labor efficiency indicator can be misleading in another respect. For example if an industrial operation succeeds in saving material inputs to produce the same volume of output as previously, this would involve a relative decline in productivity as such. The official productivity data, presented in Annex 6.10, should consequently be used with discretion.

10.41 Aside from these statistical problems, the published data appear to reflect trends correctly. As the data in Annex 6.10 indicate productivity increases in industry have slowed down considerably, especially in recent years. Engineering industries, in particular, appear affected by this relative decline as do chemicals and construction materials.

10.42 In industrial planning emphasis was given to both job creation and intensive equipment utilization. As a result, many enterprises have combined labor-intensive operations in the production process with the use of sophisticated machinery. This has not always led to an optimal utilization of labor, and in some enterprises, particularly within the machine-building industry, there are still productivity reserves which can be mobilized through better organization of the production process.

10.43 The past tendency of overdesigning industrial projects, which the Government is correcting as also discussed in Chapter Twelve, explains in large part why there is as yet little evidence of a serious strain on existing capacities. In fact, productivity reserves are apparent almost everywhere and could be mobilized by rationalization measures, including a more efficient allocation of labor. Staff can be shifted within the group of enterprises of an industrial central, a rather common practice during the build-up and expansion of such enterprises.

10.44 With the average labor productivity increase experienced in Romania during 1971-75 (6.4 percent annually), the country compares quite favorably with most of the other countries for which comparative data are available. The following table gives some examples:

Table 10.8: AVERAGE GROWTH IN INDUSTRIAL LABOR PRODUCTIVITY, 1971-75 /1
(in percent per year)

Poland	7.6	
Bulgaria	7.1	
Romania	6.4	
Hungary	6.3	
GDR	6.1	
USSR	5.9	
CSSR	5.9	
Greece	4.8	Manufacturing only
Japan	4.6	"
Spain	4.6	"
Ireland	4.1	"
Israel	3.8	
Yugoslavia	3.4	
FR of Germany	2.6	Manufacturing only

/1 The average annual growth for the CMEA countries is based on gross production values and for the rest of the countries on gross value added.

Source: UN Economic Survey of Europe 1975 and UN Monthly Bulletin of Statistics, October 1976.

C. Coordination and Specialization

(1) Product Mix and Specialization

10.45 From what is known about selected product lines in new and expanded industrial plants, it would appear that Romania has rightly given preference to production with limited variation of specification, reduced number of types and large serial volumes. Product lines with relatively short average runs, requiring frequent adjustments of equipment and tools and a rearrangement of process flows have generally been avoided. By keeping the product mix narrow, it has not only been possible to ensure a higher equipment utilization but also to employ to a certain extent labor with lower skill levels. In addition, testing requirements could usually be held to a minimum as the relative product uniformity and quality involved only limited variations. Since the same production lines have frequently been maintained for a number of years without any major changes in engineering and design, it can be assumed that past production choices have generally helped to improve the cost effectiveness of production. This favorable effect has been further enhanced by the prevalence of large production units in almost all branches of industry.

10.46 In some industrial subsectors, however, the prevailing product mix has created some less efficient productions and lower levels of capacity utilization. In these cases, the existence of large-sized production facilities has become a burden, raising difficult problems of production management. This was the case in some enterprises in the engineering subsector, notably

mechanical engineering. These enterprises had relatively short production runs and, because of certain adjustments and rearrangements of process flows, there were lower levels of equipment utilization, all of which tended to result in higher production costs. For these reasons the engineering subsector had shown a lower degree of capacity utilization than other industrial branches of Romania.

10.47 In the engineering industry, as in all other branches of industry, serial changes, the introduction of new products and the technologies to be applied are established plan targets which take into account the specific suggestions made by the enterprises, centrals, ministries, and the economic synthesis organs. In the process of determining the specific plan targets, centrals and enterprises may generally give a preference to more limited number of new products and processes which they see more compatible with the plan targets. Any possible differences in the approach to new products and process are, however, finally decided upon by the central authorities.

10.48 Throughout industry in Romania, the emphasis on size has led to long production runs and infrequent model changes. In addition, the planning system gives very limited incentives for continuous industrial innovation beyond the planned technological efforts. As in other centrally planned economies, an institutionalized sellers' market tends to be created where the industrial consumer must buy what is offered to him. All these factors explain why there is considerable scope for further industrial specialization and for more cooperation between enterprises belonging to different centrals and ministries.

10.49 To a large extent, past specialization has taken place within existing large industrial complexes, leading to a rapid multiplication of different production lines and involving only limited cooperation and integration with other plants. Under these conditions, an enterprise producing transport equipment might also manufacture a range of materials and components aside from machine-tools and other instruments. Tehnofrig, a food equipment manufacturer at Cluj, has a product mix ranging from refrigeration and milling equipment to equipment for the beverage, dairy, brewing, canning, edible oil and baking industries. And a manufacturer of equipment for the production of construction and refractory materials at Bistrita also produces equipment for ordinary bricks, firebricks, glass and ceramic materials and other items such as dust retaining filters. Specialization is also quite limited in the chemical subsector, but has been advancing in recent years more rapidly in machinebuilding. Although the enterprises themselves have a highly diversified product list and are oriented towards long production runs, integration with secondary processing plants and specialization in output of final products is still rather limited.

10.50 In general, enterprises supplying general-purpose materials and components are still unable to cover the entire range of types and dimensions that are in demand despite the fact that their product list is very extensive. The insufficient capacity and small number of medium-sized and small suppliers

capable of an economic manufacture of small batches of materials and components, which are not established by the Plan, still create problems for industrial plants, forcing them to postpone the manufacture of some products requested by the customer. 1/

10.51 Enterprise diversification and cooperation has in the past been slow and has been achieved mainly within the same enterprise and only exceptionally by transfers of production lines to other locations. In more recent years, however, the trend towards specialization has intensified, in part as a result of agreements with foreign partners on technical cooperation as well as the conditions in world markets. In some industrial branches progress in that direction has been slow. This applies, in particular, to the engineering subsector which, although offering commonly the best conditions for specialization and coordination, shows one of the heaviest plant and output concentrations and one of the lowest degrees of plant integration by international comparison.

(2) Pricing of Industrial Goods

10.52 As in all centrally planned economies, prices are set by the authorities. They are uniform for any type of product and in any part of the country, and larger consumers do not enjoy any advantage over smaller ones. In practice, large consumers with delivery contracts are only charged the delivery price of the centrals' warehousing and distribution units, while the population who depends on retail outlets pays the higher retail price which covers the distribution costs and profit margin of ITA and the retail stores.

10.53 The Government's strategy has been dominated by long-term development strategy, emphasizing maximum utilization of domestic natural resources and the mobilization of the country's labor potential for industrial work (para 10.22). As a result, prices for some raw materials of the extractive industries were set at low levels. Farm prices were kept low in relation to industrial products. This may provide another explanation of why food-processing, and other industrial branches based on domestic supplies of agricultural materials, showed a relatively larger decline in total industrial production than their physical output trends would suggest. Prices for natural gas have in the past been set too low relative to the price for coal so that there was no incentive to increased use of coal in power generation.

10.54 The vested interests of enterprises have entered into the price-setting process from another angle. Since their profit margins have been established on the basis of effective cost, enterprises have had an incentive to overstate planned costs, particularly on the price-setting of new industrial products where such actions provide also a shield against inherent risks of new production, and thereby to inflate the real growth of gross industrial production. Since the chemicals and machine building sub-sectors have

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1/ Serban Orascu, Specializarea si cooperarea in industrie, Bucharest 1974, pp. 55-56.

generated many of the new products, this applies largely to them. In recognition of that possibility, the Government has introduced, particularly since 1971 when the Law on Prices was put into force, measures to assess and adjust prices of products both before their introduction and after production has commenced. These measures make it unlikely that overpricing of new goods is now an important source of distortion in the statistics.

10.55 The fact that the cost-price calculation, as used in the price-setting process, has not included any specific charges for fixed or total assets, except for the period 1974-76 when a production assets tax was introduced, has influenced enterprises to strive for unduly capital-intensive production and has not given adequate incentives for full utilization of these assets. Since the assets tax did not contribute to the expected extent to the better use of assets and to a realistic assessment of investment requirements, the Government abolished this tax in 1976 and at the same time introduced a tax on benefits, which is not included in the production costs.

10.56 The last comprehensive rounds of price-resetting took place during 1974-76, and was at least partly induced by the recent price changes in world markets. In these rounds, new prices were established for most industrial products. In the price resetting process adjustments were made for increases in raw material prices, several wage increases and similar effects, and those cases in which prices had been subsidized by the budget were abolished.

(3) Quality and Quality Control

10.57 The production of quality industrial products has for years been a prime concern of Romania. This is not only underlined by the number of advanced technologies adopted in industrial production (through direct imports and joint ventures) but also by the continuous efforts to improve on them. Moreover, quality control is promoted through a complex system of standards and controls established at the institutional level and of incentives and penalties.

10.58 In a good number of cases, Romania has been able to gain and maintain an international reputation for the quality of its products. Oil drilling equipment, equipment for the petrochemical industry and tractors are only some examples where such a reputation is well established and Romanian brand names already speak for the quality of the relevant products. The success in the diversification of industrial exports is a further reflection of this development.

10.59 Some industrial products are produced that are of a quality that is comparable to international standards, but have to be sold at a discount in world markets to penetrate these markets. The reasons why these products are not yet well established in world markets are chiefly that sales support is not sufficient and because continuous marketing efforts are not made and servicing facilities are insufficient.

10.60 On the other hand, there is still a number of industrial products, both consumer goods and investment goods, that have quality characteristics and other properties which make them acceptable only in more limited markets and sometimes at relatively low prices. It should be pointed out, however, that the number of such products has been declining substantially in recent years as a result of stricter measures to ensure and improve product quality.

10.61 In Romania, qualitative aspects of production are addressed in the National Plan and in Quality Control Laws, the most recent of which was enacted in July 1977 (Legea Calitatii Produselor si Serviciilor). The Plan, in a separate chapter, establishes the share of quality products to be produced by industrial branches, centrals and enterprises, new products and technologies, existing products to be improved and standards to be applied as well as those products that are to be taken off production. The targets set are binding, and compliance at the enterprise level is stimulated by the granting of premiums and the possibility of penalties and other forms of punishment. Quality control is exercised by special Departments of Technical Quality Control at the ministries, centrals and enterprises and is designed to supervise the observance of technical specification and norms during all stages of the production process. These departments are subordinated to and cooperate with the General State Inspectorate for Quality Control, which has its own test facilities, and the Central Council of Workers Control, which is a party organ.

10.62 Although the institutional system set up to promote and control the quality of products is quite comprehensive it is somewhat rigid. It is probably its rigidity and the required strict coordination of the entities involved that contributes most to the fact that in practice it is difficult to improve quality on a continuous basis and beyond the established targets. Also, as the prevailing incentive system is construed it is still generally more important to achieve and overfulfill physical output targets than to concentrate on a continuous improvement of the quality of products.

D. Industry, Foreign Trade and International Cooperation

(1) Industrial Imports and Exports

10.63 Romania's impressive pace of industrialization is reflected in the rapid development and changing composition of its foreign trade. Imports of industrial equipment and materials and, since 1968, petroleum accounted for around 90 percent of total imports between 1950 and 1975 and over 90 percent of the absolute growth of imports during the period. Consequently, foreign exchange outlays rose steeply--from only $0.2 billion in 1950 and about $0.6 billion in 1960 to almost $5.0 billion in 1975 (all expressed in current dollars).

10.64 To pay for these rising import requirements, which increasingly came from western industrialized economies and from developing countries providing essential raw materials and petroleum, the country had to expand its commodity exports greatly and to shift from its traditional export base of raw materials and food items to higher-value processed commodities. Through energetic efforts, at times by suppressing domestic demand, and by taking advantage of every possible market opportunity abroad, Romania succeeded in boosting its industrial exports from very low levels in the 1950's and early 1960's to $1.7 billion in 1970 and $4.9 billion in 1975 (Annexes 6.11 and 6.12). Industrial exports contributed about 92 percent of the absolute growth of total exports during 1960-75, but, as industry is defined in Romania, industrial exports also comprise a significant, though rapidly declining, proportion of unprocessed and semi-processed materials. The share of these kinds of materials in total industrial exports was 62 percent in 1960 but has been about 45 percent since 1970. Exports of equipment goods and consumer manufactures, totalling about $240 million in 1960, $944 million in 1970, and $1.7 billion in 1975, expanded at almost equal rates, each representing about 20 percent of total industrial exports in 1960 but about 27 percent in 1975. The share of finished manufactures in total exports increased from about 10 percent in 1950 to 51 percent in 1970 and 55 percent in both 1972 and 1973. However, in 1974 and 1975 the share of manufactured goods declined to 50 percent, mainly because of increased prices of petroleum products and raw materials.

10.65 Although available information reveals very little about the actual direction of exports by product, it appears that western industrialized markets remained the main destination of unprocessed and semi-processed materials, opening themselves up only slowly to finished manufactured exports, mostly of consumer goods. In equipment goods, the Romanian export assortment has been generally more limited to buyers in industrial market economies, largely because of the relatively small share of sophisticated equipment and the shortage of servicing facilities. However, export restrictions on licensed product lines also contributed. Notable exceptions were machinery and equipment for mining and basic chemical productions, in which Romania has developed some well-established markets in advanced industrialized countries.

10.66 Due to the limitations imposed on the export of finished manufactured goods to western industrial countries, exports of these products remained for a long time confined to socialist countries. However, in more recent years, additional outlets were opened up in developing countries to help compensate for the growing imports of raw materials and petroleum supplied from this group of countries. Trade agreements with developing countries helped increase Romanian exports to about $1.0 billion in 1975, equivalent to one-fifth of total exports of industrial goods. By comparison, an estimated 50 percent of total industrial exports is normally destined to other CMEA countries and about 30 percent to industrial market economies.

10.67 The composition of trade flows between Romania and western market economies, as described above, explains the emergence of trade deficits with these countries. This feature and the problems of trade financing are discussed in Chapter Seven. Brief reference should also be made to Romania's thus far considerable surpluses with socialist and developing countries.

10.68 The value of industrial exports, which according to the Romanian definition of industry also includes exports of mining products, fuels and electrical energy, represented in 1975 about 17 percent of total gross industrial ouptut expressed in 1963 comparable prices (Annex 6.13). This contrasts with shares of 11 percent in 1970 and 5-10 percent during the 1950's and 1960's and appears to indicate a substantial rise in the export-intensity of Romanian industry. Among the major individual branches of industry, fuels and chemicals, ferrous metallurgy, and engineering goods appear to export larger shares of their respective productions than industry as a whole.

10.69 The most important contributors to the growth of industrial exports between 1960 and 1975 have been the engineering subsector, chemicals, ferrous metallurgical products and food products (Annex 6.12). Engineering goods contributed over 25 percent of the absolute growth of industrial exports between 1960 and 1975, and in 1975 they represented about 26 percent of total industrial exports. In engineering goods, Romania was particularly successful in expanding export sales of equipment used in the petroleum industry, also machine tools, tractors and, as official statistics indicate, ships and naval equipment. In tractors exports accounted for an exceptionally high share of total production -- over 70 percent in 1975 with the direct import content of production reduced to less than 5 percent. Tractors probably represent the best success story of any industrial product of Romania. Of basic Romanian design and engineering, Romanian tractors have well-established markets throughout the world, including western industrialized economies. Other examples are oil drilling, mining and petrochemical equipment.

10.70 Chemical products, including refined petroleum products, accounted for about 20 percent of the absolute growth of industrial exports between 1960 and 1975, and in 1975 they represented about 23 percent of total industrial exports. Excluding petroleum products, the subsector's contribution to the 1961-75 growth of industrial exports was 13 percent and its 1975 share in these exports came to 12 percent. Exports of the subsector included caustic soda, carbide, synthetic rubber products and nitrogenous fertilizers. Export shares in relevant production volumes of 1975 were close to 20 percent in the case of tires, about one-third in chemical fertilizers, close to 40 percent in caustic soda and exceeded 50 percent in the case of carbide. With the exception of caustic soda, the export shares of the other mentioned products have been increasing during the past decade.

10.71 In iron and steel products the export of finished rolled products and pipes contributed approximately 10 percent of the absolute growth of industrial exports between 1960 and 1975, with about the same share of exports in 1975. The export share of the production of finished rolled products was about 14 percent in 1975, and it has showed a significant decline in recent years. In steel pipes the export share was about 26 percent in 1975, but this

too has declined significantly in recent years. In pipes, however, Romania remained a substantial net exporter. This is not the case in finished rolled products in which Romania has been a net importer for years. But import surpluses have been declining in recent years with increasing domestic production (Table 10.9).

Table 10.9: BALANCE OF SUPPLY IN IRON AND STEEL PRODUCTS
(in '000 tons)

	1965	1970	1975
Finished Rolled Products			
Production	2,347	4,504	6,810
Export	342	1,278	1,003
Import	1,076	1,361	1,570
Pipes			
Production	586	767	1,151
Export	235	300	295
Import	81	106	72
Total Ferrous Production in Raw Steel Equivalents	3,426	6,517	9,545
Net exports	-	97	-
Net imports	456	-	145

Source: Information supplied by the Romanian authorities.

10.72 Processed food products have become an important earner of convertible foreign exchange, with outlets abroad concentrated in western European countries. They accounted for 9 percent of the absolute increase of industrial exports in the 1961-75 period and their share in total industrial exports was 10 percent in 1975. Chief exports have been canned fruits and vegetables and meat preserves.

10.73 Although textiles and clothing contributed only 1.8 percent and 3.4 percent respectively, to total industrial exports in 1975, both commodity groups stand out because of their steep export growth. From an export volume of $8-$9 million each in 1960, textile exports grew to $89 million in 1975 and clothing exports to $166 million. Exports were increasingly directed to EEC countries. Romania's growing penetration of the EEC market gave rise to an agreement between Romania and the EEC in November 1976, regulating 11 different textile exports from Romania to the EEC from January 1, 1976 until 1978. Individual quotas granted to Romania were calculated from the average level of supplies during the preceding three years (1973-75).

10.74 Romania's trade volume by commodity groups and selected individual commodities is shown in Annex 6.11-6.16.

(2) Cooperation Agreements and Joint Ventures

10.75 In recent years, Romania has become a strong advocate of international economic and technical cooperation, and it has extended the scope of cooperation to countries and institutions throughout the world. This new orientation represents an important change from the past when international collaboration was far more limited, focusing particularly on other CMEA countries. For industry in Romania this new orientation is significant since it provides numerous opportunities and challenges, notably through improved access and exposure to advanced technologies and know-how, additional sources of raw material and energy supplies, and expanded markets abroad for its products and own technologies.

10.76 On the whole, Romanian cooperation with foreign companies has been markedly intensified in the past few years, both within Romania itself and in developing and industrial nations. It was abroad, however, where Romanian efforts clearly made the greater headway. This is reflected in the rapid increase of various forms of cooperating activities, including partnerships in the construction of industrial units, cooperation in geological exploration and prospecting, the setting up of joint production and commercial ventures, and in the more general fields of technical assistance and consulting. A more extensive discussion on cooperation agreements and joint ventures has been given in Chapter Seven.

E. The 1971-75 Plan and Current Development Issues in Industry

10.77 Like the previous plans, the last Five-Year Plan, covering the years 1971-75, was overfulfilled in terms of growth of industrial output. This is a remarkable achievement considering that during this period there were problems resulting from flood damages as well as increasing supply constraints and much higher import costs for primary energy and other important industrial inputs. Flexibility in the utilization of labor, which is inherent in the Romanian system, has also helped to facilitate the outcome of the Plan as labor could be easier mobilized to fulfill and overfulfill plan targets. It should be kept in mind that there is a production incentive system aimed at achieving outputs over and above the established targets and that the individual targets are in fact set in a way to stimulate overfulfillment of the targets.

10.78 Achievement of planned output targets varied among subsectors. Plan targets were exceeded by a great margin in ferrous metallurgy, engineering, lumber and wood processing as well as in light industries, with the notable exception of food processing. In ferrous metallurgy, including mining and dressing of ferrous ores, the largest annual rates of expansion were recorded in the output of rolled steel products (middle and thick sheets 21.1 percent per annum, thin sheets 18.1 percent) and in steel alloys (16.0 percent per annum). Domestic supplies of iron ore have declined since 1971. In the engineering subsector, above average increases in output of electrical engineering products (18.7 percent per annum) and electronics (26.8 percent) are higher than in most mechanical engineering products, including transport equipment and in metalworks. The better than planned performance of the wood processing

industry is mainly the result of diversification and the related increases in the output of chipboard and particle board (14.1 percent per annum) and of furniture (12.1 percent per annum). Although timber production declined, better use was made of low-grade timber and wood waste. In light industries, where emphasis was laid on a rapid substitution of chemical fibers and leather substitutes for traditional materials, output grew particularly in ready-made garments and knitwear, a large part of which was destined for export.

10.79 As Table 10.10 shows, some industrial subsectors lagged behind planned output targets. These include electric power and fuels, chemicals and food processing. In fuels planned targets were not achieved, mainly because of the delays in bringing new coal mines into production. In power, the underfulfillment of the planned targets may have been a result of the measures adopted to save gas and oil. The lagging performance of the chemical subsector, compared to planned targets, is related to both unexpected major repairs and overhauls that had become necessary during 1971-75, and problems in the commissioning of new plants.

Table 10.10: INDUSTRIAL INDICATORS OF ACHIEVEMENTS DURING THE 1971-75 PLAN

A. 1975 compared with 1970 (= 100)

	Five-Year Plan	Actuals
Gross Industrial Output	169-176	184.7
Labor Productivity in Industry	142	137
Reduction of effective costs of production per 1000 lei of commodity output	11-12	9.2

B. Average Annual Rates of Growth 1971-75, in percent /1

	Five-Year Plan	Actuals
Total Socialist Industry	11.0-12.0	13.1
Electric Power	10.8-11.8	9.8
Fuels	6.0- 7.1	5.0
Ferrous Metallurgy /2	9.0- 9.9	11.3
Non-ferrous Metallurgy /2	9.0-10.4	9.9
Engineering and Metal Works	14.1-15.6	18.4
Chemicals	16.2-17.5	15.9
Construction Materials	12.8-14.2	9.8
Lumber and Woodworking	2.8- 3.5	6.2
Food Processing	9.3-10.4	8.0
Other Light Industries	8.9-10.1	13.4

/1 In terms of gross output. Note that these percentage rates differ slightly from the rates shown in Annex 6.1 due to the exclusion of industrial production of non-industrial units (training schools, design and research institutes, etc.).
/2 Including mining and dressing of ores.

Source: Communique on the Fulfillment of the Unified National Plan for Social and Economic Development of the Socialist Republic of Romania during the 1971-75 period, Bucharest, 1976.

10.80 The table above also shows that labor productivity increases in industry remained a little below expectations. It is furthermore seen that effective costs of production, expressed per thousand lei of commodity output, could not be reduced to the planned extent. There were several reasons for this, the most important of which were (a) higher import costs in production; (b) the effect of the price adjustments made in 1974 and 1975; (c) the introduction of the production fund tax of 6 percent in 1973. 1/

10.81 From the industrial performance during the past Five-Year Plan and specific findings presented in other parts of this report, it seems clear that

1/ This tax was withdrawn on January 1, 1977. See Appendix 7.

the level reached in Romanian industrialization involves much more complex planning in the longer-term than hitherto, requiring corresponding adjustments. In addition, there are problems related to the changing conditions in world markets to which the country has been increasingly exposed. One of the important issues facing industry is the adequate supply of energy, including hydrocarbons for chemical processing, and of other raw materials and intermediates. Due to the level reached in industrial development, industry has become increasingly import dependent and this has some implications not only for the cost structure and competitiveness of some industrial products but, since these conditions are expected to be accentuated in future, also for the future path of industrial development in the country.

10.82 These developing conditions call for particular attention to be paid to specific courses of action so that Romanian long-term growth will not be constrained. These are discussed further below. It should be noted that the Government is cognizant of these problems and in the context of the 1971-75 and 1976-80 plans, has undertaken or is undertaking specific measures to address many of them.

(a) achieving a more rational utilization of scarce industrial materials. To meet this objective may require abandoning certain production lines, processes and projects which make extensive use of materials or have very high specific consumption of energy (e.g. electrolytic smelting). A critical review of programs designed to increase the utilization of low grade domestic materials may also be appropriate; this would have to be done with a view to minimizing the cost-push in industry.

(b) taking appropriate steps to rationalize industrial operations, at both the enterprise and branch levels, so as to achieve a fuller and more economic utilization of capital and labor. This would support two objectives: the control of costs in industry and the promotion of those industrial activities in which Romania has clear competitive advantages in the long run. Prices that better reflect economic scarcities would provide guidance as to the directions to be selected. This applies, in particular, to the planning process; however, in actual operations, where the price regulator is less important than in market economies, it would be necessary to improve the current system of efficiency control. The following specific lines of action may be appropriate and should be given consideration:

(i) improving the allocation of labor with a view to securing higher levels of equipment utilization and labor productivity. This may be achieved by (a) enterprise reorganization separating labor-intensive operations from capital intensive process lines, (b) plant division, or (c) some reallocation of labor among industries;

(ii) improvements in material flows and better space utilization;

(iii) the promotion of industrial specialization, partly by reallocating production lines among existing enterprises.

(c) providing appropriate incentives to improve the quality of industrial products and to make Romanian products more competitive in markets abroad. To be effective specific measures would have to provide financial incentives for enterprises. Because of Romania's dependency on imports of energy, industrial equipment and materials and the ensuing need to develop an adequate volume of exports, the achievement of industrial outputs of higher quality is one of the most urgent tasks.

F. The 1976-80 Development Plan and Prospects until 1990

10.83 The current Five-Year Plan calls for a continuation of the past industrialization strategy with particular attention to the expansion of basic industries and of technologically-advanced secondary industries. During the plan period, industrial investments of 580.5 billion lei (at comparable prices) are planned. Total industrial output is to grow by 10.2 - 11.2 percent per annum, which is about one percentage point less than the target set for the previous five-year period (Table 10.11). The largest output growth is planned to be achieved in the chemical, engineering and metallurgical subsectors while the output of electrical energy, fuels, construction materials and light industries is planned to grow below the rate of industry as a whole. 1/

1/ A more detailed discussion of the 1976-80 industrial sector targets is given in Appendix 5.

Table 10.11: INDICATORS OF PLANNED GROWTH IN GROSS INDUSTRIAL PRODUCTION, 1976-80
- in comparable prices -

	1980 over 1975 1975 = 100	Average Annual Growth Percent /1
TOTAL INDUSTRY	162-170	10.2-11.2
Electrical Power	128-145	5.1- 7.7
Fuels	139-149	6.8- 8.3
Ferrous and Non-ferrous Metallurgy	173-181	11.6-12.6
Engineering and Metal Works	175-181	11.8-12.6
Chemicals	203-215	15.2-16.5
Construction Materials	154-161	9.0-10.0
Lumber, Pulp and Paper, and Wood Processing	125-132	4.6- 5.7
Food Processing	147-155	7.7- 9.2
Other Light Industries	147-152	8.0- 8.7

/1 Branch growth rates are approximate.

Source: Buletinul Oficial al Republicii Socialiste Romania, Vol. XII, No. 65, Part I, July 7, 1976.

10.84 If the implied branch coefficients for 1976-80 are compared with the actual developments during 1971-75, it is seen that chemicals and metallurgy have been given much greater emphasis in the current Five-Year Plan, while engineering industries are now expected to contribute comparatively less to industrial growth than previously. The latter is explained by the need for a more adequate structure of this subsector taking into account the domestic requirements and export provisions. Food processing has been given greater attention than in the previous plan period. This is obviously also true with respect to fuels where substantial increases in coal production are foreseen (Annex 6.17).

Table 10.12: BRANCH COEFFICIENTS OF INDUSTRY

	1971-75 Plan (Actuals)		1976-80 Plan (Targets)
Engineering	1.25	Chemicals	1.25-1.26
Chemicals	1.13	Engineering	1.06-1.08
TOTAL INDUSTRY	1.00	Metallurgy	1.06
Metallurgy	0.88-0.93	TOTAL INDUSTRY	1.00
Construction Materials	0.88	Construction Materials	0.94-0.95
Electrical Energy	0.86	Food Processing	0.89-0.91
Food Processing	0.78	Other Light Industries	0.89-0.90
Lumber, Pulp and Paper, and Woodworking	0.74-0.84	Fuels	0.85-0.87
Fuels	0.70	Electrical Energy	0.79-0.85
		Lumber, Pulp and Paper, and Woodworking	0.77

Source: Annex 6.18 and mission calculations.

10.85 Labor productivity increases in industry are planned to range on the average between 8.5 percent and 9 percent annually but no data are published with respect to industrial subsectors. The question of labor productivity is a priority target during this plan period since the period largely coincides with the planned gradual reduction of the workweek to 44 hours. No information has yet been provided on how much additional labor is anticipated to be absorbed by the various branches of industry.

Table 10.13: PLANNED GROWTH OF INDUSTRY
(in billion lei at comparable 1963 prices and percent)

	1975		1980		1990	
	Volume	%	Volume	%	Volume	%
Gross Industrial Production	586.9	100.0	950-998	100.0	2,100-2,400	100.0
Electrical Energy	15.8	2.7	20-23	2.1-2.3	..	..
Fuels	21.1	3.6	29-31	3.1	..	..
Metallurgy	62.8	10.7	109-114	11.4-11.5	..	..
Engineering and Metal Works	190.2	32.4	333-344	34.5-35.1	825-977	39.7-40.8
Chemicals	66.3	11.3	135-143	14.2-14.3	312-455	15.0-19.0
Construction Materials	18.2	3.1	28-29	2.9	..	..
Lumber, Pulp and Paper, Wood Processing	34.6	5.9	43-46	4.5-4.6	..	..
Food Processing	76.9	13.1	112-119	18.8-11.9	..	..
Other Branches of Industry	101.0	17.2	141-149	14.8-14.9	..	..

Source: Anuarul Statistic, Buletinul Oficial al Republicii Socialiste Romania, Vol. XII, No. 65, Part I, July 7, 1976, and Eleventh Congress of the Romanian Communist Party, Guidelines for Romania's Economic and Social Development over the 1981-1990 period, Bucharest 1975, and mission calculations.

10.86 Gross industrial production is planned to rise at a rate of about 8.1 - 9.1 percent a year during 1981-90, compared to a plan target of 10.2 - 11.2 percent a year during 1976-80. In social product, industry's share is expected to increase from 67 percent in 1975 to about 71 percent in 1980. By 1990, industry's contribution to Romania's social product would be in the order of 78 - 80 percent.

10.87 Assuming the full achievement of the output targets for 1976-80, Romania would see a further concentration of industrial production in heavy industry, with the metallurgical, engineering and chemical branches reaching a combined share in total industrial output of about 60 percent. The contribution of fuel and electrical energy to total industrial output would continue its relative decline. This trend reflects the growth of imports of primary energy which would make it necessary to rationalize the utilization of primary energy, mainly by reducing less economical uses of fuels or industrial feed stocks and by cutting down waste. In line with the overproportionate growth of output of heavy industries, the share of light industries will further decline, affecting industries in both food processing and consumer goods manufacturing in relative terms (Table 10.11).

10.88 As indicated and implied in the Party's guidelines for Romania's economic and social development over the 1981-90 period, there will be no departure from the strong emphasis on heavy industries after 1980. The chemical and machine-building industries are envisaged to remain the leading growth sectors of industry. Steel output is expected to reach 25 - 27 million tons/year by 1990 to support an engineering subsector that would be growing at 9.5 - 11 percent during the 1980s. Together, the engineering and chemical branches of industry are expected to increase their share in gross industrial production from about 44 percent in 1975 to 55 - 60 percent in 1990.

10.89 As indicated earlier in this chapter, the economic growth of Romania will require further imports of energy and raw materials which, combined with changing conditions in world markets, will require a certain element of flexibility in the planning process for industry. The uncertainty involved will no doubt cause periodical revisions of established plan targets, making long-term planning more indicative in many respects than in the past. Recent measures designed to reduce specific consumption in industries express concern for increasing efficiencies of industrial assets. The planned industrial expansion also considers the cost and availability of primary energy and other raw materials but adjustments might be necessary in the planning process. This may make the current planning system and Romania's industrial organization sufficiently flexible to respond to the requirements and challenges of changing conditions in foreign markets. A more detailed assessment of the prospects and problems facing the Romanian economy is given in Chapter Sixteen.

CHAPTER ELEVEN

THE DEVELOPMENT AND CONTRIBUTION OF THE AGRICULTURAL SECTOR

A. The Position of Agriculture in the Romanian Economy

11.01 Agriculture is a basic branch of the Romanian economy and plays a major role in the country's economic growth. Between 1950 and 1975, social product from agriculture more than tripled, social product per agricultural worker rose five times and national income from agriculture more than doubled. In view of the principal characteristics of Romania's economic development, however, these increases in production, which have assured an expanding food base for a population growing at 1 percent per annum, have been smaller than the rapid industrial growth and agriculture's relative contribution to the economy has declined. In 1938, agriculture employed almost 80 percent of the labor force and contributed the major share of the national income, that is, 38 percent compared with industry's share of 31 percent. In the postwar period, industrial growth soon overtook agriculture as the principal source of national income: in 1950, agriculture accounted for 28 percent of national income 1/ (compared with industry's share of 44 percent) and 26 percent of social product; by 1975, its share of national income and social product had fallen to 16 percent and 13 percent respectively. However, this change in the structure of output shares was not matched by an equally rapid change in the structure of the labor force, so that agriculture, with some 38 percent of the labor force in 1975, was only overtaken by industry in the last Plan period as the major source of employment. Considering that in 1975 over half of Romania's population lived in rural areas, it is clear that, despite the progress in industrialization, the agrarian roots of the economy persist.

11.02 The importance of agriculture to the economy, however, goes beyond its being a sizeable employer of labor; it is also of importance in its contribution to foreign trade, both as a direct earner of foreign exchange and insofar as its growth saves imports of food and industrial inputs. In spite of its relatively small contribution to national income in recent years, agriculture in the fifth plan period accounted for, on the average, somewhat more than a quarter of total exports and 30-35 percent of convertible currency earnings. Thus, quite apart from the provision of direct inputs from agriculture to industry, the agricultural sector has paid for a significant, if declining, proportion of the imported inputs needed for industry. Furthermore, since agriculture has been a source of an investable surplus for the

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1/ No only because of poor agricultural production resulting from war devastation (see Annex 7.3) but also because of the large decrease in relative prices of agricultural goods.

rest of the economy, through the effective price differentials existing in the terms of trade between agriculture and industry, the industrialization program itself has been dependent to some extent on the level and stability of production growth of agriculture. In addition, agriculture has been a source of labor for the growth of industry and related sectors, a labor pool gainfully employed within agriculture until alternative employment opportunities have been established. The labor force in agriculture declined from 6.2 million in 1950 to 3.8 million in 1975, while the labor force in the non-agricultural sectors increased from 2.2 to 6.4 million. More than half of the growth of employment in non-agricultural sectors since 1950 has been filled by former agriculural workers who have either moved to urban centers or have assumed non-farm employment in rural areas. This movement of labor from agriculture was encouraged by the relatively low income in the sector, which, despite measures introduced during the 1971-75 Plan, remains at least 10 percent below those in other sectors.

Table 11.1: AGRICULTURE'S SHARE OF THE ECONOMY

	Shares of Country Totals (%)								
	1938	1950	1955	1960	1965	1970	1973	1974	1975
Rural Population /1	79	77	69	68	66	59	58	57	57
Labor Force /1	-	74	70	65	57	49	42	40	38
National Income /2	38	28	37	33	29	19	19	16	16
Social Product /2	30	26	30	25	22	17	16	14	13
Fixed Assets	-	19	17	15	14	12	12	12	11
Exports	-	55	43	36	35	27	29	27	23

/1 Shares shown for 1938, 1950 and 1955 based on shares reported for 1930, 1948, and 1956, respectively.

/2 Data for 1970, 1973 and 1974 according to methodology in force in 1974.

Source: Anuarul Statistic.

11.03 Despite its importance in the economy, Romanian agriculture remains significantly below its potential. While the introduction of modern technologies has accelerated in recent years and while productivity has grown, both the present level of productivity and the degree of stability of production growth remain at low levels relative to the potential of the sector. 1/ For this reason, production growth has very often fallen behind the targets set in the plan, a fact which attests to the difficulty of applying planned production methods in a sector still too vulnerable to fluctuations in weather

1/ A graphic expression of this fact was given by President Ceausescu's statement to the conference on agriculture in February 1975.

and other conditions. Romania's efforts to avoid these shortfalls and instabilities have been characterized by successive attempts at securing greater control over production, partly by institutional change to expand the socialization of agriculture, partly by improving infrastructure in the sector, in particular irrigation, and expanding mechanization and by the use of improved inputs, including new seed varieties and chemical fertilizers.

B. Institutional Development and Planning

11.04 Romania's present agricultural structure has evolved gradually with the socialization of the country. The transformation proceeded in phases beginning in 1945 with various forms of organization involving differing degrees of social ownership during the transition period. The gradations in degree of socialization persist today in the differences between state agricultural units and the cooperative farms.

11.05 The first moves to reorganize the agricultural sector in the immediate postwar period involved a land reform designed to redistribute estate-owned land, about 10 percent of the total agricultural area, partly among peasant families and partly by the creation of state farms. By 1950, 9.2 percent of arable land had been allocated to state farms, while 88 percent remained as private farms; land not in large estates in 1945 had been divided into about 20 million small tracts (averaging about one-half hectare) with each family operating many small and fragmented fields. This reform, along with the institution of compulsory delivery quotas, had the effect of eliminating the kulaks, a wealthier class of peasants. These measures, however, were preliminary to the socialization of agriculture, which began with first attempts at collectivization in 1949. Difficulties were encountered in establishing large-scale cooperative farms during the first few years after 1949 due to lack of material resources, peasant unwillingness to give up land ownership and because the organization of collectives proved too complex for a peasantry that lacked the organizational and managerial experience required for the efficient operation of large farms. Consequently, the peasants were encouraged to group themselves into Agricultural Associations (Intovarasire Agricola) in which individual land ownership was retained but land was pooled within the Association and remuneration was according to labor input. The Associations served as an intermediary form of organization during the 1950s and at their peak in 1959 accounted for some 30 percent of total arable land area. Although the drive towards collectivization continued through this period, by 1959 collectives accounted for only 27.3 percent of all arable land while private farms still accounted for 26.0 percent (see table 11.2).

Table 11.2: AGRICULTURAL LAND BY TYPE OF OWNERSHIP, 1950-75

	Agricultural land			Arable land			
	1955	1965	1975	1950	1955	1965	1975
State units	25.5	30.2	30.1	9.2	13.7	20.0	21.1
Cooperatives	6.4	60.8	60.5	2.8	8.2	75.3	74.2
Agricultural Associations	2.8	0.4	-	-	4.0	0.1	-
Individual Farms	65.3	8.6	9.4	88.0	74.1	4.6	4.7

Source: Anuarul Statistic.

11.06 The final move towards collectivization came between 1958 and 1962. During this period peasants, both in private farms and in the Agricultural Associations, were persuaded to form cooperatives ("Co-operative Agricole de Productie" or CAPs), which became the dominant form of organization after 1962. By 1965 the Associations had withered to insignificance and private farm ownership had fallen to about 9 percent of all agricultural land. During the same period, there was also some marginal growth in the amount of land under the ownership of state units (UAS and IAS) resulting, for example, from land reclamation and some transfer from private ownership. After the mid-1960s, as shown in table 11.2, there was little change in the distribution of land, but the structure of the sector has been consolidated through a reduction in the number of farming enterprises. Between 1965 and 1972, the number of IASs declined from 721 to 215, subsequently to increase to 391 in 1975. These changes have been associated with efforts to reorganize IASs, where appropriate, into industrial-type complexes where state enterprises and their individual farm units have been separated and reassigned to form enterprises specializing in only one activity. The number of specialized IASs for pigs, poultry and grain production has increased over the last decade, but production of other livestock has generally remained under mixed farms because of its strong dependence upon land for pasture and fodder. The number of CAPs also fell, from 4,680 in 1965 to 4,419 in 1975. Other notable developments during this period were the establishment of closer cooperation between CAPs and IASs and the creation of Intercooperative Associations (ICA) under which CAPs pool resources for large-scale investment in dairying, beef fattening, pigs and other production activities.

11.07 At present, farming operations in Romania, which are under the overall control of the Ministry of Agriculture and Food Industry, are carried out by four types of production units:

(a) State Agricultural Units (UAS), which include State Agricultural Enterprises (Interprinderi Agricole de Stat or IAS) and other state units such as research stations, seed farms, greenhouse enterprises and

others responsible for leasing pasture and meadowland to private farmers and cooperatives. The IAS is a state-owned enterprise worked by state employees and managed by a Director appointed by the Department for State Agriculture in the Ministry of Agriculture. In keeping with the territorial organization of planning and administration, the Director also reports to the trust of IASs at the judet level (as well as to the Workers Council of the enterprise). Each IAS has one or several separate farm units specializing in the production of crops or livestock as a mechanization unit (See Annex 7.10 and Organization Chart 4).

11.08 (b) Agricultural Producer Cooperatives (Cooperative Agricole de Productie, or CAP) and small-holdings operated by cooperative farm members. Land, buildings and other property on CAPs are collectively owned by members. In addition, members are allotted a small area for their personal use (an average of .15 ha per member in 1975), may own some livestock and farm buildings and may also be permitted to make use of CAP land once the CAP harvest cycle has been completed. Like the IASs, each CAP usually has several farm units. However, CAPs do not have farm machinery except that needed for hauling materials and performing other work around farm buildings. Mechanized field operations are carried out under contract with machine tractor stations (SAM).

11.09 The General Assembly of the Cooperative approves production, financial and investment plans which later must be submitted to the General Directorate of Agriculture of the district for approval. The General Assembly also must approve major contracts with suppliers, agricultural mechanization enterprises and other cooperatives, and decide how income is to be divided. All working adults, 16-62 years of age, are cooperators and members of the General Assembly (See Annex 7.11 and Organization Chart 5).

11.10 The cooperatives are organized, at a national level, under the National Union of Production Cooperatives (NUPC). The NUPC was founded in 1966 by a Congress of Cooperative Farms to look after the interest of CAPs and help implement agrarian policies of the Government. It undertakes social welfare programs for its members, administers the pension fund, provides legal services and reviews all contracts between CAPs and centrals for marketing and input supplies. The NUPC has representatives at the judet level who participate in agricultural planning and decision making and operates five training centers for members throughout the country. It directs all non-agricultural activities of its members and approves their employment in non-farm jobs. A national Congress is held every five years to discuss national policy objectives in agriculture and how CAPs can contribute to their achievement.

11.11 (c) Inter-Cooperative Associations (ICA) formed by several CAPs, to carry out large-scale factory-type production of livestock products, vegetables and other greenhouse products. In 1975 there were 230 ICAs, mostly large-scale units for livestock production. Typically they have little land and depend almost entirely upon purchased feed and other material inputs. Capital required to establish ICAs is provided by CAPs and other participating units, either from their own resources or from BAFI loans. The ICAs are

operated by state employees working for wages and managed by a director, along with an administrative council made up of delegates elected by the general assemblies of member CAPs. Each ICA has a President elected from the Presidents of the constituent CAPs.

11.12 (d) Individual Farms (Gospodarii Agricole Individuale), small areas located mainly in mountainous regions where large-scale mechanized farming operations are difficult.

11.13 The Station for Agricultural Mechanization (SAM) which is used to bring large-scale mechanization to the cooperatives is an enterprise closely bound to the cooperatives but separate from them. Romania has 743 SAMs, about one for every six CAPs and 12,000 ha of agricultural land. They are supervised and coordinated by 39 agricultural mechanization trusts (AMEs) at the judet level. SAMs perform, through annual contracts, almost all mechanical work associated with crop and livestock production for CAPs and maintenance of machinery. They also haul input supplies and products and perform mechanical operations for irrigation. They also perform some work for private farmers (See Annex 7.12).

11.14 Overall responsibility for the production and marketing of agricultural products, including processing and distribution of some fruits and vegetables at retail levels, as well as for supplying agriculture with production inputs and services, is vested in the Ministry of Agriculture and Food Industry (MA). The MA is composed of departments, general directorates, directorates, centrals, trusts, and enterprises (see Organization Charts 2 and 3). The four departments are:

(a) Department of State Agriculture, with one central responsible for operation of poultry enterprises and 37 trusts at the judet level responsible for the operations of IASs.

(b) Department of Land Reclamation and Agricultural Construction, which has institutes and trusts responsible for design and construction of irrigation, drainage, flood protection and erosion control projects.

(c) Department of Food Industry, which has eight centrals that supervise enterprises processing and marketing meat, milling and baking, milk, sugar, fish, tobacco, oil-seeds and beer (and all other alcoholic beverages), and one central for the complex of activities in the Danube Delta. These centrals supervise operations of food processing enterprises distributed throughout the country and handle the marketing of their produce.

(d) Academy of Agriculture and Forestry Sciences, which has responsibility for all agricultural research and the production and distribution of improved seeds, plants and breeding animals.

11.15 Other important centrals include:

(a) Central for Mechanization of Agriculture and Production of Equipment, which has one trust located in each of the 39 judets (Agricultural Mechanization Trusts, AMEs). They supervise the operation of SAMs and plans for manufacturing agricultural machinery and spare parts.

(b) Central for Exploitation of Land Reclamation Systems, which has 18 enterprises located in judets.

(c) Central for Marketing Cereals and Production of Feeds, which has several feed-mixing enterprises and 39 enterprises located in judets and responsible for grain marketing.

(d) Central for Vegetables and Fruits, which is comprised of one trust directing and supervising processing enterprises, another trust supervising greenhouse enterprises, and 39 enterprises at the judet level collecting and marketing vegetables and fruits.

(e) Central for Wine and Vineyards, which has several enterprises marketing grapes and processing wine and related products.

(f) Trust for Textile Crops, which has enterprises responsible for marketing and processing flax, hemp and cotton.

(g) Trust called Protan, which takes over non-food livestock by-products for transforming into animal feed.

11.16 Marketing centrals of the MA have responsibility for purchasing, grading, processing, storing and marketing agricultural products. Marketing centrals usually have district enterprises and centers which organize the collection, transport and delivery of farm products to collection or delivery depots located throughout the country from which agricultural products move to processing centers and later are distributed to domestic and export agencies. Individual farmers and members of CAPs sell farm products produced on personal plots in peasant markets and to marketing centrals under contracts.

11.17 All sales of IASs move directly to State marketing enterprises at prices established in advance by law. CAPs make contracts with marketing centrals to deliver specified quantities of farm products at prices fixed by law. They deliver a large part of their production to State marketing enterprises to fulfill obligations to SAMs. Penalties fixed by law are specified for non-fulfillment of contracts. Prices of farm products sold by individual farmers and members of cooperatives in peasant markets are permitted to fluctuate within certain limits specified by People's Councils. 1/

1/ Price ceilings are established for fruit and vegetables, but not for meats.

Contract prices received by CAPs have been substantially higher than sale prices received by IASs since 1973. However, sale prices received by private farmers and CAPs for farm products not covered by contracts are generally lower than contract prices. Foreign trade enterprises (under the MA, among which are Romagrimex, Fructexport, Prodexport and Vinexport) purchase agricultural products for export. However, foreign trade in grains is planned and supervised by an organization named Agro-Export of the Ministry of Foreign Trade and Economic Cooperation.

11.18 The channel for, and administrator of, all investment funds provided for the agricultural sector from state funds is the Bank for Agriculture and Food and Industry (BAFI), established in 1968. Before that date, financing in agriculture had been done by a department of the National Bank of Romania, with the exception of investments in IASs which was carried out by the Investment Bank. Details of the functions are given in Appendix 8 on the Banking Structure.

1. Agricultural Planning

11.19 In agriculture, the planning process begins at the farm level under guidelines issued by the judet agricultural bodies within the framework of the national plan. IASs and CAPs draw up tentative plans for production, investment, financing, employment and the like, taking into account indicators that must be followed during the planning period. Plans are submitted to judet agricultural bodies where they are reviewed before being sent to the MA, which aggregates the proposals into a first draft plan for submission to the State Planning Committee. After reviewing the plan for agriculture along with plans for other sectors, and after making the necessary adjustments and correlations at the national level, the Five Year Plan and Annual Plan must be approved by the Grand Assembly before becoming law. Plans then move back to IASs and CAPs through the MA and Judet Directorates for Agriculture; plan targets in production and investments are established for individual farm units. Marketing centrals also participate in this planning process.

11.20 Several different criteria (indicators) are used in making decisions concerning resource use and investment projects. Agro-industry projects, in particular, require justification with regard to their location. These projects must fit into a scheme of "territorial systematization", meaning that the location of the project must fit into the system or network envisaged by the overall national economic plan of development.

C. Trends in Agricultural Production

11.21 Although crop yields have fluctuated widely from one year to the next, the overall expansion of agricultural production has been considerable during the last two decades. Since 1955, gross agricultural production has almost doubled, growing at a compound annual rate of 2.9 percent from 1955 to 1975. The annual growth rate accelerated from 1.6 percent during 1955-65 to 4.2 percent during 1965-75. As total population increased slightly less than 1 percent annually, agricultural output per capita rose 2.0 percent annually, providing the basis for higher levels of food consumption per capita

and larger agricultural exports. Agricultural exports amount to a significant proportion of total output, although the data available is not sufficient for precise calculation. In 1974, total agricultural exports, expressed in the foreign prices obtained, were 6.5 billion lei valuta, equivalent to 32.3 billion lei. In the same year, gross agricultural production was 91.2 billion lei, expressed in domestic prices. As no data are available on the relationship between internal and external prices, it is not possible to calculate the exact percentage of production that is exported. However, it appears that the share of production exported has been increasing over time.

11.22 Gross agricultural production has not increased at a steady pace; despite fluctuations from one year to the next, it has moved upward from one plateau to another with technological advances. For example, annual production averaged about 20 percent more in 1959-61 than in 1954-56; it increased to another level in 1966-70, about 50 percent higher than in 1954-56 and then increased to a record level in 1971-75 of 96 percent above 1954-56. The reasons for this behavior in the growth of gross agricultural production cannot be precisely determined, but a major one is cyclical changes in weather affecting crop yields. The changing organization of farming units, the uneven growth in the supplies of fertilizer and other current inputs and in mechanization of farming operations have all contributed to upward spurts in total agricultural output.

11.23 Livestock production has grown at a higher rate and has varied less from year to year than crop production. Total livestock output increased 4.0 percent annually from 1955 to 1971-75 while total crop output increased by 2.1 percent. Livestock production has increased in relative importance, accounting for 43 percent of total agricultural production in 1975 compared with 31 percent in 1955 (Table 11.3).

Table 11.3: COMPOSITION OF AGRICULTURAL PRODUCTION
(Percentage Shares)

	1955	1960	1965	1970	1974	1975
Crops	68.9	65.3	63.2	58.8	58.5	57.0
Livestock products	31.1	34.7	36.8	41.2	41.5	43.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: 1955 and 1960 reflect 1955 prices; 1965 and after reflect 1963 prices.

Source: Anuarul Statistic.

Table 11.4: CHANGES IN VALUE OF GROSS AGRICULTURAL PRODUCTION MATERIAL INPUTS AND NATIONAL INCOME FROM AGRICULTURE

	Annual Averages			
	1954-56	1960-65	1966-70	1971-75
Values		Billion Lei		
Gross Production	47	57	71	89
Material Expenses	18	22	31	43
National Income	29	35	40	46
Index Numbers		1954-56 = 100		
Gross Production	100	121	151	189
Material Expenses	100	122	172	239
National Income	100	121	138	159
Composition		Percentage Shares		
Gross Production	100	100	100	100
Material Expenses	38	39	44	48
National Income	62	61	56	52

Source: Anuarul Statistic (for percentages); and Scinteia, February 5, 1976 (President's Speech to the Congress of the People's Councils).

11.24 Gross agricultural production increased steadily each year during 1971-75 and in 1975 it was three times larger than in 1950. On the other hand, national income from agriculture reached a record high in 1972, thanks to exceptional weather conditions, and declined slightly during 1973-75 due to poor climatic conditions. Both gross agricultural production and national income from agriculture were higher during each of the 1971-75 plan years than any of the five-year periods since 1950. While gross production steadily improved, national income did not again reach the 1972 level, despite increased inputs, due to unfavorable weather during 1973 and 1974 and excessive rains and floods during 1975. The overall improvement in productivity and incomes was achieved mainly from scale economies resulting from reorganization and specialization and through increased use of fertilizers, farm machinery, improved supplies of feed and an expansion in irrigated area from 731,000 ha in 1970 to 1.5 million in 1975.

11.25 The composition of inputs used in agricultural production has changed greatly during the last two decades, as fixed assets (farm machinery, buildings and the like) more than tripled while the number of farm workers declined by 36 percent. Fertilizer use increased from only 22,000 tons (active substance) in 1955 to 929,000 tons in 1975. Irrigated areas increased from only 43,000 ha in 1950 to 1.5 million ha at the end of 1975. Land reclamation programs helped to increase the arable area from 9.4 million ha in 1950 to 9.7 million ha in 1975.

11.26 The productivity of Romanian agriculture has increased greatly in the last two decades as shown by the growth of national income from agriculture per worker and per hectare of agricultural land. Land productivity increased more than 50 percent from 1955 to 1975 while labor productivity increased by 100 percent. But average output per unit of fixed assets has declined slightly because investments have grown more rapidly than production and because capital goods have been substituted for land and labor. Annual net production per agricultural worker was almost two and one half times larger in 1971-75 than in 1954-56 (a compound annual rate of 5.5 percent). National income from agriculture was 18 billion lei larger each year between 1971-75 than in 1954-56 (Table 11.4). Growth of labor productivity has supplied a surplus used to improve incomes of agricultural workers and to supply capital for agriculture and other sectors.

1. Crops

11.27 The major changes in the use of arable land in the last two decades include a reduction of the area devoted to cereals from 7.2 to 6.2 million ha (largely as a consequence of the institution of alternative crops for oats) and a corresponding increase in the cultivation of fodder crops and soybeans for the livestock industry and, to a lesser extent, pulses, vegetables, sugar beets, sunflowers and flax. Despite a reduction of about 14 percent in the area under cereals for grain from 1954-55 to 1971-75, total grain production increased by 64 percent as yield per ha almost doubled (Table 11.5). Annual growth rates in yields per hectare were especially high for wheat and barley (4.3 percent), and maize (2.5 percent) but low for oats. Rising yields per ha have more than offset declines in areas under wheat, barley and maize; only in the case of oats has production declined. Total grain production per person of the total population increased from 520 kg in 1954-55 to 711 kg in 1971-75, an average higher than in most other European countries.

2. Livestock

11.28 Expansion of all kinds of livestock production since 1955 has contributed to an annual growth rate of 4.3 percent in total livestock production. Romanian statistics show that total meat production more than doubled from 1954-56 to 1971-75; egg production increased by 196 percent, milk increased 73 percent, and wool 55 percent. Pork production rose 154 percent, substantially more than other meats. Productivity, as measured by production per animal, has

Table 11.5: PERCENTAGE CHANGES AND COMPOUND ANNUAL GROWTH RATES IN CROP AREA, YIELD AND PRODUCTION, 1954-55 TO 1971-75

Crop	Percentage Changes			Annual Growth Rtes (%)		
	Area	Yield	Production	Area	Yield	Production
Grains						
Wheat and rye	-15	133	97	-0.8	4.3	3.5
Barley	-12	133	103	-0.7	4.3	3.6
Oats	-75	15	-71	-7.2	0.7	-6.5
Maize	- 5	63	54	-0.3	2.5	2.2
Rice	67	-20	34	2.6	-0.9	1.5
Total	-14	90	64	-0.8	3.3	2.5
Technical Crops						
Sunflower	66	68	172	2.6	2.7	5.2
Sugar beets	70	64	179	2.7	2.5	5.3
Tobacco	42	12	62	1.8	0.6	2.5
Flax for fiber	108	25	160	3.8	1.1	4.9
Flax for oil	186	63	366	5.4	2.5	8.0
Hemp	-52	75	-15	-3.6	2.9	-0.8
Total	61	-	-	2.4	-	-
Potatoes	14	16	35	0.7	0.8	1.5
Vegetables	96	13	119	3.4	0.6	4.0
Fodder Crops						
Perennials for hay	130	46	245	4.3	1.9	6.4
Annuals for hay	-66	26	-36	-4.0	1.2	-2.2
Green feed	291	11	750	7.1	0.5	11.3
Silage	1009	1	990	12.8	0.1	12.7
Root crops	84	117	299	3.1	4.0	7.2
Total	96	-	-	3.4	-	-

Source: Computed on a 20 years basis from Anuarul Statistic.

increased for all livestock products. Growth in the number of cattle has been slow, only about 1.0 percent a year. But the number used as draft animals has declined and most cattle now are kept almost exclusively for milk and meat production (Table 11.6).

Table 11.6: CHANGES IN LIVESTOCK PRODUCTION AND NUMBERS

	1954-56 Average	1971-75 Average	Changes from 1954-56 to 1971-75 Increase (%)	Annual Growth (%)
Production				
Milk (mil. hl)	24.5	42.3	73	2.9
All meat (thous. tons)	821.5	1,853.0	126	4.4
Pork (thous. tons)	344.6	875.3	154	5.0
Eggs (millions)	1,570.7	4,644.3	196	5.9
Wool (thous. tons)	19.8	30.6	55	2.3
Numbers /1				
Cattle (thousands)	4,635.5	5,678.1	22	1.0
Hogs (thousands)	4,469.5	8,087.9	81	3.2
Poultry (millions)	30.0	62.9	110	4.0
Sheep (millions)	10.7	14.1	32	1.5

/1 Numbers on hand at beginning of year.

Source: Anuarul Statistic.

3. Instability of Crop Production

11.29 Romania's weather conditions are variable. Crop yields and total crop production, like other countries with a similar climate, fluctuate widely from one year to the next. One measure of these fluctuations is the difference between actual yields per ha and total crop production that would have resulted with a computed straight-line upward trends based on actual data for 1954-73. For example, total crop production was 19.6 percent above the computed trend line in 1955 but 16.8 percent below in 1956. It was 21.2 percent above the trend line in 1957 but 21.8 percent below in 1958. Similar wide variations have occurred for wheat, maize, sunflower, sugar beets and potatoes. In most years, high yields for some crops do not offset low yields for other crops, causing total crop production to vary almost as much as yields of individual crops. For example, in 1970, yields of all major crops were substantially below computed trend lines while in 1972, all were considerably above.

11.30 Yearly variation in rainfall is the major factor causing crop yields to fluctuate widely. Although there may be sufficient rainfall in July and August to obtain fairly high yields in some years, lack of rainfall often causes low yields and complete crop failure in some areas. Flood damage due to excessive rainfall, such as during late June and early July of 1975, also causes crop production to vary from one year to the next. Land reclamation programs to provide better flood protection, irrigation and drainage should gradually reduce wide yield fluctuations and raise yields to higher levels.

11.31 Wide variations in crop yields from one year to the next make it difficult in some years for Romania to supply domestic fodder requirements and to meet export targets for some agricultural products. Large reserve stocks of grains and other crop products need to be maintained for years when yields are low. Land reclamation programs, by helping to stabilize crop yields, reduce the need for and the cost of maintaining large carry-over stocks. They also could reduce the need for feed imports and reductions in livestock product exports and foreign currency receipts. In 1973 and 1974, when crop yields declined because of below average weather conditions, Romania found that it had to import some feedgrains and protein meals to meet its requirements for livestock feed and achieve its export targets for livestock products.

4. Regional Changes

11.32 Gross agricultural production has increased more in the plains region (Zone 1) than in the foothills (Zone II) and the mountain and tableland (Zone III) regions in recent years. Between 1967 to 1973, gross agricultural production per ha of agricultural land increased by 34 percent in Zone I compared with 17 percent in Zone II and only 10 percent in Zone III. Expansion of the agricultural area of each region increased agricultural production slightly. Gross agricultural production increased at an annual rate of 5 percent in Zone I, 3 percent in Zone II and only 1.8 percent in Zone III (Table 11.7). As a result, the share of gross agricultural production accounted for by Zone I increased from 48 percent in 1967 to 51 percent in 1973 while the shares of both Zones II and III declined. 1/

Table 11.7: GROSS AGRICULTURAL PRODUCTION BY ZONES

Zones	('000 lei per ha) 1967	1973	Changes, 1967 to 1973: Percent Increase	Annual Growth Rate (%)	Distribution of Gross Agr. Production (%) 1967	1973
Zone I	5.6	7.5	34	5.0	48	51
Zone II	4.6	5.4	17	3.0	28	27
Zone III	4.2	4.6	10	1.8	24	22
Total/ average	4.9	6.1	24	3.6	100	100

Source: Computed from data reported in Anuarul Statistic showing percentage compositions of gross value of agricultural production and hectares of arable land by judets.

1/ It should be noted that total crop production was 7.1 percent above the long term trend line in 1967 and 7.7 percent below in 1973. Therefore, the data cited above probably understate changes in the distribution of agricultural production among regions that would have occurred with average weather conditions.

5. Changes by Types of Production Units

11.33 Agricultural production has been increased more by IASs than by CAPs in the last decade. Gross agricultural production of IASs rose 77 percent and that of CAPs 35 percent from 1965 to 1975 (Table 11.8). Although land area in different kinds of production units has not changed significantly since 1962, the use of fertilizer and other inputs has increased much more on IASs than on CAPs. Investments per hectare also have been much larger on IASs than on CAPs. In 1975, 26 percent of the arable land on IASs was irrigated compared with only 14 percent on CAPs. Crop yields per ha have been about 30 percent higher on IASs than CAPs. Yields and gross agricultural production have also increased more on IASs than on CAPs because the former have a larger share of their land in the most fertile areas. In 1973, 28 percent of the arable land in zone I was in IASs compared with only 15 percent in zone II and 11 percent in zone III (Table 11.9). In addition, management practices have been improved more on IASs than CAPs in the last decade, and the use of fertilizer and other inputs and capital investments for buildings, mechanization and livestock have been increased at higher rates on IASs than CAPs and individual farms. It appears that the marginal productivity of capital inputs has been higher on CAPs than on IASs. There are therefore opportunities for greatly increasing the productivity of CAPs by expanding the irrigated area and providing additional capital inputs.

Table 11.8: CHANGES IN GROSS PRODUCTION, AREA, FERTILIZER, AND INVESTMENTS OF STATE AGRICULTURAL ENTERPRISES AND AGRICULTURAL PRODUCER COOPERATIVES, 1965 TO 1975

State Agricultural Enterprises	1965	1970	1975	1975/1965
Gross agricultural production (1960=100)	181	233	320	1.77
Agricultural area (thous. ha)	2,077	2,089	2,058	.99
Arable area (thous. ha)	1,627	1,667	1,658	1.02
Irrigated area (thous. ha)	104	232	432	4.15
Fertilizer consumption (thous. ton)	133	205	252	1.89
Total investment (mil. lei)	3,014	4,731	5,429	1.80
Yield of wheat and rye (kg/ha)	2,777	1,995	2,548	.92
Yield of maize (kg/ha)	2,671	3,341	3,525	1.32
Agricultural Producer Cooperatives				
Gross agricultural production (1962=100)	119	119	161	1.35
Agricultural area (thous. ha)	8,994	9,033	9,047	1.01
Arable area thous. ha)	7,387	7,274	7,229	.98
Irrigated area (thous. ha)	116	431	977	8.42
Fertilizer consumption (thous. ton)	123	379	583	4.77
Total investment (mil. lei)	2,811	4,111	4,778	1.70
Yield of wheat and rye (kg/ha)	1,818	1,344	2,000	1.10
Yield of maize (kg/ha)	1,758	2,024	2,738	1.56

Source: Anuarul Statistic.

11.34 Considering their small share of the arable land, individual farmers and members of CAPs account for large shares of total production of crops and livestock. For example, in 1975, members of CAPs produced almost 10 percent of the cereals, 36 percent of the potatoes and 36 percent of the vegetables although they operated only 8 percent of the arable land (Table 11.9). Individual farmers produced 16 percent of the potatoes and 7 percent of the vegetables. Members of CAPs and individual farmers usually produce labor-intensive crops that have a high value of output per hectare.

Table 11.9: PRODUCTION OF SELECTED CROPS BY TYPE OF PRODUCTION UNIT, 1975

Unit	All Cereals	Oil-Seeds /1	Sugar Beets	Potatoes	Vegetables
	('000 ton)				
Total State Agr. Units	3,546	161	14	196	448
State Agr. Enterprises	3,382	159	10	172	114
Other State Units	164	2	4	24	334
Agr. Prod. Coops.	9,836	646	4,888	1,104	991
Members of CAPs	1,480	- /2	2	970	909
Individual Farms	404	- /2	1	446	170
Grand Total	15,266	807	4,905	2,716	2,518
	Percentage Composition				
Total State Agr. Units	23.2	20.0	0.3	7.2	17.8
State Agr. Units	22.1	19.7	0.2	6.3	4.5
Other State Units	1.1	0.3	0.1	0.9	13.3
Agr. Prod. Coops.	64.4	80	99.7	40.7	39.4
Members of CAPs	9.7	- /2	- /2	35.7	36.1
Individual Farms	2.7	- /2	- /2	16.4	6.7
Grand Total	100.0	100.0	100.0	100.0	100.0

/1 Sunflower and others.
/2 Less than 1,000 tons or 0.1 percent.

Source: Anuarul Statistic.

11.35 Individual farmers and members of CAPs are especially important in livestock production. In 1975, CAP members produced 33 percent of the meat, 38 percent of the milk, 31 percent of the wool and 48 percent of the eggs, while individual farmers produced 13 percent, 20 percent, 12 percent and 14 percent, respectively. Grazing of cattle and sheep on state-owned pasture and meadowland is a major source of feed for livestock produced by individual farmers. In addition, individual CAP members may make use of CAP land for grazing after the winter wheat harvest. Livestock production has been an important way of using family labor of individual farmers and CAP members that otherwise might not be employed.

Table 11.10: LIVESTOCK PRODUCTION BY TYPE OF PRODUCTION UNIT, 1975

Unit	Total Meat ('000 ton)	Pork ('000 ton)	Total Milk ('000 hl)	Wool ('000 ton)	Eggs (mil.)
Total State Agr. Units	601	369	6,612	6,367	1,566
State Agr. Enterprises	561	354	6,322	5,386	1,512
Other State Units	40	15	290	981	54
Agr. Prod. Coops.	515	225	12,365	11,620	486
Members of CAPs	688	279	16,753	9,861	2,624
Individual Farms	259	84	8,691	3,684	736
Grand Total	2,063	957	44,421	31,532	5,412
	---------- Percentage composition ---------				
Total State Agr. Units	29.1	38.6	14.9	20.2	28.9
State Agr. Enterprises	27.2	37.0	14.2	17.1	27.9
Other State Units	1.9	1.6	.7	3.1	1.0
Agr. Prod. Coops.	25.0	23.5	27.8	36.8	9.0
Members of CAPs	33.3	29.1	37.7	31.3	48.5
Individual Farms	12.6	8.8	19.6	11.7	13.6
Grand Total	100.0	100.0	100.0	100.0	100.0

Source: Anuarul Statistic.

6. Changes by Region

11.36 Land in Zone I (plains region), where agricultural output has grown most rapidly, apparently has been more responsive to the application of improved technology than land in Zones II and III. It is not known how fertilizer and other inputs have been distributed among regions but increases probably have been greatest in Zone I. Expansion of the irrigated area has been mainly in Zone I and this probably accounts in large part for the very large increases in agricultural production in this region. The annual growth rate in total agricultural output of 5 percent in Zone I from 1967 to 1973 is impressive, especially when it is considered that weather conditions were less favorable in 1973 than in 1967. The priority placed on upgrading technology and on investments to expand agricultural production in Zone I appears to have been a wise policy from the standpoint of maximizing output growth.

7. Sources of Growth in Agricultural Production

11.37 The following discussion of sources of growth in agricultural output and productivity deals with the country as a whole since detailed data by regions are not available.

Table 11.11: PERCENTAGE DISTRIBUTION OF ARABLE LAND BY ZONES, 1975

	IASs	CAPs /1	Individual Farms	Total
Zone I	28.1	70.3	1.6	100.0
Zone II	14.8	79.1	6.1	100.0
Zone III	11.5	77.7	10.8	100.0
All Zones	21.1	74.2	4.7	100.0

/1 Includes CAP private plots.

Source: Anuarul Statistic.

Research and Education

11.38 Romania's well-developed programs of agricultural research and education have made important contributions to higher crop yields and productivity of livestock. Better quality seeds, particularly for sunflower, hybrid, maize and wheat, and breeds of livestock distributed by the Academy of Agricultural and Forestry Sciences have helped raise output and productivity levels, although there still is much scope for further improvements. Increases in livestock productivity have resulted from better breeds of animals and improved feeding and related practices. Technically-trained agriculturalists stationed on IASs and CAPs to supervise farming operations are given detailed guides to follow in carrying out land preparation, planting, cultivating and harvesting operations.

11.39 Agricultural education in Romania has been organized into a national system, coordinated by the Ministries of Agriculture and Education, to provide training for specialists and skilled workers for the agricultural sector. The structure of formal education can best be divided into two branches--instruction for new personnel and that for staff already employed. The former category starts with agricultural gymnasiums, or high schools, where students are exposed to a wide range of agricultural activities as well as an opportunity to specialize. One segment of these graduates proceeds directly to production complexes as skilled workers while another portion continues to agricultural universities. Agricultural universities and institutes are dispersed throughout the country. The MA determines the numbers of experts needed in future years and thereby finalizes the number of seats available in the various disciplines. Post-graduate programs are also maintained at these institutions.

11.40 A varied refresher program is conducted for all levels of workers in the agricultural sector. The MA organizes eight-week review courses that are compulsory for all expert staff every five years. Similarly, short-courses are given annually for experts and skilled workers in order to pass down knowledge to lower level staff from research institutions as well as to provide opportunities for discussion of mutual problems. The Center for Management Training within the University of Economics and Political Science arranges two-year advanced training courses for management staff already in

the field. In addition, the MA coordinates special weekly radio and television broadcasts designed to reach the basic educational needs of CAP members. CAPs are equipped with television sets. The chief engineer organizes CAP members to view or hear the broadcasts and for leading discussions based on the central topic of each program. Finally, in each CAP during the winter months, courses are held to improve the skills of members.

Fertilizer

11.41 Increased use of fertilizer has been an important factor contributing to higher crop yields. Fertilizer consumption increased from only 22,000 tons in 1955 to 929,000 tons (plant nutrients) in 1975 or from only 2 kg/ha of arable land in 1955 to 95 kg/ha in 1975. About 60 percent is used for grains, 5 percent for sugar beets, 5 percent for sunflower, 3 percent for potatoes, 3 percent for vegetables and 24 percent for other crops. Fertilizer use on grains may have increased by about 300,000 tons form 1955 to 1975, enough to increase total grain production 3 million tons assuming a yield response ratio of 10 kg of grain per kg of plant nutrients. Total grain production average about 8 million tons in 1954-56 compared with 15 million tons in 1971-75. Thus, larger applications of fertilizer appear to account for a large share of the increase of 7 million tons in total grain production.

Table 11.12: FERTILIZER CONSUMPTION
(thousand tons of active substance)

	1955	1960	1970	1971	1972	1973	1974	1975
Nitrogen (N)	10	25	367	431	421	420	480	572
Phosphate (P_2O_5)	7	47	203	180	173	242	299	314
Potash (K_2O)	5	3	24	22	45	53	35	43
Total	22	75	594	633	639	715	814	929
Quantity per ha of arable land (kg)	2	8	61	65	66	74	84	95

Source: Anuarul Statistic.

Land Reclamation and Irrigation

11.42 Romania has long experience in building minor flood control and drainage structures, but large-scale construction of irrigation and flood control facilities is a recent development. Irrigated area increased from only 185,000 ha in 1961 to 1.4 million ha in 1975 or from only 1.9 percent of the arable area to 15 percent (Table 11.13). The objectives of irrigation include prevention of crop failure or reduced yields in years of low rainfall, higher yields in years with average rainfall, and increased doublecropping. Most irrigation projects also incorporate flood damage and drainage control. Most of the irrigated area is in southern and eastern parts of the country where rainfall is only 350-500 mm annually and varies widely from one year to the next.

Table 11.13: IRRIGATED AREA BY CROPS

Crops	Thousand hectares 1961	Thousand hectares 1975	Percentage of Area Irrigated 1961	Percentage of Area Irrigated 1975 /2
Wheat	23.7	210.0	.8	8.8
Maize	45.7	428.0	1.3	13.0
Sunflower	4.0	56.8	.9	11.1
Sugar beets	5.4	55.9	3.1	22.7
Potatoes	2.4	15.8 /1	.8	5.3
Vegetables	50.4	128.4	27.9	57.6
Lucerne and clover	-	181.2	-	24.9
Pasture and meadow	-	25.8	-	0.6
Vineyards	-	19.2	-	5.9
Orchards	-	10.6	-	2.5
Other crops	53.0	292.8	-	-
Total	184.6	1,424.2	1.9	14.8 /2

/1 Data for 1972.
/2 Percent of total arable area excluding minor crops and pastures.

Source: Anuarul Statistic.

11.43 Expansion of irrigated areas,together with improved flood control and drainage structures, have been important reasons for increased crop production. Most studies of crop production increases made possible by irrigation, flood control and drainage facilities, along with improved cultural practices, show that crop production can be more than doubled over a period of several years. Crop production per hectare has been doubled on the area placed under irrigation since 1955. It was equivalent to about 10 percent of total crop production in 1973. Of course, other inputs required to make effective use of irrigated land were also provided, although not all in optimum quantity.

Farm Mechanization

11.44 One of the most significant developments in Romanian agriculture during the last two decades is rapid mechanization of many farm operations as over 2.5 million workers moved from agriculture to jobs in other sectors. Mechanization, by substituting capital for labor, has permitted the removal from agriculture of large numbers of workers without any reduction in output.

Table 11.14: LABOR FORCE IN AGRICULTURE AND OTHER SECTORS
(Thousand workers)

Actual Numbers	1954	1960	1965	1970	1975
Agriculture	6,377	6,233	5,477	4,849	3,837
Other	2,770	3,305	4,207	5,026	6,314
Total	9,147	9,538	9,684	9,875	10,150

Changes in Numbers	1954-60	1960-65	1965-70	1970-75
Agriculture	-144	-756	-628	-1,012
Other	535	902	819	1,288
Total	391	146	191	276

Source: Anuarul Statistic.

11.45 Most seed-bed preparation, cultivating and harvesting still were carried out by animal-drawn implements in 1955, but numbers of farm machines have increased greatly in recent years (Table 11.15). Almost all field operations for producing crops now are mechanized. However, much hand labor still is used to produce sugar beets, potatoes, tobacco, fruits and vegetables, so there is still scope for further mechanization. Romania has about 560,000 horses used mainly for hauling operations, but also for some field work in hilly areas. Much land has been released from producing feed

Table 11.15: NUMBERS OF SELECTED FARM MACHINES

	1955	1970	1973	1974	1975
Tractors	23,033	107,290	116,513	116,816	119,533
Mechanical cultivators	7,787	29,346	34,594	33,736	34,391
Chemical fertilizer spreaders	-	14,504	13,718	12,783	12,251
Tractor-drawn combines	46	43,916	33,222	28,438	20,209
Self-propelled combines	1,489	1,325	7,197	12,245	17,912
Combines for silage		7,129	9,117	9,130	9,445

Source: Anuarul Statistic.

for draught animals for producing livestock and other agricultural products for human use. About one million horses were used for draught purposes in the early 1950s, and many cattle were also once used for draught purposes. Therefore reduction in number of draught animals has been an important source of feed for expanding dairy, beef, pork and egg production. It should be noted, however, that it is not intended to eliminate draught animals totally: terrain and the quantity of rural roads necessitate their continued use.

Capital Investments

11.46 Capital investments have played an important role in increasing agricultural output and productivity. Total investments in agriculture increased from an annual average of 2.6 billion lei in 1955-59 to 15.4 billion lei in 1971-75 (Table 11.16). Investments for mechanization have been very large, making possible increased agricultural production with fewer workers. Investments for land reclamation became increasingly important in the 1960s as total irrigated area rose from 200,000 ha in 1960 to 1.4 million ha in 1975. Agriculture's share of total investments in the economy increased from 15.2 percent in 1955-59 to almost 19 percent in 1960-65 but decreased to 14.0 percent in 1971-75 and is planned to be 11.6 percent during 1976-80 with total investment expected to increase by about 50 percent.

11.47 The ratio of agricultural investment to the gross value of agricultural production has risen steadily from only 5.3 percent in 1955-59 to 17.3 percent in 1971-75. Similarly, the ratio of agricultural investment to national income from agriculture rose from only 8.5 percent in 1955-59 to 33.4 percent in 1971-75. However, the ratio of agricultural investment to output of the sector has not reached as high a level as the ratio for other sectors. In the case of the total economy, the ratio of investment to national income (Romanian methodology) was 31.4 percent in 1973. The fact that Romania has invested a large share of its current output for future production has contributed to high economic growth rates in agriculture as well as in other sectors. Investments in agriculture include certain items (e.g., silos, stores, certain buildings), which in certain countries are not so classified. Major infrastructural projects, such as irrigation and greenhouses, have been responsible for the recent higher level of agricultural investment.

Table 11.16: INVESTMENTS IN AGRICULTURE DURING PLAN PERIODS COMPARED WITH TOTAL INVESTMENTS AND AGRICULTURAL PRODUCTION

	Annual Averages				
	1955-59	1960-65	1966-70	1971-75	1976-80 /1
Agricultural investments (billion lei)	2.65	7.11	10.31	15.39	23.2
Total investment (billion lei)	17.42	37.89	66.16	109.80	200.0
Agriculture's share of total investment (percent)	15.2	18.8	15.6	14.0	11.6
Gross value of agr. prod. (billion lei)	49.6	57.2	71.1	89.2	115-130
National income from agr. (billion lei)	31.0	35.0	40.0	46.0	60-68
Ratio of agricultural investment to:					
Gross value of agr. production (percent)	5.3	12.4	14.5	17.3	20.0-17.8
National income from agriculture (percent)	8.5	20.3	25.8	33.4	38.3-34.1

/1 Plan estimates.

Source: Anuarul Statistic.

Employment

11.48 Between 1950 and 1975, the labor force in agriculture declined from 6.2 million to 3.8 million, that is, from 74 percent of the total labor force to 38 percent. Details of this aggregate change and its implications are given in Chapter Seven on human resources. Only limited information is available on employment in each type of enterprise. Total personnel in agriculture increased from 219,200 in 1950 to 484,200 in 1975, when 252,000 were IAS employees and 126,383 were employees of SAMs. Between 1960 and 1975, the years for which figures are available, employees on IASs rose from 224,000 to 252,000 while the equivalent figures for SAMs were 44,500 and 126,000 (Annexes 7.10 and 7.12). Similar figures for CAPs are not available; the published statistics represent the size of CAP membership by number of families, which was 3.9 million in 1962 and 3.4 million in 1975 (Annex 7.11).

D. Foreign Trade

11.49 Romania's trade in agricultural products has increased greatly in the last two decades although less than non-agricultural products, as might be expected with the emphasis placed on industrial growth in Romania. Exports of agricultural products (including forestry) rose from about 700 million lei valuta in 1950 to 6.5 billion in 1974, while imports increased from 285 million lei valuta to 4.7 billion in 1974 (Table 11.17). Despite the decline in agriculture's share of total exports from 55 percent in 1950 to 27 percent in 1974, agriculture's growing trade surplus -- from 412 million lei in 1950 to almost 2.2 billion lei valuta in 1973 and 1.8 billion in 1974 -- has become increasingly important for financing imports for industrialization. Moreover, an increasing share of the growing trade surplus for agricultural products has been in convertible currency -- a development that also has contributed to industrial growth.

1. Exports

11.50 Romania exports a wide variety of agricultural products (Tables 11.17-11.18). Exports of processed foodstuffs have risen much more than raw materials for foodstuffs and other purposes. Items that have shown large export-value increases since 1965 include meat and meat products, cereals, sugar, vegetable oils, wine and alcoholic beverages and fresh vegetables and potatoes. Exports of processed foodstuffs amounted to over half the total value of agricultural exports in 1974 compared with 39 percent in 1965. The total value of agricultural exports increased by 12.0 percent annually from 1965 to 1974, compared with an annual growth rate in gross agricultural production of 4.4 percent annually. Thus, it appears that an increasing share of total agricultural output has been exported. However, some of the rise in the total value of exports has been due to rising export prices and to the growing share of processed products. The shift in composition of agricultural exports to include a larger share of processed foodstuffs has been stimulated by their rising export prices compared with those of raw materials.

Table 11.17: EXPORTS, IMPORTS AND TRADE BALANCES FOR AGRICULTURAL AND OTHER PRODUCTS (in Million Lei Valuta)

	1950	1960	1965	1970	1973	1974
Agricultural Products /1						
Exports	697	1,542	2,337	2,952	5,293	6,504
Imports	285	699	832	1,808	3,051	4,725
Balance	412	844	1,506	1,144	2,242	1,779
Total Trade						
Exports	1,274	4,302	6,609	11,105	18,576	24,226
Imports	1,461	3,887	6,463	11,761	17,418	25,563
Balance	-187	415	146	-656	1,158	-1,337
Agriculture's Share						
Exports	55	36	35	27	28	27
Imports	20	18	13	15	18	18

/1 Includes forestry products and assumes sugar exports in 1973 at 1972 value.

Source: External Trade of the Socialist Republic of Romania and Anuarul Statistic.

Table 11.18: EXPORTS OF AGRICULTURAL AND FORESTRY PRODUCTS
(in Million Lei Valuta) /1

	1965	1970	1971	1972	1973	1974 /1	1975 /1
Foodstuffs							
Meat and meat products	219	271	323	442	762		
Dairy products	45	56	104	95	89		
Vegetables and potatoes	62	115	182	210	256		
Fruits (fresh, dried and processed)	177	180	170	179	192		
Sugar	16	20	6	179	-		
Vegetable oils	55	206	278	219	298		
Wine and alcoholic beverages	180	265	316	342	361		
Others	165	232	265	128	559		
Sub-total	919	1,345	1,644	1,794	2,517	3,673	2,822
Raw materials for foodstuffs							
Cereals	308	131	240	354	734		
Live animals	79	245	242	390	372		
Seeds	26	48	47	56	28		
Others	97	77	73	282	206		
Sub-total	510	501	602	1,082	1,340	1,245	1,513
Other raw materials							
Sawn wood	499	576	626	651	840		
Wooden cases and plywood	121	121	123	133	139		
Pulp and paper	52	147	141	144	163		
Others	236	262	260	258	294		
Sub-total	908	1,106	1,151	1,186	1,436	1,586	
Grand Total	2,337	2,952	3,397	4,062	5,293	6,504	

/1 Breakdown of totals not available.

Source: External Trade of the Socialist Republic of Romania and Anuarul Statistic.

11.51 Major changes in agricultural exports, measured in volumes, include the following:

	1965	1974
	('000 tons)	
Meat and meat products	61	132
Edible animal fats	19	52
Edible vegetable oils	33	165
Tinned vegetables	11	61
Fresh vegetables	137	185
Wines	43	90
Other alcoholic beverages	9	17
Refined sugar	34	107

Cereal exports have not changed significantly, fluctuating around an annual average of about 700,000 tons since 1960. Most of Romania's increased grain production has been used to expand the output of animal products, following a decision made in 1970 to forego foodgrain exports whenever necessary to ensure adequate supplies for livestock.

11.52 Romania has traded more with West European and North American countries in recent years. The share of agricultural exports going to non-CMEA countries increased from only 35 percent in 1960 and 40 percent in 1965 to 74 percent in 1973. Thus, convertible foreign exchange earnings have risen considerably. The expansion of large-scale factory-type farm units for producing meat products, vegetables and other agricultural products have been concerned with increasing export earnings.

2. Imports

11.53 Agricultural imports consist mainly of raw cotton, crude leather, citrus fruits, cocoa and other products not produced in the country in sufficient quantities (Table 11.19). Much of the growth in the total value of agricultural imports since 1965 has been due to higher import prices. Nevertheless, agricultural imports as a share of total imports declined from 20 percent in 1950 to 18 percent during 1974. Growth of agricultural imports has been mainly from non-CMEA countries. Agricultural imports from non-CMEA countries accounted for 82 percent of the total from all countries in 1973 compared with about 46 percent in 1965.

Table 11.19: IMPORTS OF AGRICULTURAL AND FORESTRY PRODUCTS
(in Million Lei Valuta)

	1965	1970	1971	1972	1973	1974 /1
Foodstuffs						
Meat and meat products	-	27	138	120	25	
Fish and fish products	39	77	69	63	51	
Citrus fruits	15	23	36	46	54	
Sugar	-	90	117	76	74	
Alcoholic beverages	21	21	34	48	63	
Others	80	119	67	42	133	
Sub-total	155	358	461	395	400	587
Others						
Fodder (feeds)	35	68	79	157	467	
Live animals	1	19	5	9	42	
Raw cotton	302	388	434	480	529	
Wool	26	34	34	39	97	
Crude leather	61	152	115	217	290	
Cocoa	18	25	27	25	54	
Tobacco	9	13	29	14	14	
Pulp and paper	35	95	126	159	180	
Others	190	656	685	690	978	
Sub-total	677	1,450	1,534	1,790	2,651	4,138
Grand Total	832	1,808	1,995	2,185	3,051	4,725

/1 Breakdown for each item not available.

Source: External Trade of the Socialist Republic of Romania and Anuarul Statistic.

11.54 Romania increased its imports of soybeans and protein meals greatly in 1973 and they also were large in 1974. Romanian authorities stated that these were necessary to meet production and export targets of livestock products when feedgrain production was lower than planned. One source states that Romania's imports of protein meals increased to 600,000 tons for the year beginning July 1, 1973, and to 1 million for the year beginning July 1, 1974 compared with 300,000 tons for the year beginning July 1, 1972.

F. Development Prospects and Five Year Plan for 1976-80

1. 1976-80 Plan

11.55 The 1976-80 Five Year Plan provides for gross agricultural production to increase by 28-44 percent (5.1-7.6 percent annually) over that of the previous plan. Actual gross agricultural production averaged 25 percent larger in 1955-59 than in 1950-54 and 15 percent larger in 1960-65 than in 1955-59. It increased by about 25 percent from one plan period to the next during the last two plan periods. Therefore, an increase of 28 percent in 1976-80 over 1971-75 would be close to the actual achievement of the last plan (1971-75), while an increase of 44 percent would require a greatly accelerated growth of agricultural production. Gross agricultural production increased at an annual rate of 2.0 percent during 1955-65 and 4.4 percent during 1965-75. Thus the lower limit of the planned annual increase in gross agricultural production of 5.1 percent is more or less the same as the rate achieved during the last decade but the upper limit of 7.6 percent annually exceeds growth rates ever achieved previously.

Table 11.20: GROSS AGRICULTURAL PRODUCTION:: PERIOD AVERAGES AND PERCENTAGE CHANGES FROM PREVIOUS PERIOD

Periods	Annual Averages 1950 = 100 /1	Percentage changes from previous period
1950-54 (1st 5-year plan)	122.7	-
1955-59 (2nd 5-year plan)	153.0	24.7
1960-65 (3rd 6-year plan)	176.4	15.3
1966-70 (4th 5-year plan)	219.2	24.3
1971-75 (5th 5-year plan target)	269.2	36-49
1971-75 (actual)	275.3	25.6
1976-80 (6th 5-year plan) /2	334-369	28-44

/1 Actual averages except plan averages for 1971-75 and 1976-80.
/2 Law for 1976-80 Plan.

Source: Anuarul Statistic.

11.56 Targets have been set for livestock numbers and individual products with lower and upper limits. By the end of 1980 the number of livestock is planned to reach 7.5 million heads for cattle, 12 to 13 million for swine, 19 to 19.5 million for sheep and goats and 50-57 million for egg-laying poultry. Production targets for various products call for increases from 1971-75 to 1976-80 of 35-51 percent for cereals, 32-49 percent for sunflower, over 50 percent for most other major crops, 41-52 percent for all meats, and 37-47 percent for milk. These targets may be compared with production in 1980 assuming continuation of annual growth rates from 1954-55 to 1971-75. Production of sunflower and eggs would exceed targets set for 1976-80, but growth

rates for other products would have to exceed those during the last two decades to achieve their targets. But it should be noted that production of most agricultural commodities has grown more rapidly during the last decade than during the previous one. Continuation of growth rates of the 1965-75 period would mean achievement of the lower 1976-80 plan targets for most agricultural products.

Table 11.21: PRODUCTION TARGETS FOR MAJOR AGRICULTURAL PRODUCTS 1976-80

Products	1976-80 Annual Average	1976-80 Compared to 1971-75 (%)	Actual 1971-75
Cereals ('000 tons)	20,000-22,360	135-151	14,804
Sunflower ('000 tons)	1,000- 1,133	132-149	760
Sugar beets ('000 tons)	8,600- 9,354	181-197	4,757
Soybeans ('000 tons)	545- 575	246-260	221.0 /1
Flax for fibre ('000 tons)	300- 322	324-348	92.5
Potatoes ('000 tons)	4,600- 4,800	157-166	2,927
Field vegetables ('000 tons)	4,200- 4,316	165-169	2,549
Fruit and grapes ('000 tons)	3,800- 4,000	166-173	2,295
Meat ('000 tons l.w.)	2,500- 2,687	141-152	1,768
Milk (mil hl.)	58- 62	150-161	39
Eggs (millions)	6,000- 6,500 /1	129-140	4,642
Wool ('000 tons)	42- 47	138-153	30

/1 Flax average is low due to 1975 floods.

Source: Law of the 1976-80 Plan, Communique on 1971-75 Plan and Anuarul Statistic.

11.57 The 1976-80 plan calls for yields per ha and livestock production per animal unit to increase greatly. For example, according to Directives (yields of major crops), are expected to be 30-78 percent higher than those during 1971-75 (Table 11.22). Fertilizer use (active substance) is projected to rise to 250-280 kg per ha of arable land, vineyards, and orchards in 1980 compared with 95 kg in 1975. Approximately 1.2 million ha of additional land will be brought under irrigation, bringing the total close to 3.0 million ha in 1980. Drainage will be improved on 1.1 million ha, erosion control measures will be carried out on about 1 million ha, and the arable area will be increased by 125,000 ha during 1976-80.

Table 11.22: TARGET YIELDS FOR 1976-80

	Average 1971-75 (kg/ha)	Target 1976-80 (kg/ha)	Percentage Increases
Wheat and rye	2,210	3,000- 3,150	36-43
Maize	2,680	3,500- 3,800	31-42
Sunflower	1,450	2,000- 2,140	38-48
Sugar beets	22,140	34,000-36,000	54-63
Field vegetables	11,250	19,000-20,000	69-78

Source: Directives of the Eleventh Congress of Romanian Communist Party Concerning the 1976-80 Five Year Plan and Anuarul Statistic.

11.58 Planned investment in agriculture during 1976-80 will total 116 billion lei. Planned annual investment in agriculture will average 23.2 billion lei in 1976-80 compared with 15.4 billion in 1971-75 and 10.3 billion in 1966-70. However, agriculture's share of total investment will continue to decline from 15.6 percent in 1966-70 and 14 percent in 1971-75 to 11.6 percent in 1976-80.

11.59 Investment plans for 1976-80 put greater emphasis on improving productivity of CAPs and SAMs than in previous plan periods. This policy shift towards CAPs, which account for 75 percent of the arable land, is a step in the right direction for realizing higher plan targets. Available data indicate that investments for CAPs will be 64 percent higher and those for SAMs 74 percent higher in 1976-80 than in 1971-75. On the other hand, investments for IASs, which have been relatively large in recent years, will be reduced. It also shows that investments for land reclamation, mechanization, and vegetable production will be increased greatly and those for animal production will be increased slightly in 1976-80 compared with 1971-75. Number of tractors of various types are expected to increase in 1975 by 70,000 tractors, some for replacement and some for additional operations.

11.60 The most important projected change in agriculture is a large improvement in labor productivity resulting from capital-labor substitution. The labor force in agriculture is expected to decline to about 3 million in 1980, compared with 4.0 million in 1975, and to account for only 27-28 percent of total labor force in 1980 compared with 38 percent in 1975. About 700,000 of the 1 million non-agricultural jobs to be created during 1976-80 will be filled by workers leaving agriculture. If the number of agricultural workers declines by 25 percent from 1975 to 1980 as planned and gross production increases by 30 percent, gross production per agricultural worker will increase 73 percent. The 1976-80 Plan envisages that real incomes of all workers will be 18-22 percent higher in 1980 than in 1975. In 1977, it was announced that this target had been revised to allow an increase of 30.2 percent in real wages by 1980. The Plan also stated that real incomes of workers on CAPs and

private farms were to rise by 20-29 percent over the plan period and this figure was also increased to 30 percent in 1977. At the same time, changes in pensions for workers throughout the economy were announced (See Chapter Nine).

Table 11.23: INVESTMENTS IN AGRICULTURE

A. Distribution by Types of Enterprises

	Annual Averages in Billion Lei				
	1960	1961-65	1966-70	1971-75	1976-80
Agricultural Production					
Cooperatives, total	1.5	3.0	3.3	4.5	7.4
Own funds	1.0	2.2	2.2	2.0	4.3
Loans	.5	.8	1.1	2.5	3.1
Stations for Agricultural Mechanization (State Budget)	1.5	1.4	1.4	2.3	4.0
State Agricultural Enterprises,					
Total	1.5	2.5	3.8	4.8	3.7
State Budget	1.0	2.0	3.2	4.1	3.2
Retained Profits	.5	.5	.5	.5	.5
Sub-total	4.5	6.9	8.7	11.4	15.1
Other	.4	.4	1.6	3.9	8.1
Grand Total	4.9	7.3	10.3	15.3	23.2

B. Distribution by Subsectors

	Annual Average in Billion Lei (%)	
	1971-75	1976-80
Land Reclamation	4.6 (32.7)	7.8 (33.6)
Mechanization	3.4 (22.7)	6.5 (28.0)
Vegetable production	1.5 (10.0)	3.2 (13.8)
Animal production	4.4 (29.3)	4.9 (21.1)
Other	1.1 (7.3)	.8 (3.5)
Total /1	15.0 (100.0	23.2 (100.0)

/1 Totals exclude investments for silos and farm storage, and other building facilities.

Source: Data supplied by Romanian authorities.

2. Perspectives to 1990

11.61 The Directives also include guidelines for economic and social development until 1990, calling for intensive development of agriculture. Gross agricultural production in 1986-90 is projected to be 50-80 percent larger than in 1971-75, with livestock products accounting for 50 percent of the total in 1986-90 compared with 40 percent in 1971-75. Total irrigated area will increase to 5 million ha in 1990 (about half of all arable land and virtually all of the irrigable land) and fertilizer use to 300-325 kg per ha (active substance). Cereal production is projected to rise to 28-30 million tons, averaging more than one ton per person. Yields per ha are expected to rise greatly.

Table 11.24: TARGET YIELDS FOR 1990

	1971-75 Averages (kg/ha)	1990 Averages (kg/ha)	Percentage Increase
Wheat and rye	2,210	3,700	67
Maize	2,680	5,300- 5,800	98-116
Sunflower	1,450	2,300- 2,400	59- 66
Sugar beets	22,140	42,000-45,000	90-103
Flax for fibre	1,886	5,800- 6,000	207-218
Field vegetables	11,250	23,000-24,000	104-113

Source: Same as for Table 11.23.

11.62 Livestock numbers and production per animal unit are also projected to increase greatly. For example, the number of pigs is expected to increase by 36-48 percent by 1980 and 105-127 percent by 1990 over the number in 1975 (Table 11.25). Large increases are also expected for cattle, sheep, goats and poultry. Livestock will be fed to heavier weights, thereby increasing meat production. Productivity per animal unit as measured by milk per cow, eggs per hen, and wool per sheep will approximately double from recent levels. In 1990, in IASs milk production per cow is expected to average 3,300-3,500 litre annually, wool production per sheep 4.5-4.7 kg and eggs per laying hen 200-240. In the CAPs, the respective figures are 2,200-2,400 litre, 3.3-3.7 kg and 180-210 eggs.

Table 11.25: TARGET INCREASES IN LIVESTOCK NUMBERS

	1975 Actual	1980 Target	1990 Target	Percent Increase from 1971-75 1980	1990
		(in millions)			
Cattle	6.1	7.5	10-11	23	63-80
Pigs	8.8	12-13	18-20	36-47	104-127
Sheep and goats	14.3	19-19.5	20-22	32-37	40- 54

Source: Law of the Plan 1976-80
Directives of 11th Congress of RCP
Anuarul Statistic

3. Assessment of Development Prospects

11.63 Romania has great potential for expanding agricultural production. It should be able to achieve a 28 percent increase in gross agricultural production in 1976-80 over 1971-75, as called for by the lower target of the Five-Year Plan, if average weather conditions prevail. If Romania is able to fulfill plan stipulations for irrigating an additional 1.2 million hectares and put into effect farming practices required for higher yields on this area, it should be able to move gross agricultural production closer to the upper targets.

Crops

11.64 Crop yields could be raised by increased use of improved seeds, fertilizer, and herbicides to control weeds and by better seedbeds preparation, cultivation and harvesting practices. It has been reported that only enough herbicides were available in 1974 to control weeds on wheat planted on IASs. The expansion in supplies of these inputs planned for 1976-80 should raise crop yields throughout the country. There undoubtedly are large potentials for raising yields by more effective control of weeds and more timely performance of field operations. The planned expansion in farm machines on SAMs should improve field operations and contribute to higher yields on CAPs.

11.65 Crop yields on IASs are generally 25-60 percent higher than on CAPs (Table 11.26), due largely to the use of better seeds, more fertilizer and other chemicals and better field operations. Also a larger share of the land is irrigated on IASs than on CAPs. However, Romania now plans to upgrade farming practices on the CAPs and put more of their land under irrigation. It should be possible to increase their crop yields by 25-50 percent by following agronomic practices similar to those now used on IASs, so that CAP production will be close to the IAS level.

Table 11.26: CROP YIELDS AND FERTILIZER USE BY TYPES OF FARMS
1971-75 AVERAGES
(kg/ha)

Crop Yields	IASs	CAPs	IAS/CAPs
Wheat and rye	2,873	2,115	136
Maize	3,388	2,672	127
Sunflower	1,747	1,378	127
Sugar beets	20,934	22,159	94
Potatoes	18,335	11,509	159
Lucerne	6,190	3,851	161
Fertilizer			
Arable land /1	132	65	203

/1 Kg of active substance per ha.

11.66 Comparison with neighbouring countries also suggests that Romania has not been fulfilling its potential. Crop yields are lower in Romania than in other East European countries (Table 11.27). Differences in soil fertility and climatic conditions account for some of the differences, but its lower crop yields are undoubtedly partly due to lower applications of fertilizer, poorer seeds and less effective weed control. Fertilizer use is less than half that of nearby countries. Romania's plans to increase fertilizer use from an average of 95 kg (active substance) in 1975 to 250-280 kg in 1980 per ha of arable land, vineyards and orchards should help much to increase yields provided better seeds and other improved cultural practices are also followed. Experimental trials made by research stations of the Academy of Agriculture and Forestry Sciences reinforce these conclusions. It will be especially important to improve farming practices on land brought under irrigation. It has been observed that some crops now under irrigation have been damaged by plant diseases and insects, so there may be much scope for increasing yields on land already under irrigation by upgrading farming practices.

Table 11.27: CROP YIELDS AND FERTILIZER USE IN EAST EUROPEAN COUNTRIES
(kg/ha)

Countries	Crop Yields (1971-73 Average)				Fertilizer Use /1
	Wheat	Maize	Sugar Beets	Potatoes	
Romania	2,220	2,681	23,096	12,008	65
Bulgaria	3,457	4,137	35,556	13,282	156
Czechoslovakia	3,554	4,229	34,090	14,953	272
East Germany	4,017	2,835	28,701	17,386	388
Hungary	3,218	3,840	31,576	10,628	196
Poland	2,708	2,977	31,020	17,520	205

/1 Active substance per ha of arable land in 1972.

Source: FAO Yearbook of Agricultural Production, 1974.

11.67 Currently, Romania's seed industry has facilities for growing, cleaning, grading, drying and storing only about 200,000 tons of the 600,000 tons of seeds used annually to grow wheat, maize, barley, sunflower, soybeans, and other field crops. It especially needs to expand seed-drying capacity. The provision of improved seed-handling facilities should enable Romania to increase yields of cereals and oilseeds 10-20 percent through the use of new varieties developed by the Academy of Agricultural and Forestry Sciences and thereby reduce present high-seeding rates. Because germination rates are uncertain, seeding rates for cereals are often high, causing plant population to be too dense and lodging to take place in fields where high germination rates occur. Additional seed-handling facilities are especially needed to bring into use new monogram sugar beet hybrids, which have potential for yield increases of about 18 percent. Romania also needs better seed handling facilities for expanding its exports of superior hybrid sunflower seed to the United States, and hybrid corn and other seeds to European countries. It also needs to improve storage capacities for crops after harvest: the 1976-80 plan gives priority to silo construction and modernization of on-farm storage.

11.68 It should be emphasized that the realization of increases in crop yields described above will require improvement in farming practices and that the potential for increased crop yields may overstate yield gains under field conditions since tests are made under ideal moisture conditions. Nevertheless, prospects for continued yield increases at rates achieved in the last decade appear good because of plans to expand the irrigated area and to increase the use of improved seeds, fertilizer, and other inputs.

Livestock

11.69 Romania can expand beef, sheep and milk production from its 4.5 million ha of pasture and meadowland. Approximately 2 million ha of state-owned land, located mainly between the arable low plains of Zone I and the forested areas of Zones II and III, could profitably be improved by clearing encroaching shrubs and trees, building access roads and stock water facilities, fencing, seeding and fertilizing. Controlled grazing practices to prevent overstocking and to improve vegetative growth will be required to maximize livestock production. Pasture and meadowlands could be used to raise more cattle and lambs for fattening by specialized feeding enterprises.

11.70 Larger investments for pasture-livestock development could yield relatively high returns. A pasture development program was begun in 1972 involving expenditure of 300-400 million lei annually for various pasture improvements. In 1975, the amount was increased to 1.2 billion lei, sufficient to carry out minor improvements on 400,000 ha. Financing is provided outside the state budget, largely by grazing fees of 30 lei per year for bovines and 10 lei per sheep and charges made for cutting pastures for hay. Unimproved pastures produce about 5,000 kg of green forage per ha, but improved pastures produce three times that much. It is estimated that costs of improving native pasture in mountain areas require investments of 7,000 to 8,000 lei per ha. Annual operating costs would be additional.

11.71 Little arable land is used for perennial hays and almost none for pasture in crop rotations. In 1971-75, roughage feed (fodder) crops accounted for 16 percent of the arable area, but only half was in perennial hay and almost none in rotation pasture. Agronomists believe that sound crop rotations for hay and pasture, involving more perennials such as lucerne and clovers, are required to conserve soil structure and fertility, control insects and diseases and raise the protein content of roughage feeds. Field experiments also show that yields of maize, sunflower and wheat increase substantially when these crops are grown on land right after perennial crops. About half of the 1.6 million ha in fodder crops are annuals for hay, green feed, silage and root crops harvested for barn feeding. Much of the cost of labor and capital could be saved by permitting livestock to harvest a larger share of their feed from perennial pastures instead of relying so heavily on harvesting roughage feed crops for barn feeding.

11.72 Achievement of the high targets set for livestock products depends upon expansion in total feed production and increased efficiency in the use of feed. Roughage, as well as feed grain production, will need to average 45-50 percent more during 1976-80 than during 1971-75. It should be noted that a doubling of the area used to grow hay, green feed, silage and root crops during the first two decades was made possible by reducing the area of grain cereals. Further reduction of the area in grain, and expansion in the area of fodder crops, will probably be necessary to produce the roughage required to achieve targets set for milk and beef production. Also, the introduction of double cropping of forage crops will help to meet these targets.

11.73 Despite much progress in recent years, there still is much scope for upgrading the genetic quality of livestock breeds and for improving livestock-feed conversion ratios. The upward trend in (product) output per animal unit can be expected to continue. However, shortage of grain concentrates, particularly high-protein meal, will be a major problem in achieving better-balanced feeding rations and improving livestock-feed conversion ratios. Feedgrain shortage may also be an important constraint to achievement of the high production targets for livestock products.

11.74 Romania is planning to establish many more large-scale factory-type livestock enterprises for producing pork, beef, dairy products, poultry and eggs, based mainly on purchased feed. Supplies of feed to private farmers and to members of CAPs will be increased, according to Romanian authorities, even though the number of large-scale livestock enterprises increases. Private farms and members of CAPs accounted for 46 percent of the meat, 57 percent of the milk, 43 percent of the wood, and 62 percent of the eggs produced in 1975. It is expected that total livestock production by individual farmers and CAP members will be maintained and perhaps increased, but large-scale units will account for an increasing share of national production. Factory-type livestock enterprises make more efficient use of feed than small-scale production by private farmers and members of CAPs. But the latter probably use much poorer quality feed, which otherwise would be wasted.

11.75 Prospects for achieving a large increase in livestock production are good, but the targets, calling for doubling the number of cattle and pigs from 1971-75 to 1990, will require great efforts for achievement. They will require much more rapid increases in feed production and improvements of feed-conversion ratios than have occurred during the last two decades.

CHAPTER TWELVE

THE CONSTRUCTION AND HOUSING SECTORS

A. The Construction Sector

1. The Role and Performance of the Construction Sector

(a) Output Growth and Structure

12.01 The construction process, by its very nature, is an important element in investment and as Romania bases its economic strategy upon a high rate of investment, it is not unexpected to find it playing such a crucial role in the development of the Romanian economy. It is, in fact, the third largest sector in terms of both national income and social product as table 12.1 shows. Total social product increased at an average annual rate of 9.8 percent between 1950-75 while construction social product 1/ increased at an average annual rate of 11.5 percent per annum. Similarly, national income increased at 9.7 percent per annum with the construction element growing at 11.3 percent per annum.

Table 12.1: SECTORAL BREAKDOWN OF SOCIAL PRODUCT AND NATIONAL INCOME IN 1975 (in current prices and percentage terms)

Share of:	Industry	Construction	Agriculture	Transport and Telecommunications
in				
Social Product	64.7	8.6	13.3	4.2
National Income	56.2	7.6	16.0	5.8

Source: Anuarul Statistic.

12.02 The magnitude of the growth of construction output can be seen more fully in tables 12.2 and 12.3. The increases in the early 1950s were large but mainly reflect progress from an underdeveloped base and large investments including those for drilling and exploration. As the 1950s wore on, some construction works were hampered by a shortage of lumber and cement, both of which were required for export to obtain scarce foreign exchange for machinery imports. By the 1960s, these constraints began to disappear and as the state diverted an increasing proportion of national income into investment, construction continued to grow at very rapid rates. The 1970s have also seen significant rates of growth for the sector but at a slower pace. This has not occurred because of slower investment growth but because of a reduction in construction's share in investment. This is discussed further below.

1/ Construction social product includes construction work, capital repairs and geological and drilling operations.

Table 12.2: CONSTRUCTION 1950-75
(in billions of comparable 1963 lei)

	1950	1955	1960	1965	1970	1971	1972	1973	1974	1975
Construction Social Product	5.1	12.7	20.7	33.0	54.8	59.7	64.4	67.3	71.0	76.7
Construction National Income	2.1	4.7	9.1	12.4	21.8	23.9	25.9	27.3	28.8	31.4
Construction Output /1	4.4	10.5	17.1	26.4	44.3	47.9	51.3	54.9	56.7	61.7
Construction Work /2	2.9	7.3	12.2	21.1	34.7	38.2	41.3	44.3	45.6	50.9

/1 Includes construction work plus capital repairs.
/2 Includes Building, Installation and Mounting of Equipment in the socialist sectors.

Source: Anuarul Statistic, Investiti-Constructii, and Bank estimates.

Table 12.3: Average Annual Rates of Growth in Construction
(in percentage)

	1951-55	1956-60	1961-65	1966-70	1971-75
Social Product	20.2	10.2	9.8	10.7	6.9
National Income	16.9	14.3	6.4	12.0	7.6
Output	19.1	10.1	9.1	10.9	6.9
Work	20.3	10.8	11.5	10.5	7.9

Source: Anuarul Statistic.

12.03 Annexes 8.1 and 8.2 detail construction work by branches of the national economy since 1960. As one would expect, the patterns follow the general development strategy. Over 50 percent of all construction is in the industrial area and between 80 and 90 percent of industrial construction is in the producers' goods sector (Group A). Not only does industry have the greatest share but it has also shown a consistent growth rate throughout the period. The producers' goods sector took the lead in the early 1960s but consumer goods expanded rapidly towards the end of the decade and both have continued their expansion in the 1970s.

12.04 In general, the productive sector, together with housing, have accounted for the bulk of construction work. In 1960, the productive sector accounted for 74.8 percent of construction work, with housing taking a further 13.3 percent. By 1975, the productive sector had increased its share to 77.5 percent and housing accounted for 12.3 percent.

12.05 Construction output in the socialist sector (that is construction work plus capital repairs), by category of output rather than by branch of economy, is given in Annex 8.3. The 15-year average rates of growth for the whole economy are the same for both construction work and output but construction output growth has been lower in the last five years, suggesting that capital repairs have declined relative to new construction. An explanation for this is that the average age of buildings has declined, and as a result capital repairs have decreased in importance relative to the rapidly increasing new construction.

(b) Economic Efficiency in Construction

12.06 In 1950, the construction sector was labor-intensive, unmechanized and relatively unsophisticated. By 1975, the picture had changed substantially. The sector is now much more mechanized and efficiency conscious.

12.07 The biggest transformation has been in mechanization, as part of a general policy of modernization and increased efficiency (table 12.4). In 1955 only 22.9 percent of earth work and 37.7 percent of digging was undertaken by mechanical means; by 1975 the respective figures were 90.6 percent and 91.7 percent. This, however, does not give the full picture. Fixed assets in construction have also been growing as a proportion of total assets (Table 12.5). They grew quickly in the first few years of the 1950s but slowed down towards the end of the decade (see para 12.02). In the 1970s their growth has been especially fast with a 19.5 percent increase recorded in 1975 alone. Except for the 1950s, construction investment has had a similar growth (see Table 12.6).

Table 12.4: MECHANIZATION /1 IN CONSTRUCTION SECTOR 1955-75

	1955	1960	1965	1970	1971	1972	1973	1974	1975
Earth Work	22.9	50.6	80.7	86.7	87.3	88.2	87.1	89.6	90.6
Digging	37.7	62.9	84.6	88.7	88.9	89.3	90.7	91.4	91.7
Transport		75.2	89.7	92.8	92.9	94.7	94.3	95.6	95.3
Concrete Work				73.5	75.5	77.5	82.8	85.9	86.2
Handling of Sets			65.6	84.2	85.0	85.5	86.4	87.5	88.5

/1 Mechanization is defined as the percentage of work performed with mechanical means.

Source: Anuarul Statistic.

Table 12.5: FIXED ASSETS
(1950 = 100)

	1950	1955	1960	1965	1970	1971	1972	1973	1974	1975
Fixed Assets in Construction	100	396	477	791	1376	1560	1851	2033	2318	2769
Fixed Assets in all economy	100	125	161	223	337	368	398	433	478	534
Construction as % of total	0.7	2.2	2.0	2.4	2.7	2.9	3.1	3.2	3.3	3.5

Average annual rates of growth of fixed assets in	1951-5	1956-60	1961-5	1966-70	1971-5
Construction	32.0	3.8	10.6	11.7	15.0
All economy	4.6	5.2	6.7	8.6	9.6

Source: Anuarul Statistic.

12.08 The statistics published on capital and labor in construction and the sector's output provide an indication of the sector's development and its efficiency over the past twenty-five years. This paragraph looks briefly at the development in the use of capital and labor between 1950 and 1970, while the following paragraph examines more closely the changes in the last five-year plan period. Between 1950 and 1970, the proportion of the labor force working in construction in both the socialist sector and the whole economy increased at a steady rate from 2.2 percent to 7.8 percent. The growth of investments and fixed assets proceeded at a less regular pace. Very rapid growth of fixed assets between 1951 and 1955 was followed by a very much smaller rate of growth for the following five year period, reflecting in great part the period of economic consolidation that occurred during the second plan period. With the renewed industrialization after 1960, fixed assets expanded more rapidly again (10.6 percent per annum between 1960 and 1965). The fact that social product in construction increased more rapidly than national income and that the capital-output ratio increased throughout the plan period suggests that the infusion of labor and capital in the period were not fully effective and that greater output could only be obtained by a more than proportionate increase in inputs. This trend appears to have been reversed in the 1961-65 plan period when national income from construction grew more rapidly than construction and the ICOR for construction fell to 1.36 (see Table 12.3 and figure 12.1).

TABLE 12.6

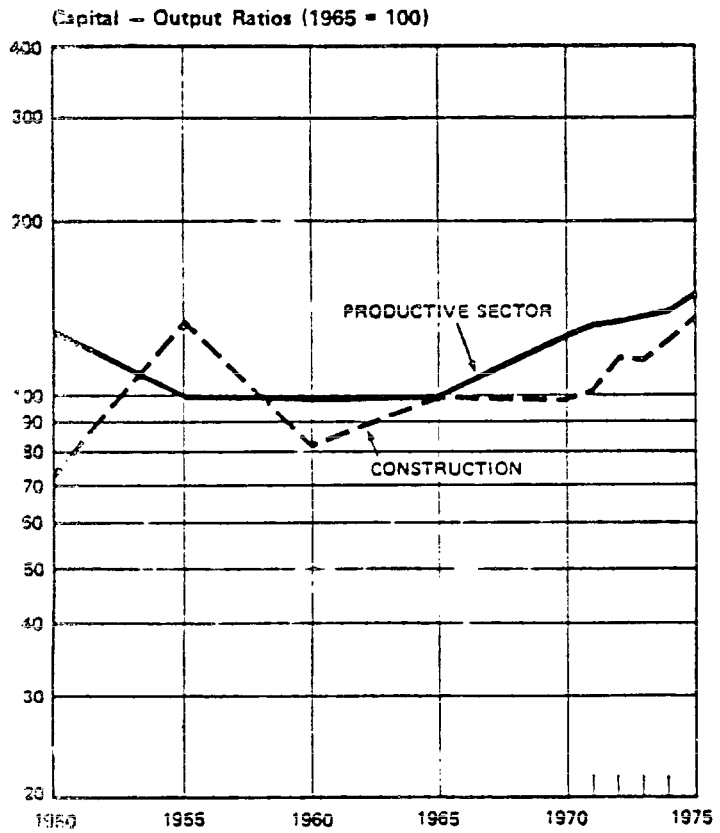
Investment (in millions of Lei)

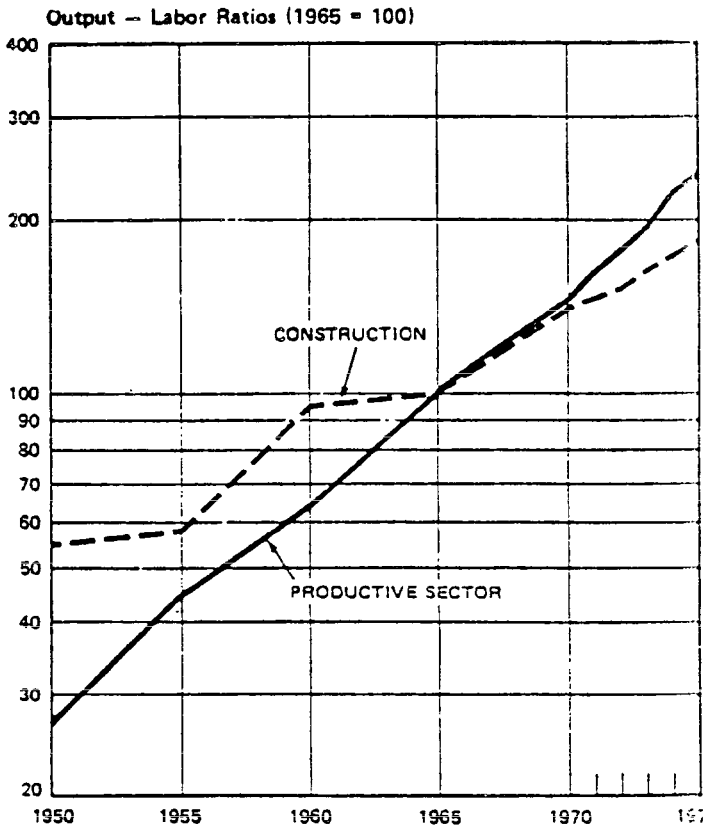
	In 1959 Prices				In 1963 Prices						
	1950	1955	1960	1965	1965	1970	1971	1972	1973	1974	1975
Total Investment	5,633	13,466	24,615	44,857	44,659	74,790	82,617	91,717	99,231	112,457	130,640
Construction Investment	369	292	531	1,931	1,826	3,595	4,290	4,448	4,148	5,652	7,317
Construction of % of Total	6.5	2.2	2.2	4.3	4.1	4.8	5.2	4.8	4.2	5.0	5.6

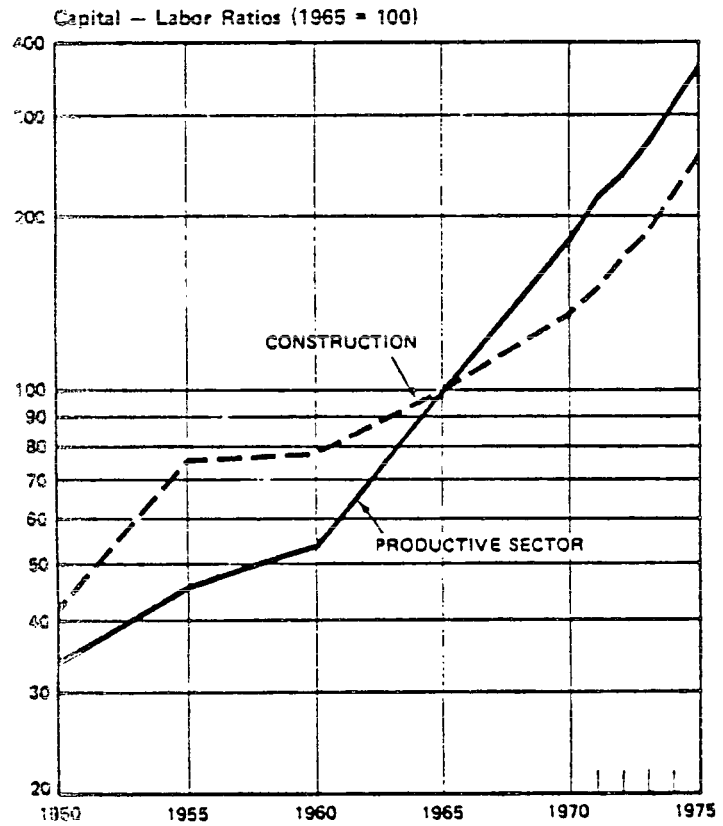
Average annual rate of growth of	1951-55	1956-60	1961-65	1966-70	1971-75
Total Investment	18.9	12.8	12.7	10.8	11.8
Construction Investment	-4.6	12.7	29.5	14.5	15.3

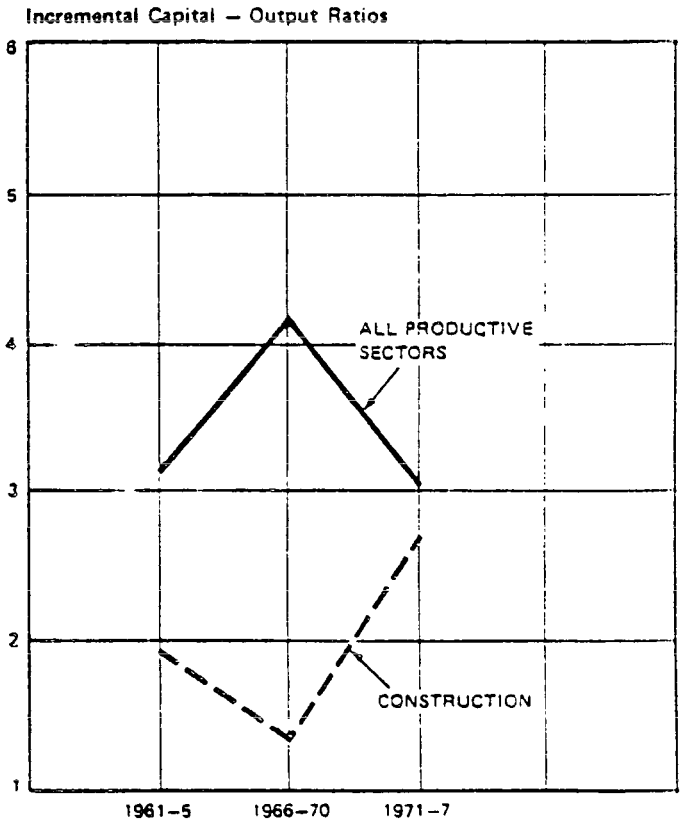
Source: Anuarul Statistic.

Figure 12.1









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12.09 The developments between 1971-75 were somewhat different. As table 12.3 shows, production increased at an average annual real rate of 7-8 percent. Fixed assets meanwhile grew at 15 percent per annum, significantly faster than the productive sector average of 9.6 percent. Construction's share in fixed assets increased from 2.7 percent in 1970 to 3.5 percent in 1975, and its share of investment increased from 4.8 percent to 5.6 percent. The manpower position exhibited a different trend. In 1971 and 1972, there was an initial surge in the construction labor force (Annex 8.4) but after that period it became rapidly more difficult to recruit construction workers. In absolute numbers, total occupied population and employees in construction dropped between 1972-75. The response was to increase capital investment and introduce modernized technology particularly in 1974 and 1975 to maintain production growth. Some of the effects of this is shown in Annex 8.4. The capital/labor ratio in construction increased by 52.3 percent between 1972-75, which was the same as the economy average. However, the capital/output ratio rose by 18 percent as against the economy average of 13 percent and output per man increased by 24 percent, only two thirds of the economy average of 35 percent. In the 1971-75 period, the ICOR in construction increased to 2.69 from 1.36 during the previous five years while the ICOR for the total productive sector fell from 4.15 to 3.03. The picture then was one of some labor unavailability for which it was only possible to substitute capital at an increasing cost.

(c) The Role of Construction in the Investment Process

12.10 Although an integral part of the investment process, the weight of construction has been diminishing over the last 25 years (Annex 8.5). This can be explained by examining the way in which efficiency has increased in the sector. The design cost of each project is determined by valuing the cost of materials, labor, design and the like. Thus increased efficiency in construction is reflected, over time, in a reduction in the share of construction in the design costs of projects and hence in the share of construction in investment.

12.11 Still this is unlikely to account wholly for the fall. Because productivity of investment is a critical concept in which the opportunity cost of consumption foregone is high (and with accumulation at 33 percent of national income in Romania, one can safely assume this to be the case), it is very much in society's interest to maximize that productivity. The productivity of investment for the most part depends upon the productivity of machinery and equipment rather than the amount of construction. Therefore, in order to minimize the ICOR, one should, as far as possible, minimize construction costs in each investment project.

12.12 After the price restructuring that began in 1973, raw material prices were increased to reflect the new higher world prices and it became even more a matter of efficiency to minimize the material inputs used in construction. Even with increases in costs, it would have been possible for fixed price values of construction to fall, thus explaining the particularly large changes in construction's share in 1974 and 1975. Some evidence is available to back up this hypothesis. In 1974, for example, the proportion of material expenditures in construction social product, in current prices,

increased suddenly from 61.6 percent to 63.1 percent, having been stable for the previous three years. It has been observed that the state has been undertaking measures to minimize material inputs in construction; and this is discussed further below.

2. The Organizational Structure and the System of Planning

(a) Organization

12.13 Description of the organizational structure in construction is complex because of the variety of enterprises that are responsible to ministries, People's Councils and cooperative unions. Construction activities are organized in terms of the final product (for example a factory or school) as well as in terms of the form of activity (a building or installation). As republican projects are the responsibility of ministries, their construction is carried out by construction enterprises or centrals responsible to ministries. Socio-cultural projects and housing are the responsibility of People's Councils and so they are constructed by units of the People's Councils. Similarly, services to the population are the realm of cooperatives and so cooperatives undertake maintenance and minor repairs on private housing as well as its construction. Figure 12.2 gives a diagramatic representation of this structure.

12.14 In terms of output, the ministerial construction enterprises and centrals are the most important. Seven ministries 1/ have their own construction enterprises, which undertake certain specialized work for their ministries, and in addition, there is the Ministry of Industrial Construction, which is the only one specializing completely in construction work. The Ministry of Industrial Construction undertakes a broader range of activities, for different branches of the national economy: chemicals and petrochemicals, metalworking, machine building, light industry, the food and agro-industry.

12.15 There is also a network of construction enterprises at the district level. There is one building trust or enterprise under each People's Council 2/ in each district with direct responsibility to the Executive Committee. These units undertake all the construction work for which the People's Councils are responsible, that is, all socio-cultural schemes (education, health, etc.), housing and local industrial projects. 3/

1/ Ministry of Transport and Telecommunications (all transport and telecommunications constructions): Ministry of Electric Power (power and hydro power); Ministry of Metallurgical Industry (siderurgical construction); Ministry of Mining, Petroleum and Energy (mining construction only); Ministry of Agriculture and Food Industry (land and hydro improvement projects only); Ministry of Forestry and Construction Materials (forestry and roads); and Ministry of Chemical Industry.

2/ The Municipality of Bucharest has one central under its responsibility.

3/ These are usually small, consumer orientated and dependent upon local raw materials.

12.16 Construction work is also carried out in the cooperative sector in various ways. The craft cooperatives include cooperatives that specialize in construction alone. The aim is for each cooperative union to include just one construction cooperative. 1/ These co-ops, each of which includes a number of specialized workshops, undertake three types of construction activities. First they provide such services to the population as general household repairs (heating, sanitation, electrical, structural) and in some cases, home-building. Second, they undertake maintenance and repairs for both state and cooperative enterprises and third they implement investment projects for coops. In the rural areas, such activities are usually carried out by construction workshops, which are part of agricultural or consumer co-ops, rather than by specialized cooperative enterprises.

12.17 There is also a small amount of construction work carried on outside the state and co-operative sectors but it has no distinct organizational structure. Since 1948, private construction enterprises have been phased out or been brought into the co-op sector and now most private construction work is on an individual basis. The most important part of this is housing constructed by private individuals for their own use.

12.18 There is a wide variety of organizational frameworks within the construction sector and differences even permeate industrial ministries. For example, the Ministry of Industrial Construction includes 21 trusts, 14 of them construction trusts that are territorially organized, three are installation and assembly trusts again territorially organized and four are specialized trusts 2/. Each trust is directly responsible to the Ministry only while remaining an independent self-administering unit with a legal entity. Each is comprised of units, which are denominated in terms of geographical position and/or specialization, and each unit has at least three building sites under its jurisdiction.

12.19 Other ministries have one construction central for each broad specialization and within each central, the enterprises are divided in terms of area and specialization. For example, within the Ministry of Transport and Telecommunications there is a construction central which includes construction enterprises for railways, river transport, telecommunications and road construction. This central includes ten enterprises (six of which are regional railway construction enterprises) plus the Bucharest Railway Sites.

12.20 Despite independence as administrative units, the central and trusts rely on the ministry for certain services. The ministry will coordinate the activities of all centrals, particularly in the realms of training 3/ and planning. In addition, each ministry has at least one design institute that draws up the technical specifications for each construction project.

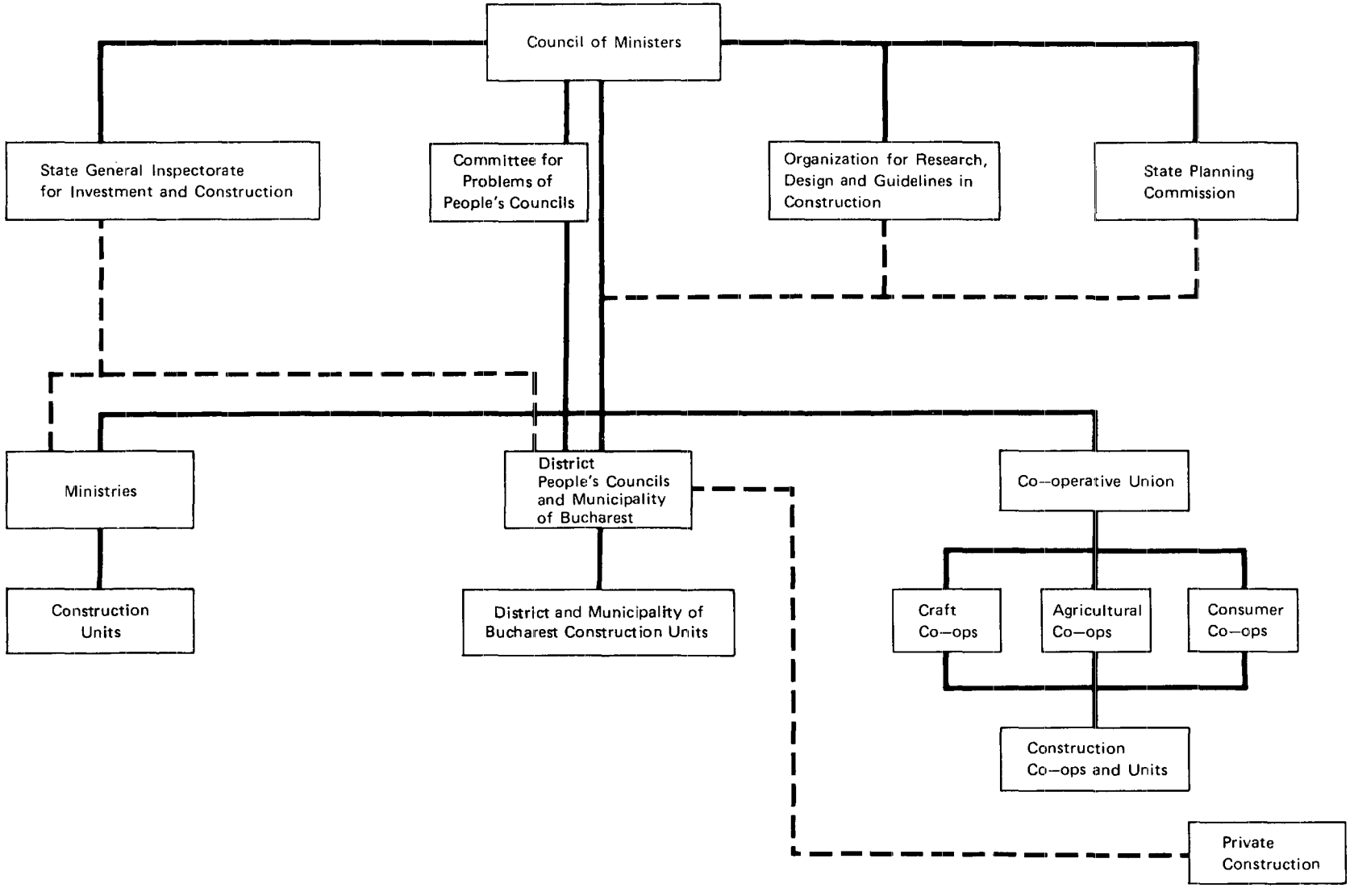
1/ Bucharest, due to its size, has two, one specialized in construction, the other in installation.

2/ These are the Insulation for Industrial Workers Trust, Specialized Works Trust, Assembly of Chemical Equipment Trust and Installation and Automation Trust.

3/ See Chapter Eight on Human Resources.

Figure 12.2

The Organization of the Construction Industry



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12.21 The line of authority from the ministries and the People's Councils goes to the Council of Ministers but there are several other centralized bodies also responsible to the Council of Ministers but with a degree of authority over the ministries, the People's Councils and in some cases also the co-operatives. First, there is the State General Inspectorate for Investments and Construction (SGIIC), whose functions are: inspection for compliance of building laws, the setting of norms in construction 1/ and the technical planning of large projects for the state sector only.

12.22 Second, there is a more scientific and technical institution concerned with building techniques in general, which is called the Central Institute for Research, Design and Guidelines on Construction (CIDGC). Its aim is to promote the state's technical policy in the field of construction as well as technical and economic efficiency. One aim of the organization is to coordinate research and development; it deals with general matters, such as the adoption of mechanized means, as well as more specific problems, such as how to reinforce buildings against seismic interference. Its other responsibility relates to design and through its subordinate institutes it draws up standardized models that are fully designed and specified. In drawing up guidelines, it elaborates standards, norms and instructions which become compulsory for the sectors, while at the same time are consistent with the priorities of the construction sector. The CIDGC priorities are all related to the more economic use of resources. The chief ones are: to minimize raw material inputs (especially steel); to minimize the use of manpower and the time taken to complete construction work; and to minimize the use of energy, both in the construction and in the use of the final output. Discussion of these priorities is taken up below.

12.23 The CIDGC is subordinated to the Council of Ministers as is the SGIIC. In a downward direction, its powers are specific. All ministries have their own research and design institutes, which draw up the detailed designs for the projects for which they are responsible. These research and design institutes are independent and cooperate with the CIDGC which approves their plans, research and designs for standard models.

12.24 These two institutions cover the whole state sector but there is another that only affects the district construction enterprises. The Committee for the Problems of the People's Councils (CPC) is a centralized body to coordinate the technical activities of the People's Councils, including certain functions in the realm of construction. Its role is much more that of a coordinator than of a controller and it is involved in the standardization in the design of dwellings and the implementation of physical planning.

1/ Among the norms is the requirement that all new construction meet approved seismic standards.

(b) Planning

12.25 The planning process in construction is, in essence, no different from that in other sectors but because construction is a derived activity in the investment planning process, there tends to be a slightly different timing.

12.26 The State Planning Committee's role in construction planning is twofold: it has the task of welding ongoing projects to new investments and it is also responsible for calculating and maintaining the material balances for approximately 50 most important raw materials (for example, steel, cement, asbestos, aluminum, etc.). In drawing up the annual construction plan, the SPC begins by drawing up the lists of investments and establishing for both ongoing and new projects the volume of investment that has to be implemented. From this is determined the volume of investment by ministry (which implements the project) and, for the whole economy, the requirements for raw materials, labor and equipment.

12.27 Meanwhile, at the micro level, the enterprises will be drawing up their own provisional plans. They are aware of the ongoing projects and are informed of the major projected investment programs. In addition, the five year plan will have provided general guidelines on their expected levels of production. They will then draw up their plan proposals establishing the indicators for the volume of production, labor productivity, salaries, numbers employed and material expenditures per 1,000 lei of output.

12.28 At this point (usually July/August), they proceed to contract with supplying enterprises for the necessary raw materials, whose demands are based upon plan and material consumption norms. In addition, contracts are also made between the construction enterprises and the beneficiaries.

12.29 The enterprise plans, as drawn up, are then sent to the relevant ministries who aggregate them, incorporate them into their own plans and pass them on to the SPC. The SPC attempts to reconcile these proposed plans with its own macro plans, all the while ensuring that all projects are consistent with the five-year plan. Upon successful completion of this, the plan is disaggregated down to the ministry and from there to the enterprise.

12.30 The planning process for the five-year plan is essentially the same. However, detailed account is taken only of the major investment projects that will require a significant time to complete and for which the technico-economic documentation is prepared.

12.31 The procedure so far has only specifically described planning at the republican level; however, at the local level the methods are the same except that the enterprises pass on their plans to the People's Councils who incorporate them into their own regional plans. In the same way, plans of the co-operative sector are forwarded to the co-operative unions. One difference exists, however: because the co-operatives are responsible for the provision of construction materials to private individuals, they are required to assess private demand when drawing up their plans.

12.32 Other construction, undertaken by the population, is regulated. It requires a permit from the People's Council indicating that it complies with the physical planning regulations. Thus, there is some degree of control over the operations and the co-operatives are given an indication of the expected demand for materials.

12.33 In recent years, there have been attempts to improve the quality of construction planning. This has led to the establishment of the Center for Organization and Cybernetics in Construction, which is a responsibility of the Ministry of Industrial Construction. The COCC is at work on a project in which all the key information on a given construction job, including its critical path, is fed into a computer. Thus at any given time, it can provide an updated portfolio of construction work; from this, it can also calculate the implied demands for construction materials in detail and assist in drawing up material balances. The project has advanced rapidly and should improve the efficiency of the construction industry. Already planning and control systems have been established covering the most important 10,000 out of 15,000 construction projects.

(c) Other Institutional Arrangements

(i) Financial

12.34 The financial arrangements, like the planning system, are slightly different in the construction sector. Whereas industrial and other enterprises hold bank accounts with the National Bank and agricultural enterprises hold theirs with BAFI, construction enterprises hold bank accounts with the Investment Bank.

12.35 Payment for construction is not made in advance but monthly after performance. During the month the Investment Bank, taking into account the enterprise's production plan, advances credits to cover expenses incurred within that month. Monthly, the beneficiary reviews the work completed by the constructor and if found satisfactory, authorizes the Investment Bank to release the funds for the work performed. In this way, the construction enterprise repays the Bank's credit.

12.36 In addition, the Investment Bank gives credits for the purchase of raw and other materials as well as for seasonal financing. The interest rate is 2 percent. The Bank assesses a rate of 12 percent when there is a failure to repay the credit. Credits for construction by CAPs and agricultural state farms is extended to them by BAFI. Strict penalties are imposed on delays both in delivery of materials and in completion of construction work.

12.37 Co-operatives maintain their accounts at the National Bank and they are not granted credit. However, for large investments (over 100,000 lei) credit can be extended to the handicraft cooperatives by the Investment Bank. If in financial need, a co-operative can obtain loans from a central fund established by the Central Union of Co-ops, to which all co-ops contribute. Actual payment for construction work for the cooperatives is the same as for state enterprises.

(ii) The Labor Force in Construction

12.38 Once again the construction sector does not fit into a conventional pattern. Unlike other countries where the construction labor force is temporary and on a project-to-project basis in Romania it has permanent status in that all workers have contracts. In practice, however, there is fluctuation in the construction labor force. A proportion of the labor is, in fact, seasonal. For example, co-operative agricultural workers are on contract with construction cooperatives for a certain period of time when not required to undertake agricultural work. In addition, the labor force tends to have a large turnover, particularly of unskilled workers. Some of them leave the construction enterprises for work on the completed project. While the average wage in this sector is higher than that in any other sector, it had not been adequate to compensate for the nature of the work. In mid-1977 wages were adjusted to reflect better the working conditions.

12.39 Recruitment does not take place centrally or at site level but at unit level. Workers are expected to be mobile within a unit (either regional or specialized) and may be required to move their residence at regular intervals. Housing, however, is always provided.

12.40 To overcome some of these problems, training is provided for skilled and unskilled workers on all levels. The result is intended to be greater mechanization, learning of different skills, and greater productivity, leading to higher wages and more job satisfaction. In practice, it is also likely to lead to more highly specialized workers who end up tied to the construction industry.

(iii) External Works

12.41 Responsibility for construction work outside the country has been consolidated in a foreign trade enterprise called ARCOM, which is subordinated from mid-1977 to the Ministry of Foreign Trade and International Cooperation. It has undertaken various construction works, such as in the fields of housing, refinery and other plant building, in such countries as West Germany, Libya, Iraq, Lebanon, Sudan and Syria. In general, the designs and technical knowledge are Romanian but materials are usually supplied in the country itself and local subcontractors are often used. There are some other ministries which undertake construction activities abroad such as the Ministry of Mining, Petroleum and Geology for oil drilling, the Ministry of Electrical Energy for hydro and thermal power plants and the Ministry of Transportation and Telecommunications for roads.

12.42 Administratively, ARCOM acts like any other foreign trade enterprise and fits into the planning system accordingly. It exports construction services.

3. The Present Position and Prospects for Construction

12.43 As already noted, construction work grew at an average annual rate of 10.4 percent (between 1960-75). Although no precise plan targets are available, there is every indication that this rapid rate of growth will continue and even increase between 1976-80. For example, the 1977 Annual Plan requires an increase in construction work of 20.4 percent over 1976 and it has been estimated that between 1976-80, the plan target is for an annual average rate of increase of some 15 percent. As a result, there is extra pressure upon the industry not only to produce efficiently but also to attain its growth targets.

12.44 In order to evaluate the efficiency of construction sector, the following criterion is employed: construction is considered efficient if it imposes no constraints on the growth of the economy or is not constrained in its own growth by the supply of inputs under its own control. Furthermore, it should not be contributing to a wasteful use of resourses through "over-dimensioning" and "over-finishing."

12.45 First, construction's role in the investment process cannot be fully evaluated because detailed data on plan targets and achievements are not available. But a judgment can be made that, until the very recent years, the construction sector has with generally increasing efficiency met the requirements of the economy and that it has imposed no constraints upon economic growth.

12.46 Construction work was sluggish, however, in 1976 and also in 1977 before the earthquake. This may mean that the sector could not meet plan targets because of limitations in its capacity or in the capacity of enterprises delivering equipment and materials to it. Also, another limiting factor appears to be the shortage of construction workers. These factors affect the pace of construction work and project completion. Since construction accounts for 40 percent of total investment, the performance of the construction sector explains to some extent the overall shortfall of investment in 1976 and 1977.

12.47 Two additional important problems exist in the sector: First, the provision on time of designs and documentation for projects by the design institutes and second the improved distribution and organization of personnel on building sites. The 1971-75 Communique on the Plan's Fulfillment highlighted the "delay in the elaboration of technical and economic documentation" as a deficiency which "affected the efficiency of investments and resulted in the delay of some production capacities." Similar difficulties were acknowledged in the 1976-80 and 1977 Plans; in order to correct them and to secure better qualified personnel, wages in the design industry have been recently increased. The Plans have also called for better organization, particularly at the site level.

12.48 While the problems discussed in the above paragraph are characteristic of a rapidly growing sector, those discussed in para. 12.46 show the sector emerging as a constraint to the economy. This explains also the disproportionate attention given to the sector in the 1977 Plan. The situation has been aggravated by the additional requirements for construction following the earthquake. As explained further in Chapter Sixteen, some of those additional requirements have been met through compulsory and voluntary work of the population. The government is also accelerating the introduction of more capital intensive technology in the construction sector and is taking measures to improve quality. One important example of the latter is the switching of major responsibility for quality control from on-site supervision to the manufacturer of construction materials, by increasing the prefabricated component of construction works.

12.49 With regard to the second criterion of para. 12.44 there are indications that construction has been overfulfilling its role. Problems of works which are "overdimensioned" and "overfinished" are pinpointed in the 1971-75 Five-Year Plan, which also specified that appropriate action was to be taken by the Council of Ministers. The 1971-75 Communique on the Plan's Fulfillment reported on that action. There are indications, alluded to in the 1977 Plan, that there are still "overdimensioning and architectural exagerations" in construction works.

12.50 One of the Government's most important proposals affecting the sector is that material expenditures in construction should be cut by 30 percent by 1980. This reflects concerns about both overdimensioning and excessive consumption of inputs. Reductions in the consumption of materials and use of labor may be required for several reasons -- materials may have been used wastefully, or else are in short supply. There is a strong concern for the former since some construction methods have not completely eliminated waste in materials and labor. It has already been identified in Chapter Six that a raw material constraint is starting to hit the economy. Furthermore, the CIDGC is producing standardized designs where main priority is a minimal input of materials, especially steel and cement, the latter especially because of the large consumption of energy required for its production.

B. Housing

1. An Overview

12.51 Two policy objectives have combined to raise housing requirements: improvements in the standards of living of the people and industrial urbanization.

12.52 These demands for housing are balanced by the macroeconomic constraints limiting the supply. Over 90 percent of housing cost is made up of construction and as neither construction capacity nor raw material inputs are limitless, there is a permanent trade-off between housing and other construction projects, particularly between productive investments. The problem is not only to equate supply and demand in absolute quantities but also in terms of quality and geographical distribution.

12.53 These situations are very real in Romania particularly since, as seen in para 12.46, the construction sector has been underfulfilling its targets in the first two years of the current five year plan. For an annual rate of population growth of one percent, the required volume of housing is 66,000 dwellings a year 1/ if the present per capita housing stock is to be maintained. Added to this are the tasks of replacing and maintaining the present stock (40% of which was built before 1944) meeting any local shortages that may develop from urbanization and improving the living standards of those already housed.

12.54 In quantitative terms, the present housing stock provides an average of 0.978 dwelling per family unit 2/ implying a deficit of 150,000 dwellings. The objective of one dwelling per family unit is at present achieved only in the rural areas where in 1976 there were 1,019 dwellings per 1,000 families. 3/

2. The Structure of the Housing Sector

12.55 There are essentially two forms of housing in Romania, those built by the state and those built by private individuals for their own occupation. State-built housing is available for renting and for sale and is constructed by enterprises directly subordinated to the People's Councils. The People's Councils themselves are responsible both for the renting and sale of the dwellings that are financed by direct state funds. 4/

12.56 According to law, accommodations are available for rent to all citizens. Priority is determined according to a classification of the population in seven categories such as workers, transfers in the interest of services, etc. Within each category consideration is given to such factors as levels of incomes and number of dependents. Rents are determined by law and reflect the size of the housing and the income of the highest wage earner in

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1/ Equal to the average number of dwellings completed per year 1971-75 from direct state centralized and co-operative funds.

2/ Based on an estimated housing stock of 6.7 m dwelling and 6.85 m family units in 1975.

3/ It should be noted that a family is permitted to own one house plus a vacation residence and consequently an average of over one is required before the deficit will be eliminated.

4/ In certain cases enterprises allocate funds for state owned dwellings and are then permitted to administer themselves.

the family 1/. Rented accommodations are mainly in urban areas (75 percent of those built in 1975 were in urban areas); those in rural areas are usually located close to a major economic project, such as a dam or mine.

12.57 Apartments built by the state may also be purchased by private citizens, either with their own funds or with a loan from the state through the Savings and Consignment Bank. The size of the loan is limited by the number of rooms of the apartment to be purchased and the terms are determined by the level of income at the time of purchase 2/; the minimum down payment must be 20 percent of the value of the purchase. This type of loan is only available for purchases from the state. Individuals may buy old properties but they must purchase any mortgage obligation and no changes are permitted in the terms. Loans of up to 35,000 lei are available for the construction of private dwellings. Loans are also available for individuals who wish to purchase the housing they rent. The terms of these loans are 6 percent and 5-10 years for repayment. State-built dwellings are rarely, if ever, available for purchase in rural areas.

1/ Rents are determined in lei per month and per square meter as follows:

Income Area	Up to 800	801 to 1,100 lei	1,101 to 1,300 lei	1,301 to 1,600 lei	over 1,600 lei
Floor space	1.80	2.20	2.40	2.50	2.70
Annex (halls, closets, etc.)	0.72	0.88	1.00	1.00	1.00
Porch, locker	0.36	0.44	0.50	0.50	0.50

2/ The maximum loans are:

41,500 lei for a 1 room apartment*
64,000 " " " 2 " "
81,000 " " " 3 " "
91,500 " " " 4 " "
105,000 " " " 5 " "

(* calculation of rooms includes living rooms plus bedrooms and excludes bathrooms, kitchens)

Interest rates are 3-5 percent for the long term loans (up to 50,000 lei; they are 6 percent for larger loans). Down payments may be financed by short-term loans of up to 5 years at 8 percent. The impact of income on the terms is illustrated below:

Income	<1,500 lei	1,500 to 2,000 lei	>2,000 lei
Minimum advance payment	20%	25%	30%
Repayment period	25 yr.	20 yr.	15 yr.

12.58 Privately-built housing is found mainly in rural areas (76 percent of those built in 1975 were in rural areas). Building permits are required from the physical planning department of the People's Councils; otherwise this category of housing is unplanned. Credits are available to assist in the construction of houses and in the purchase of materials.

3. The Performance of the Housing Sector

12.59 The government's concern to improve the housing situation of the population is evident: investment in housing increased by 11.3 percent per annum in constant prices between 1966-75 (Tables 12.7 and 12.8) and the housing stock, showed an average rate of growth of 2.4 percent per annum over the same period, which is higher than the population growth rate (Table 12.9). In terms of allocation of investment funds housing has had a relatively high share varying from 15.6 percent in all investment in 1956-60 to 9.3 percent in 1971-75. Housing investment in the socialist sector from state centralized funds has been around six percent of the total investment in the socialist sector.

Table 12.7: INVESTMENT IN HOUSING (in millions of lei)

	In 1959 Prices				In 1963 Prices							
	1950	1951-5	1956-60	1960-65	1965-70	1970	1971	1972	1973	1974	1975	1971-75
Investment in National Economy												
Total Investment	6,304	61,916	100,180	199,692	330,797	79,990	88,388	97,539	105,657	119,665	137,731	548,980
Housing	706	6,260	15,654	23,068	31,423	7,859	7,993	8,380	9,602	11,482	13,362	50,819
%	11.2	10.1	15.6	11.6	9.5	9.8	9.0	8.6	9.1	9.6	9.7	9.3
Investment in Socialist Sector												
Total Investment	5,663	57,713	88,152	187,656	314,479	74,790	82,617	91,717	99,231	112,457	130,640	516,662
Housing	150	2,704	5,421	12,059	16,642	2,994	2,578	2,963	3,741	4,745	6,680	20,707
%	2.6	4.7	6.1	6.4	5.3	4.0	3.2	3.2	3.8	4.2	5.1	4.0
Investment in Social Sector from State Centralized Funds												
Total Investment	5,561	56,712	84,538	173,748	297,349	71,082	78,507	87,533	95,074	108,597	125,957	495,668
Housing	150	2,693	5,411	12,059	16,603	2,973	2,553	2,937	3,696	4,717	6,626	20,529
%	2.6	4.7	6.4	6.9	5.6	4.2	3.3	3.4	3.9	4.3	5.3	4.1
Investment outside Socialist Sector												
Total Investment	641	4,203	12,028	12,036	16,318	5,200	5,771	5,822	6,426	7,208	7,091	32,318
Housing	556	3,556	10,233	11,009	14,784	4,865	5,415	5,417	5,861	6,737	6,682	30,112
%	86.7	84.6	85.1	91.5	90.6	93.6	93.8	93.0	91.2	93.5	94.2	93.2
Housing Constructed with:												
State Assistance	-	-	-	-	2,775	1,954	2,542	2,655	3,401	3,297	3,525	15,420
Population Funds only	556	3,556	10,233	11,009	12,009	2,911	2,873	2,762	2,460	3,440	3,157	19,692
Non Socialist Sector Housing as % of Total Housing	78.8	56.8	65.4	47.7	47.0	61.9	67.7	64.6	61.0	58.7	50.0	59.3

Source: Anuarul Statistic and data provided by Romanian authorities.

Table 12.8: GROWTH OF INVESTMENT IN HOUSING
(Annual Average Percentage Rates of Growth)

	In 1959 Prices			In 1963 Prices		In Comparable Prices
	1951-55	1956-60	1961-65	1966-70	1971-75	1951-75
Investment in National Economy						
Total Investment	18.2	13.6	11.3	11.2	11.5	13.1
Housing	19.3	20.6	3.1	8.3	11.2	12.3
Investment in Socialist Sector						
Total Investment	18.9	12.8	12.8	10.9	11.8	13.4
Housing	39.5	15.3	12.5	-0.9	17.4	16.1
Investment in Socialist Sector from State Centralized Funds						
Total Investment	18.7	12.1	12.4	11.3	12.1	13.3
Housing	39.5	15.3	12.5	-1.0	17.4	16.0
Investment outside Socialist Sector						
Total Investment	11.8	22.3	-5.6	17.2	6.4	10.1
Housing	10.4	24.4	-5.0	17.9	6.5	10.4

Source: Anuarul Statistic.

Table 12.9: ESTIMATE OF HOUSING STOCK
(in millions of dwellings)

	Total	Urban	Rural
1965	5.3	2.0	3.3
1966	5.4		
1970	5.9	2.4	3.6
1974	6.53	2.79	3.75
1975	6.7	2.9	3.8

Sources: 1966: 1966 Census
1974: Current Trends and Policies in the Field of Housing Building and Planning: Bucharest 1976
Other figures are Bank estimates using new housing data and current stock.

12.60 Over the last decade, the structure of the housing stock has altered significantly in response to specific policy measures, with the share of urban dwellings increasing from 37.3 percent in 1965 to 43.3 percent in 1975 while urban population increased from 33.7 percent to 43.2 percent. By 1975 urban and rural areas had the same average of persons per dwelling--3.2 in each sector.

Table 12.10: AVERAGE PERSONS PER DWELLING

	Total	Urban	Rural
1965	3.66	3.27	3.88
1970	3.44	3.51	3.38
1975	3.17	3.17	3.17

Source: Bank estimates.

12.61 Table 12.10 also gives some indication of the success of the housing program despite what had seemed a low growth rate. Overall the average number of persons per dwelling has been steadily falling. The decline has been steadiest in rural areas; while heavy migration to the cities, a fall in new housing during the period 1965-70 and a sudden increase in the birth rate (para 8.05) caused higher density.

12.62 As Table 12.11 and Annex 8.6 show, in 1975 new urban housing comprised 81.7% of the total; in 1965 it was 45.3 percent. Along with changes in the structure of housing, financing patterns altered. State loans were introduced in urban areas, and these were used to purchase 27.3 percent of the new housing in 1975. State-constructed apartments for rent increased from 27.1 percent in 1965 to 51.6 percent in 1975 while self-constructed, self-financed housing fell from 72.9 percent in 1965 to only 21.1 percent in 1975 with both urban and rural declining.

Table 12.11: HOUSING TURNED OVER TO OCCUPANCY BY SOURCE OF FINANCE
(in percentage of total, in terms of number of actual housing units)

	1965	1970	1975
Total from State Funds	27.1	42.7	51.6
of which:			
Urban	25.9	41.9	49.3
Rural	1.1	0.8	2.3
Total with State Aid	-	17.8	27.3
of which:			
Urban	-	17.8	27.3
	-	-	-
Total from own Funds	72.9	39.5	21.1
of which:			
Urban	14.4	10.3	5.1
rural	58.5	29.2	16.0

12.63 The average size of new houses was also increasing as can be seen from Table 12.12. Between 1965 and 1970, the increase was across the board in both urban and rural areas, except for those financed from state centralized and cooperative funds. Table 12.13 shows that the size of dwelling has also been increasing in terms of numbers of rooms.

Table 12.12: AVERAGE SIZE OF DWELLINGS TURNED OVER FOR OCCUPANCY

	Total			From State, Centralized and Cooperative Funds			With State Assistance			With Own Funds		
	Total Area (m^2)	Living Space (m^2)	Ratio	Total Area (m^2)	Living Space (m^2)	Ratio	Total Area (m^2)	Living Space (m^2)	Ratio	Total Area (m^2)	Living Space (m^2)	Ratio
ALL AREAS												
1965	...	25.9	...	...	31.1	...	—	—	—	...	23.9	...
1970	58.3	31.3	1.86	44.4	24.4	1.82	69.6	32.5	2.14	68.2	38.3	1.78
1975	69.1	33.7	2.05	62.0	29.1	2.13	72.4	34.4	2.10	82.1	43.9	1.87
URBAN												
1965	...	28.8	...	...	31.2	...	—	—	—	...	24.4	...
1970	55.1	28.5	1.93	44.3	24.3	1.82	69.6	32.5	2.14	74.1	38.9	1.90
1975	67.6	31.9	2.12	61.9	28.9	2.14	72.4	34.4	2.10	95.7	47.5	2.01
RURAL												
1965	...	23.9	...	...	28.6	...	—	—	—	...	23.8	...
1970	65.7	37.7	1.74	48.6	26.9	1.81	—	—	—	66.1	38.0	1.74
1975	75.9	41.4	1.83	63.0	32.0	1.97	—	—	—	77.8	42.8	1.82

Source: Anuarul Statistic

Table 12.13: HOUSING PUT INTO OCCUPANCY BY NUMBER OF ROOMS
Number of Dwellings and percent

TOTAL	1965	1970	1971	1972	1973	1974	1975
Total	191,988	159,152	147,023	135,969	149,128	154,345	165,431
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 Room	57,116	26,548	16,972	14,654	16,770	10,605	14,952
	29.8	16.7	11.5	10.8	11.2	6.9	9.0
2 Rooms	85,080	83,935	78,510	69,897	79,931	78,552	83,148
	44.3	52.7	53.4	51.4	53.6	50.9	50.3
3 Rooms and over	49,792	48,669	51,541	51,418	52,427	65,188	67,331
	25.9	30.6	35.1	37.8	35.2	42.2	40.7
FROM STATE CENTRALIZED AND COOPERATIVE FUNDS							
Total	51,973	68,016	52,416	48,541	57,649	65,227	85,352
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 Room	6,334	14,849	6,759	4,986	6,556	6,367	8,974
	12.2	21.8	12.9	10.3	11.4	9.8	10.5
2 Rooms	30,973	39,065	33,028	30,895	37,710	42,795	51,141
	59.6	57.4	63.0	63.6	65.4	65.6	59.9
3 Rooms and over	14,666	14,102	12,629	12,660	13,383	16,065	25,237
	28.2	20.8	24.1	26.1	23.2	24.6	29.6
FROM FUNDS OF THE POPULATION WITH STATE HELP							
Total	-	28,279	36,010	37,326	42,924	41,909	45,153
	-	100.0	100.0	100.0	100.0	100.0	100.0
1 Room	-	1,642	1,056	977	2,562	1,400	1,625
	-	5.8	2.9	2.6	6.0	3.3	3.6
2 Rooms	-	16,459	20,760	18,787	23,247	17,956	19,886
	-	58.2	57.7	50.3	54.1	42.9	44.0
3 Rooms and over	-	10,178	14,194	17,562	17,115	22,553	23,642
	-	36.0	39.4	47.1	39.9	53.8	52.4
FROM THE POPULATION'S FUNDS							
Total	140,015	62,857	58,597	50,102	48,555	47,209	34,926
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 Room	50,782	10,057	9,157	8,691	7,652	2,838	4,353
	36.3	16.0	15.6	17.3	15.8	6.0	12.5
2 Rooms	54,107	28,411	24,722	20,215	18,974	17,801	12,121
	38.6	45.2	42.2	40.4	39.0	37.7	34.7
3 Rooms and over	35,126	24,389	24,718	21,196	21,929	26,570	18,452
	25.1	38.8	42.2	42.3	45.2	56.3	52.8

Source: Anuarul Statistic.

12.64 Other attempts have been made to tailor new housing to the demands of the population, providing housing for single persons. Between 1970 and 1975 (see Table 12.14), over 240,000 new units were completed, adding a stock of about 60,000 units available for single people in 1970.

Table 12.14: UNITS FOR SINGLE PEOPLE PUT INTO OCCUPANCY
(Financed from State Centralized and Cooperative Funds)

	1970	1971	1972	1973	1974	1975
Number	21,907	21,306	26,717	34,793	56,384	80,304
Total area (000 m2)	203	184	273	335	527	695
Inhabitable area (000 m2)	108	96	138	173	277	370
Equivalent number of conventional apartments of 30 m2 inhabitable area	3,593	3,184	4,584	5,768	9,214	12,327

Source: Anuarul Statistic.

12.65 Since 1965, as can be seen from Table 12.13, the share of dwellings with three or more rooms has increased, while that of one room dwellings has fallen substantially. Thus the average cost of a housing unit has risen (between 1965 and 1975, this increase in costs is estimated at about 70 percent). At the same time, improvements in the finishing of the dwellings and the provision of additional comfort have increased costs per sq. meter by 59 percent during 1965-75 (Table 12.15).

4. The Achievements 1971-75 and Planned Targets 1976-80

12.66 Between 1971 and 1975, 751,896 new dwellings were occupied, an increase of 16.1 percent over the 1966-70 Plan period. In terms of units completed, output did not grow consistently and no year exceeded the 1965 level (see table 12.13); in terms of living space however, a continuing improvement took place. Planned new housing was 522,000 dwellings (see table 12.16), a target of 98 percent achieved, mainly due to underfulfillment of dwellings purchased with state assistance. Unplanned housing achieved 76 percent of its 1966-70 level.

12.67 In terms of annual plans, dwellings financed by state centralized and cooperative funds fulfilled their targets out of five in three years and in no year was achievement less than 98 percent. Those purchased with state loans did not meet their targets in any year and in 1974 achieved only 73.5 percent of the planned level. Dwellings for single persons were introduced as a target into the plan in 1974 and in that year overfulfilled it by 13.4 percent. The 1975 target was set at double of the previous year but only a 42.4 percent increase was made.

Table 12.15

HOUSING BROUGHT INTO USE, 1965, 1970-75

	1965	1970	1971	1972	1973	1974	1975
1. Fixed assets brought into use for the construction of housing (million lei)	5,205	7,573	7,756	8,080	8,960	11,193	12,965
of which:							
- from state funds and with state assistance	3,066	4,662	4,883	5,318	6,500	7,753	9,808
- built from the population's funds	2,139	2,911	2,873	2,762	2,460	3,440	3,157
2. Total constructed area ('000 sq.m.)							
of which:							
- from state funds and with state assistance	3,528	5,189	5,229	5,686	6,570	7,401	9,256
- built from the population's funds	4,071	4,287	4,065	3,608	3,516	3,569	2,869
3. Cost per square meter of total constructed area (lei)							
of which:							
- from state funds and with state assistance	869	898	934	935	989	1,048	1,060
- built from the population's funds	525	679	707	766	700	964	1,100
4. Living space ('000 sq.m.)							
of which:							
- from state funds and with state assistance	1,583	2,685	2,603	2,711	3,087	3,497	4,404
- built from the population's funds	2,210	2,405	2,230	1,963	1,921	1,942	1,534
5. Cost per square meter of living space (lei)							
of which:							
- from state funds and with state assistance	1,937	1,736	1,876	1,962	2,106	2,217	2,227
- built from the population's funds	968	1,210	1,288	1,407	1,281	1,771	2,058
6. Number of houses brought into use							
of which:							
- from state funds and with state assistance	50,959	99,888	91,610	90,451	106,341	116,350	142,832
- built from the population's funds	70,056	62,857	58,597	50,102	48,555	47,209	34,926
7. Cost per house (lei)							
of which:							
- from state funds and with state assistance	60,166	46,672	53,302	58,794	61,124	66,635	68,668
- built from the population's funds	30,533	46,311	49,030	55,128	50,664	72,867	90,391

Source: Anuarul Statistic

Table 12.16: PLAN TARGETS AND ACHIEVEMENTS - 1971-75

	1971 - 75		1971		1972		1973		1974		1975	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Total Planned 1/	522,000	512,507	93,000	88,426	93,600	85,657	110,000	100,573	117,300	107,136	133,280	130,505
of which:												
From State Centralized and Cooperative Funds	272,000	309,185	50,000	52,416	49,500	48,541	61,000	57,649	60,300	65,227	85,150	85,352
From Funds of Population with State Assistance	250,000	203,322	43,000	36,010	44,100	37,326	50,000	42,924	57,000	41,909	48,130	45,153
Dwellings for Single Persons	Unplanned	219,504	-	21,306	-	26,717	-	34,793	49,700	56,384	110,800	80,304
Self Financed	Unplanned	239,389	-	58,597	-	50,102	-	48,555	-	47,209	-	34,926

1/ i.e. dwellings from state centralized and cooperative funds and with state assistance.

Table 12.17

PLAN TARGETS - 1976-80

From state centralized and cooperative funds	339,000
With state assistance	476,000
Total	815,000
Self financed	250-300,000
Dwellings for single persons	200,000

12.68 The initial targets for 1976-80 (Table 12.17) represented a 9.6 percent increase in dwellings financed from state-centralized and cooperative funds over 1971-75, which would not seem to be too taxing a target. Those financed with state assistance are planned to increase by 134 percent which is 18.5 percent p.a. Total state constructed dwellings have a target increase of 59 percent or 9.7 percent p.a. and in light of previous experience would seem attainable. However, in 1977, the authorities decided to increase the plan target by 190,000 dwelling units of which 30,000 would be constructed to replace earthquake damaged dwellings. This is a substantial increase but can probably be realized given the priority the government attaches to housing. It is expected that enough private individuals will take out loans to purchase the new apartments. If this does not materialize, though, the new dwellings will be rented out by the state.

12.69 Hostel accommodations for single persons are planned to increase by 24 percent over their 1971-75 output. The revised plan target in 1976-80 is 272,500. Self constructed housing is planned to increase to 250,000-300,000 from a 1971-75 level of 239,389. This requires a reversal in the downward trend (Table 12.13).

12.70 A housing program of 3-3.5 million new dwellings is envisaged for the period 1976-90 in order to meet fully projected requirements and eliminate the housing shortage. This is a certainty since already by 1980 a numerical equivalency of dwellings and number of family units would have been established. If the initial targets of the 1976-80 plan are fulfilled, the housing stock should reach 7.7-7.8 million dwellings; if the number of family units increases by 1 percent it will reach 7.2 million by 1980 and with a 2 percent increase, 7.5 million. Thus, there should be at least one dwelling per family unit. This does not necessarily mean that the shortage will be eliminated, as the urbanization and regional policy may create a geographical imbalance. Also some allowance has to be made for the aging of old houses.

CHAPTER THIRTEEN

THE DEVELOPMENT OF THE TRANSPORT SECTOR

A. Government Strategy and Policy

13.01 Broadly speaking, Romania has a fairly well developed and evenly distributed transportation network that provides access to all major centers of economic activity (see maps 12731 and 12730). Government strategy during the last twenty years has focused more on the modernization of the main elements of this system (especially the railroads) than on its extension, contrary to the experience in most other LDCs. In 1950, for example, the length of the railway system was 10,853 route km. This was equivalent to a very high density of 45.7 km per 1,000 km2. By 1975, the system had increased by less than 200 km to 11,039 route km - a density of 46.5 kms per 1,000 km2. The road system amounted to about 76,000 km in 1950, most unpaved; by 1975 it had increased by some 2,000 km. 1/ This marginal increase in the length of the road system is in marked contrast with developments over the same period in high income developing countries.

13.02 With a good national railway system already in existence the government has given investment preference to upgrading. The alternative of rapidly bringing the road system up to modern standards in the post war decades, and of financing road vehicles, was considered less cost effective and the authorities felt would have utilized scarce resources (including foreign exchange) better employed in more directly productive sectors. The increasing sophistication of the economy, however, has created pressures to modernize the road system. As a result, a highway modernization program was begun in 1956 with the objective of upgrading 13,000 km of the national road network. By 1975,

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1/ The public road network is classified by administrative function as follows:

	1971	1975		of which "modernized" 1975 /a
National Roads	12,896	12,918		10,193
District Roads	26,123	26,334	)	2,924
Village Roads	36,698	38,697	)	
	75,717	77,949		13,117

/a Modernization basically consists of asphalting roads according to certain specifications which are reviewed in more detail in para 13.33.

20 percent of the national roads still remained to be modernized (i.e. asphalt paved). A second highway modernization program for 27,000 km of the district roads was initiated in 1968; by 1976, 20 percent had been completed. Although progress in the road modernization programs has been steady, about two-thirds of the country's road network is still gravel or earth surfaced, and cannot be considered to be all-weather.

13.03 The relatively low emphasis on road development can be best understood within a broader view of Romanian transport strategy. The national transport system is viewed as a unitary system in which each transport mode complements and does not compete with each other. The declared objective in 1950-70 had been to integrate the different modes so that, in toto, they meet the transport service requirements of the economy at minimum resource cost, particularly in terms of energy consumption. In order to use as much as possible the existing railway system and reduce energy consumption truck hauls were generally restricted to small distances. This practice actually also reflects the limited infrastructure available at that time in terms of vehicles and modernized roads. A more planned distribution of transport service was initiated in 1971, when, based on past experience, it was decided that in principle all transport of goods for less than 50 km would be undertaken by road and the remainder by rail and water. This policy was based on the premise that fuel consumption per ton km of road freight transport was higher than that of rail and water and also that rail transport per ton km was cheaper and more efficient. This focus on the railway as the mainstay of the transport system was a common feature of the policy of all the East European socialist countries, other than Yugoslavia. Since 1975, the distribution of goods traffic between railways and roads is not subject to the restriction mentioned above but is determined more systematically by studying for each case the distance the goods require to travel when using alternative modes, all costs of loading and unloading, the tariff costs and fuel savings.

13.04 The dominance of line-haul average cost considerations inevitably leads to a continuing emphasis on railway development. The distance limitation on truck hauls was based primarily on the desire to utilize an existing railway system. 1/ It is questionable whether rail transport is necessarily and generally more efficient than trucks for distances below 200 km for loads other than bulk and generally mineral or similar loads. The quality of door-to-door service (resulting also in less damage and pilferage), much greater speed and frequency of deliveries (which lead to lower stocks and working capital requirement) are all factors, which, when appropriately considered, might involve lower total distribution costs. Finally, competition is possible only if each mode has some spare capacity, and this is an advantage in view of fluctuating transport demands, for example, in case of bumper crops, emergencies, etc. With regard to the criteria used in determining investment

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1/ The only high income non-socialist country with an equivalent distance limitation on truck movements is New Zealand, where the policy is admittedly to limit competition with the railway.

priorities in the sector, these appear to have been adequate in meeting Romania's internal transport requirements but the country's expanding trade and tourist links with western countries require a reconsideration of the investment priorities which the Government is undertaking. For example, effective export competition requires service quality that in some cases may be possible only with the use of trucks. Bottlenecks in tourist traffic also already are developing during the high season, particularly in the Black Sea area.

13.05 In pursuing policy objectives of energy conservation and reduction of pollution, the Government has recently sought a more intensive utilization of the inland waterway network. The Danube River, for example, flows through or along the borders of Romania over a distance of 1,075 km, yet river transport plays a very small role in the country's transport system, some 0.9 percent in tonnage and less than 3 percent in ton km; it is confined mainly to bulk transport to and from industrial complexes along the Danube. Improvement of other rivers would require large investments for dams and locks to make them navigable. In the absence of other objectives (irrigation, flood protection) such investments are usually only justified for large traffic volumes.

B. The Sector's Role in the Economy

13.06 In the period 1951-75, the transport of goods by all modes increased at an average annual rate considerably higher than social product, but the growth of passenger traffic lagged. Annual growth rates in the transport sector have varied over each five year plan period but, as illustrated in Table 13.1, mostly outpaced the increase in social product.

Table 13.1: SOCIAL PRODUCT AND TRANSPORT SECTOR GROWTH RATES /1
(Average Annual Percentage Increase)

	1951-55	1956-60	1961-65	1966-70	1971-75
Social Product	13.2	7.2	9.5	8.7	10.5
Total Goods Transport					
tons	12.8	15.1	12.6	10.9	9.4
ton/km	12.9	7.2	13.3	16.3	9.1
Total Passengers					
number	16.2	1.1	8.6	9.7	11.4
passenger/km	8.6	-1.3	7.4	8.8	10.1

/1 Includes only public transportation and excludes the transportation by enterprises and Peoples' Councils which represents about 60 percent of total automobile transport.

Source: Anuarul Statistic.

The share of the transport sector in the value of social product has remained at around 3.8 percent. 1/ The sector's increasing contribution, though, to national income from 3.9 percent in 1950 to 5.2 percent in 1975 indicates a substantial reduction in material expenditures and implies a rising productivity.

13.07 As indicated, the modernization effort has concentrated almost exclusively on the railway, with relatively little emphasis on road transport. Investments in railways have financed a continuous effort to reduce energy use through electrification and to increase line capacity by improved signalling, the double tracking of some lines and the expansion and modernization of the locomotive and rolling stock fleet. For example, the share of goods traffic moved by diesel and electric locomotives increased from one percent in 1960 to 96.0 percent in 1976. The investments have been spread selectively throughout the system in order to develop the local handling capacity required by increasing volumes of economic activities and to avoid the creation of serious bottlenecks in the movement of goods and services on specific routes.

13.08 Investments in the road system have consisted primarily of the modernization of the national road system and, only secondarily that of the districts, as illustrated in Table 13.2 below. The increase of about 2,000 kms of local roads between 1971 and 1975 is mainly the result of opening to public traffic roads that were initially constructed by industrial and mine enterprises, rather than in the construction of new roads for public use.

Table 13.2: MODERNIZATION OF ROAD SYSTEM

		1956	1960	1965	1970	1975
1.	Total Roads (km)	76,142	76,154	75,898	75,879	77,949
	of which modernized	3,625	5,883	8,508	11,091	13,117
2.	National roads (km)	9,682	10,573	11,514	12,167	12,918
	of which modernized	3,246	5,147	6,788	8,688	10,193
3.	District and communal Roads (km)	66,460	65,581	64,384	63,712	65,031
	of which modernized	379	736	1,720	2,403	2,924

Source: Anuarul Statistic.

1/ Published national income statistics do not provide separate data for the transport and telecommunications sectors. The share of the telecommunications subsector has, however, been very small (in the order of 10 percent) and variations in it would not affect the main trends in the transport sector, nor change substantially relative magnitudes. Shares above present an estimate for the transport sector only. Also, it should be noted that pre-1970 national income statistics excluded passenger transport.

13.09 Overall, investments in the transport sector have remained at about the same share of total and socialist sector investment, in the order of 9-9.5 percent and 10.5 percent respectively, except for the second and third five-year plans (1955-60 and 1961-65) during which they were significantly lower. The resource allocation to the transport sector appears low by international comparison, the more so since it includes investments for ocean shipping vessels, buses and trucks, which in most other countries appear as private rather than public investment. More detailed information on the sector investment over each of the five-year plan periods and 1971-75 is given in Table 13.3. All sector investments are undertaken by the socialist sector from state centralized funds.

TABLE 13.3

INVESTMENT IN THE TRANSPORT SECTOR

(billions Lei)

	FIVE YEAR PLANS					ANNUALLY (1971-1975)				
	1959 Lei			1963 Lei		1963 Lei				
	1951-5	1956-60	1961-65	1966-70	1971-75	1971	1972	1973	1974	1975
a. Total Investment	61,916	100,180	199,692	330,797	548,980	88,388	97,539	105,657	119,665	137,731
b. Socialist Sector Investment	57,713	88,152	187,656	314,479	516,662	82,617	91,717	99,231	112,457	130,640
c. Transport Sector Investment	5,797	7,511	16,239	31,627	49,888	8,247	8,902	9,023	10,290	13,426
c/a	9.4	7.5	8.1	9.6	9.1	9.3	9.1	8.5	8.6	9.7
c/b	10.0	8.5	8.7	10.1	9.7	10.0	9.7	9.1	9.2	10.3

Source: Anuarul Statistic

13.10 The investment program has led to a large increase in fixed assets. However, despite a quadrupling of fixed assets over 1950-75, fixed asset formation in transport lagged behind that of the economy at large, particularly in the 1960s. Despite a greater emphasis during the sixth five year plan, the sector's share of total fixed assets in the economy has shown a small decline, as illustrated in Table 13.4.

Table 13.4: FIXED ASSETS FORMATION IN THE TRANSPORT SECTOR
(1950 = 100)

	1950	1955	1960	1965	1970	1971	1972	1973	1974	1975
Fixed assets in all economy	100	125	161	223	337	368	398	433	478	534
Fixed assets in transportation	100	118	131	177	264	287	309	333	368	414
Share of transportation to total (percent)	13.7	13.0	11.1	10.9	11.7	12.2	12.0	12.0	12.0	12.1

Source: Anuarul Statistic

13.11 The growth of the sector has been accompanied by substantial increases in the number of people employed, from 136,000 in 1950 to over 400,000 in 1975. The share of the sector in the national labor force has been remarkably steady, as illustrated in Table 13.5.

Table 13.5: GROWTH OF EMPLOYMENT IN THE TRANSPORT SECTOR
(000)

	1950	1955	1960	1965	1970	1975
Total Employment						
a. Total Economy	2123.0	2948.4	3249.2	4305.3	5108.7	6300.8
b. Transport Sector	135.5	198.7	209.3	288.1	340.7	402.2
b/a (percent)	6.4	6.7	6.4	6.7	6.7	6.4
Workers						
a. Total Economy	1222.9	1967.9	2284.1	3109.9	3838.9	4993.8
b. Transport Sector	94.7	148.4	166.9	241.2	299.4	367.7
b/a (percent)	7.7	7.5	7.3	7.8	7.8	7.4

Source: Anuarul Statistic.

13.12 The constancy of the ratios of transport employment to total employment hides a dramatic employment reallocation among transport modes with that for railroads declining and that of road transportation increasing. Disaggregated data shows the railroad's share of 76 percent of total transport employees in 1950 had declined to 44 percent by 1975, while that of road transport increased from 4 percent to 46 percent in the same period.

C. The Transportation System

1. An Overview 1/

13.13 The mainstay of the transportation system is the 11,039 km railway network, which carried 90 percent of all ton kilometers in 1950 and still carried 82 percent in 1975. Notwithstanding the geophysical configuration of the country, no point is very far from one of the 1441 railway stations. Present railway operations reflect a long tradition and thorough staff experience. The weakest link in the country's transportation system is the 100 year old, 1,800 meter long single line railway bridge across the Danube near Cernavoda. Nearly all the general and dry bulk cargo handled in the port of Constanta (averaging over 50,000 tons per day) passes over this bridge. Any serious interruption in service over this bridge would seriously impede transportation flow to the ports since there is no other rail connection to Constanta. Because of policies that have restricted road transport, it would not be possible to handle any large additional volume of freight diverted from rail. A new railway bridge across the Danube is the highest priority in Romania's railway transport system and is included in the current five-year plan, as discussed further below.

13.14 The length of country's road system is over 78,000 km but because road transport only started to attain some importance in the early 1960s, it carried less than 12 percent of total ton-kilometers moved by all modes in 1975. There is only one 100 km expressway, between Bucharest and Pitesti, and 264 km four lane highways. Most of the local/district roads are not built to provide all-weather service and old wooden bridges restrict weight of trucks on many of these roads. This results in high cost haulage by tractor-drawn carts, both of which operate on national and district roads where they create serious traffic hazards to faster moving traffic.

13.15 The other transport modes contribute only marginally to the total output of the sector. The share of transport of petroleum and gas by pipeline, for example, is small and has been almost constant over the years (2.2 percent of tonnage, 3.6 percent of ton km in 1975). Information on the role of the aviation subsector, until recently a military operation, is not available but it is still negligible. Domestic maritime transport is limited to small volumes of transshipments from Constanta port to the ports near the Danube delta. And, as already discussed (para. 13.05), river transport of cargo is of limited importance and, in the case of passenger traffic, negligible. The share of the various modes of transportation of goods and passengers over the 1950-75 period is shown in Table 13.6 and Annexes 9.1 and 9.2. The subsector's growth rates are given in Annex 9.3.

1/ For a qualification on the relative shares of the transport modes see footnote in Table 13.6.

13.16 While there are important amounts of Romanian exports and imports crossing its frontiers by land, the bulk of trade is handled through its ports on the Black Sea. The country's major port, Constanta, located about 225 km east of Bucharest, handles about 90 percent of the country's seagoing trade, and can accommodate 80,000 dwt tankers and 55,060 dwt bulk carriers. The port's capacity is being expanded to handle 150,000 dwt oil tankers and 100,000 dwt bulk carriers. The handling of dry cargo, other than bulk cargo, at Constanta is still largely conventional; only 10 percent of the general goods cargo is unitized by palletization, pre-slinging or containerization. The small volume of container traffic that is handled at the two container berths has to be stuffed and unstuffed in the port since only about 20 railway stations have the facilities to handle containers. Nor is the trucking fleet geared to maximizing the economy of door-to-door container traffic. The commercial river ports of Galati and Braila, which are 150 km and 170 km respectively from the mouth of the Danube, handle the remaining 10 percent. These two ports can accommodate seagoing vessels of only about 12,000 dwt because of the great alluvia deposits at the Danube mouth which limit the access of the vessels with a draught of above 7 meters. Works are underway in order to allow vessels of more than 25,000 dwt to enter the Danube. Tulcea, located 73 km from the mouth of the Danube is a small port where both sea and river vessels can be handled and is meeting the needs of local enterprises as well as of the sea fishing fleet. Finally, there are some 25 river ports located along the 1,075 km of the Danube that flows within Romanian territory. All seaports and half of the river ports have both rail and road connections. Nearly all land transport to and from the port is by rail, except for crude oil.

13.17 Table 13.6 illustrates:

(a) that contrary to the situation in nearly all other countries, the railways over the years have held their dominant position in terms of ton-km of traffic, even with an annual growth since 1965 of only half of that of road transport; 1/

(b) even by the early 1960s, road transport surpassed rail transport in terms of tonnage moved, as a result of a road modernization program that started in 1956; in terms of ton-kms, its share remains very modest because of the limits on haulage distances;

(c) recent annual growth of passenger road transport is five times that of railways in numbers of passengers carried and four times in passenger kilometer output;

(d) the relative role of both river and pipeline transport has remained constant and nearly negligible over the years.

1/ A relatively strong reduction took place in the year 1975 over 1974. There are two plausible explanations; (a) it may have resulted from interruptions from the 1975 floods (b) it was easier and quicker to restore temporarily road connections than rail connections.

Table 13.6: THE STRUCTURE AND GROWTH OF TRANSPORT OF GOODS AND PASSENGERS BY MODE /1

		1950	1960	1970	1975
A.	Goods Transport				
	Rail million tons	35.1	77.5	171.3	228.3
	Percent	91.8	54.7	40.2	34.2
	Billion ton km	7.6	19.8	48.0	64.8
	Percent	89.4	87.6	85.2	82.0
	Road million tons	1.0	56.6	239.8	418.8
	Percent	2.7	40.0	56.4	62.7
	Billion ton km	0.04	0.94	5.2	9.3
	Percent	0.5	4.1	9.1	11.8
	River million tons	1.1	1.9	3.4	6.1
	Percent	2.9	1.4	0.8	0.9
	Billion ton km	0.67	0.87	1.35	2.08
	Percent	7.9	3.8	2.4	2.6
	Pipelines million tons	1.0	5.6	11.3	14.5
	Percent	2.6	3.9	2.6	2.2
	Billion ton km	0.19	1.02	1.84	2.85
	Percent	2.2	4.5	3.3	3.6
B.	Passenger Transport				
	Rail million passengers	116.6	214.8	328.3	366.9
	Percent	90.8	74.6	47.6	31.0
	Billion pass. km	8.16	10.74	17.79	22.38
	Percent	95.1	88.0	69.2	54.1
	Road million passengers	11.3	71.8	359.4	814.2
	Percent	8.8	25.0	52.0	68.8
	Billion pass. km	0.39	1.42	7.86	18.92
	Percent	4.5	11.7	30.5	45.7
	River million passengers	0.56	1.16	1.91	2.31
	Percent	0.4	0.4	0.3	0.2
	Billion pass. km	0.02	0.04	0.08	0.11
	Percent	0.2	0.3	0.3	0.3

/1 Published statistics include maritime transport which distorts completely the shares of the various transport modes. Because of the very long distances (over 10,000 km) of maritime transport, its share is published as 45 percent, or even more than that of the railways. Moreover, the maritime statistics refer only to the oceangoing fleet under Romanian flag, making the statistics as published even more meaningless. The same is true for aviation statistics but the distortion in this case is negligible because of low volumes.

Source: Anuarul Statistic.

2. Transport of Goods by Commodity Groups

13.18 During 1951-75, substantial changes occurred in the tonnage of commodity groups transported by the two main transport modes. The share of agricultural, wood and related products carried by rail has been halved to 16 percent and reduced to about a third (10 percent) in general road transport (during the shorter period 1956-73 for which such statistics are available for this mode and excluding the transport within enterprises). The most striking development in the increase of tonnage hauled by road is the volume of quarry and ballast products, which, in 1972, accounted for 62 percent of total road tonnages (up from 40 percent in 1956). The volume of quarry and ballast products carried by road is unusually high and may be explained if the transport of contractors' materials is included in the reported transport of volume of goods. These products also account for the largest share of railway tonnage but have not varied much from the 1975 share of 20.5 percent. A detailed breakdown of the transport of goods by commodity groups is given in Annexes 9.4 and 9.5. From the ton-kilometer figure, it can be seen that road transport is important - as in many countries - for the movement of higher value goods, for example, chemical products, processed foodstuffs, machine goods etc.

Table 13.7: TRANSPORT OF GOODS BY COMMODITY GROUP 1972

	TONS		TON Kms	
	Railways	Road	Railways	Road
Total (000')	193,740	276,173	53,280	5,738
of which (percent)				
Petroleum and petroleum products	8.8	1.0	8.9	1.7
Coal	10.7	0.2	6.4	0.1
Coke	1.6	-	1.3	-
Ferrous and non-ferrous metal product, machinery and equipment	7.8	1.7	9.8	8.6
Wood products	7.3	0.8	7.2	2.0
Firewood	1.5	0.9	1.2	1.5
Quarry and ballast products	23.1	62.7	13.9	30.2
Building Materials	9.7	7.4	7.8	6.8
Cereals	3.1	3.4	2.9	5.8
Sugar beet	1.4	0.6	0.8	1.0
Products of Light and Chemical Industry	5.4	1.4	6.9	6.8
Foodstuffs	3.9	4.4	4.3	10.7
Other	15.7	15.5	28.6	24.8

Source: Anuarul Statistic.

D. The Operation of the Transport System

1. Organization and Management

13.19 Responsibility for all transport modes other than aviation and pipelines is vested in the Ministry of Transport and Communications. Aviation has a separate department subordinated to the Council of Ministers and pipelines are the responsibility of the Ministry of Mining, Petroleum and Geology. Organization Chart 6 in the Statistical Annex shows how the Ministry of Transportation and Communications is organized. In principle, the role of the officers and staff of the Ministry's headquarters is limited to planning, coordination, design, administration, and budgeting. For construction and actual transport operations, much authority is delegated to centrals and the enterprises within them. Separate departments exist in the Ministry for railways, sea and river transport.

13.20 On lower administrative levels, there is one General Directorate, for post and telecommunications, a Directorate of Highways, and a number of other Directorates. Further, there are four centrals which report directly to the Minister: one for construction of civil works other than roads (see Chapter Twelve on construction) one for major repairs and overhaul of locomotives and rolling stock, one for road transport operations, and one for major repairs and overhaul of motor vehicles. These centrals are subdivided in a number of enterprises. On the same administrative level but not responsible directly to the Minister, there are seven centrals within the department of railways. Each of these is responsible for railway operations within the seven geographic regions into which the railway network is divided. These centrals are not further subdivided into enterprises. There are also a number of transport enterprises which do not form part of any central, but are under the Department of Sea and River Transportation and the Directorate of Highways. The broad principle behind this horizontal form of organization, is that centrals and enterprises have their own revenues and thus are in a position to be financially self-supporting, except for highway enterprises and the administration for the Lower Danube which are financed by the state budget.

13.21 All inter-city passenger public transport is the responsibility of the Ministry of Transport and Communications. In the larger municipalities, public transport by tramways, buses, trolleys and taxis is the responsibility of the particular municipal administration except for the subway line, being constructed in Bucharest, which will be administered by an enterprise responsible to the Ministry of Transportation. The districts are responsible for maintenance of district and communal roads and bridges as well as for maintenance of national roads within the boundaries of the capitals of the districts and municipalities. Funds for this purpose, however, are very limited compared with needs. In 1975, for example, they amounted to lei 1,013 million, a significantly lower figure than all previous allocations in the 1970s and amounted to 2.5 percent of the district government's expenditures, which also was considerably less than a peak allocation of 5.5 percent of expenditures in 1970 (see also Appendix 2).

2. Planning and Coordination

13.22 The planning process in the transport sector follows the basic planning principles discussed in more detail elsewhere in this report (Chapter Three). The demand for transport, as for the construction sector, is a derived demand. This leads to a somewhat longer and complex process of reconciling the demands of the economic sectors for transport with the physical capacities and expansion plans of transport enterprises at the micro level and with the allocation of investment funds.

13.23 As in other sectors, planning for new transport projects originates both at the micro level through the enterprises and at the macro level through the State Planning Committee. Project proposals are submitted by the enterprises first to the centrals, where they are reviewed, and then forwarded to the Ministry of Transport and Telecommunications. Following technical reviews by the respective Directorates within the Ministry, they are further reviewed and coordinated by the Ministry's Directorate of Planning against the background of various other studies, one of which calculates the demand for transport services of the 45 most important commodities. This study is undertaken by the Ministry with the collaboration of the SPC. For these commodities, the minimum economic cost of meeting transport demand for various distances by each transport mode, or combination of modes, is obtained by computer. However, important non-quantifiable factors, such as quality of service and speed, which affect the real social cost of transport, are not reflected in the computer inputs.

13.24 At this stage of review and coordination, new investment proposals which seem justified at the macroeconomic level are submitted by the Ministry to the SPC. The iterative process of further plan modifications and reconciliations for transport is no different from that of other sectors. It would seem, however, that when a reduction in total investment has to be made, supporting sectors of the economy like transportation are usually reviewed first, rather than the directly productive sectors. Planning is also undertaken at the district level, mainly in respect to road and bridge maintenance requirements, which are incorporated into the local budget considered by the Ministry of Finance in the drawing of the districts' financial plans.

13.25 Transport sector planning is based on planned or expected annual average traffic volumes rather than on seasonal peak volumes, since the general policy is to avoid investing resources in excess capacity in the transport sector. This policy has at least two advantages. One, it frees resources for effective use elsewhere with economy. Second, it can act as a spur to efficiency in transport enterprises by making them try to maximize transport output with the capacity available. The risk of this planning premise is that serious congestion may occur at times, even though the transport of non-seasonal commodities is fairly well spread over the year and is monitored monthly. Congestion seems to develop during two periods - harvest time and the last two months of the year when enterprises are involved in an all-out effort to meet or exceed their annual targets. On the railways, for example, congestion has developed at such times because of shortage of

wagons and limitations of capacity on certain line sections. Since most decisions on the choice of transport modes for commodities are made far in advance, and reflected in the Plan, there is usually very little surplus capacity and flexibility to adjust, not only during harvest time if crops are larger than expected but also if weather conditions are bad, adversely affecting road transport.

3. Efficiency, Costs and Quality of Construction in Transportation

13.26 Earlier reference has been made to the density and productivity of the transport sector. More detailed observations follow for the two main modes - railways and road transport.

13.27 The railway system's productivity can be illustrated from such indicators as passenger kilometers and ton-km per kilometer of track. These were at 2.0 million and 5.9 million respectively, and are among the highest in Europe. On the other hand, staff employed (18 employees per kilometer), is also high compared with other railways. To a large extent this reflects the unusually large number of stations, which on average are less than 6 km apart, and the volume of night traffic, which requires three shifts for operational employees. The number of traffic units (that is, ton kilometers plus passenger kilometers moved per employee) amounts to 490,000 per employee. This compares quite favorably with other railways and reflects again the very high average traffic density. More specificially, labor productivity measured in ton kilometers more than tripled during 1950-75. 1/

13.28 Train punctuality, although still good, is deteriorating because some single lines are reaching their saturation point (up to 80 trains daily). The average daily haul for passenger trains is 485 km. Commercial speeds are 70 to 75 km per hour for rapid trains, 45 km p.h. for local trains on main lines. On branch lines, commercial speeds are only 30 km p.h. reflecting the very large number of stations. It seems doubtful whether much of local train traffic is economic compared with bus service. The national average distance for passenger traffic is also low (about 60 km), reflecting the large number of passengers travelling only short distances. Whether, under Romanian conditions, it is important and economically beneficial to increase passenger train speeds up to a maximum of 160 km per hour on main lines as intended, needs very careful examination, particularly since higher speeds become increasingly energy intensive.

13.29 The average daily haul for freight trains is 340 km, with an average distance for freight traffic of 285 km. Turnaround time for wagons is good but, after declining to 3.6 days in 1960, has been gradually increasing by 1975 to 3.8 days. No data on train load factors are available, but assuming an average 75 percent load factor - due to partially empty backhauls - average travel distance per day for wagons would be about 100 km and average speeds in the order of 26 km per hour. In view of this, it would apear that the intended

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1/ In a productivity index with 1950 = 100; 1960 was 142; 1970, 254; and 1975, 342.

increase in maximum running speeds for freight trains to 100 km per hour will have little impact on the total turnaround time of wagons.

13.30 In road transport, trucks have an economic life of six to seven years and buses of seven to eight years. Trucks travel on the average about 50,000 km per year. This is quite low and reflects the short average hauling distance (22 km) and the proportionately large and unproductive waiting time for loading and unloading. It may also be because hauls to railway stations are made on unsatisfactory roads. Based on incomplete information an estimate of trucking rates is about 60 bani per ton km. Since average haulage distance for railway freight is 284 km, or 13 times the average roadhaul, it is not surprising that such movements are proportionately cheaper.

13.31 The actual construction of transport infrastructure projects is the responsibility of the centrals and the large number of their enterprises which work within specific geographic regions. The Design Institutes within the Ministry have also control of construction work. The main supervision of the construction sites activities is made by the beneficiaries of the works and through the autocontrol of the construction enterprises. Prices are stabilized during the planning and design stage. There appears to be a tendency to pressure designers and construction enterprises to squeeze costs to a bare minimum. Since final prices are allowed to deviate only 5 percent from contracted prices, there is a danger that design standards or construction specifications may be compromised when it appears that works cannot be properly built for the contracted prices. With planning, design, construction, and supervision existing under the same Ministry, it is also likely that pressure for reaching physical targets (for example, km completed) leads to reduced quality.

13.32 "Modernization" of national roads means, in practice, providing existing roads with a 6-7 meter wide asphalt concrete pavement. Shoulders are one meter wide. This is inadequate both for safety and drainage but with the low volume of traffic on many road sections, this is not always inappropriate. For the district roads, paving is in general 5.5-6.0 meters of asphalt concrete with one meter of untreated shoulders. Local roads are improved by "light asphalt paving". For all three categories, however, quality of paving, drainage, shoulders and the like needs to be improved in order to correspond better to the volume of traffic.

4. The Energy Consumption of the Sector

13.33 Official statistics indicate that the transport sector is not as energy intensive as in many other countries. There are a number of reasons for this: the dominance of the railway system, restriction of truck hauls to short distances, the low level of private automobile ownership and restrictions on fuel availability for official car use. In 1970 and 1975, energy consumption by the transport sector, and its share in total domestic energy consumption, were as follows:

Table 13.8: ENERGY CONSUMPTION OF TRANSPORT SECTOR

Energy Consumption (millions tons of oil equivalent)	1970	1975
a. Total Economy	38.7	52.1
b. Transport Sector	2.4	2.2
c. b/a	6.1%	4.3%

Source: Annex 10.4

The absolute decline in consumption in 1975 over 1970 can be attributed to the rationing measures introduced after the oil price crisis 1/ while the sector's relative decline is due to the substantial increase in the industrial sector's consumption. Nevertheless, the sector's energy consumption share is very low (this compares, for example, with 15 percent in U.K. in 1973); but it may also be due to definitional differences.

13.34 Information on long term trends in energy consumption by the different transport modes is not available. It can be approximated, though, by using another country's fixed coefficients of energy consumption for each transport mode. This seems a reasonable approach because energy intensiveness by mode is usually not so different from country to country. The distribution of energy consumption in Romania by transport mode 2/ is shown in Table 13.9.

1/ Gasoline consumption for cars for general official use and cooperative and public organizations were allotted a maximum of 180 liters/month, those of higher level government personnel 400 liters and privately owned cars 40 to 60 liters. In 1975, restrictions on gasoline use by privately owned cars were rescinded.

2/ The coefficients used are for the US form "Energy in the Transportation Sector" by William E. Mooz. They were used to calculate the average energy intensiveness of various freight modes in 1960-68. The energy intensiveness used in BTUs is:

	Freight Mode (per ton km)	Passengers Mode (per pass. km)	
Waterway	310	Rail	1,624
Rail	465	Bus	1,054
Pipeline	1,147		
Truck	1,488		

All road passenger traffic was assumed to be by bus. The difference in BTU per ton kilometer for railways and trucks appears to be smaller than Bank experience suggests, a factor that would understate the energy intensiveness of the road system in the table. On the other hand, door-to-door road routes are shorter than road-rail-road routes, which is an important factor in considering the energy consumption for shorter distances.

Table 13.9: ENERGY CONSUMPTION BY TRANSPORT MODE /1
(percent)

	1950		1960		1970		1975	
	(a)/2	(b)/3	(a)	(b)	(a)	(b)	(a)	(b)
A. Transport of Goods								
Railways	89.0	88.0	88.0	76.0	85.0	69.0	82.0	63.0
Roads	0.4	2.0	4.0	12.0	9.0	24.0	12.0	29.0
Rivers	8.0	5.0	4.0	2.0	2.0	1.0	3.0	1.0
Pipelines	2.0	5.0	4.0	10.0	3.0	6.0	3.0	7.0
B. Transport of Passengers								
Railways	95.0	97.0	88.0	92.0	69.0	78.0	54.0	65.0
Roads	5.0	3.0	12.0	8.0	31.0	22.0	46.0	35.0

/1 Aviation not included, but its share is marginal.
/2 Share in total ton kilometer/ passengers km respectively.
/3 Share in total energy consumption.

Source: Derived from Annexes 9.1 and 9.2 and per footnote on this page.

13.35 The above figures demonstrate the increasing energy consumption of road traffic, which now absorbs almost 29 percent of the sector's total consumption, despite its relative small share in traffic. Romania has little room to save energy by shifting traffic from road to rail since the bulk of long haul traffic now goes by rail. In the U.K. 75 percent of road freight traffic is moved on hauls of under 40 km. The Romanian situation is very similar. The relative efficiency of passenger traffic by road is also shown. 1/

E. The 1976-80 Plan

13.36 The 1976-80 transport sector plan is designed to implement stated government policies with a renewed thrust on energy conservation. It emphasizes improvements in the productivity of the transport modes within existing capacities and calls for more intensive utilization of the Danube and interior

1/ A weighted average of energy intensity of the sector in the transport of goods was 473 BTU per ton kilometer in 1950, 532 in 1960, 577 in 1970 and 606 in 1975, an increase of about one percent per annum in 1950-75. Converted to ton miles the 1960 and 1965 average for Romania were 858 and 890 BTU's respectively, compared to 1,288 and 1,346 BTU's respectively for the US, the diversions reflecting the different weight that each transport mode has in each country.

waters. 1/ Any proposed development of road transport is linked closely with that of the other modes so that road distance traveled is minimized. Total investments in the transport sector will amount to lei 95.3 billion, or 9.5 percent of total plan investment, which is about double the amount included in the 1971-75 Plan. The growth indicators for rail and road goods transport are:

Table 13.10: RAILWAY AND ROAD GROWTH INDICATORS IN 1976-80

		Initial Plan Indicators					Revised Plan Indicators
Railway Traffic	1975	1976	1977	1978	1979	1980	1976-80 /1
Tonnage	100	106	113	120	127	134	122.6
ton kilometers	100	106	111	119	126	133	122.1
passenger kms	100	105	109	113	117	122	116.2
Road Transport							
Tonnage	100	105.8	109.9	118	124.1	130.4	125.6
ton kilometers	100	110.8	117.1	123	129.9	136.7	121.4
passenger kms	100	115.0	125.0	137.2	164.7	180.2	132.2

/1 All annual indicators for 1976-80 have been revised downwards as of 1977.

Source: Ministry of Transportation.

13.37 No breakdown of the total sector investment is available, but it is likely that the railways have been allotted the dominant portion, (about 40 percent of total as in the 1971-75 Plan) and that allocations for road investments will amount to about 10 percent of the total. A major project to be undertaken is a new bridge across the Danube (para 13.13). The Plan also includes the complete elimination of steam traction, lengthening by over 800 km rail track electrification, adding of 430 km of double track (bringing double track to 22 percent of the system by 1980), increasing motive power and

1/ When allowance is made for the greater circuits of distances by inland waterway, it seems there is little difference in direct energy intensiveness by rail and inland waterway transport (in the U.S. waterway routes are on average 38 percent more circuitous than rail routes) (N. Seymer, Intermodal Comparisons of Energy Intensiveness in Long Distance Transports, Transportation Research, Programme Press, 1976 (U.K.).

rolling stock 1/, improvements to the technical condition of rail network to achieve maximum speeds of up to 160 km/hr with passengers and up to 100 km/hr with goods.

13.38 Very large amounts are to be spent on the expansion of the port of Constanta and the planned 62 kilometer Black Sea Canal designed to introduce barge traffic between the Danube river and the Constanta port, with a handling capacity of 100 million tons annually. 2/ The Black Sea Canal project is estimated to cost more than lei 20 billion, of which the major part is to be spent during the 1976-80 Plan period when also the construction equipment is to be procured. Its construction involves the widening and deepening of a 40 km stretch of irrigation canals and construction of a new canal for the rest of the distance. Although the total volume of goods transported by river will show a sixfold increase with the completion of the canal, the share of river transport will remain modest.

13.39 Regarding other transport modes, a significant expansion is envisaged for the fleet of river barges (70 percent) and for international maritime transport as the government aims at transporting 80 percent of all seagoing trade under the Romanian flag by 1990. By 1980, it intends to add 107-117 sea going vessels with a capacity of 2.5 million dwt, in addition to the present capacity of about 1 million dwt. No new roads are planned along completely new routes. For the national road network, emphasis will be on completion of the modernization program, but what is planned is still very modest considering the growth of road transport over the last five years. 3/

Assessment of the Plan

13.40 The five year plan has been drawn up on the basis of exhaustive studies of requirements for transport services by major sectors and commodities, but these studies have not been published. It is not possible, therefore, to make a well founded analysis of the plan but certain general observations are in order. The growth indicators for the internal transport of goods (5.5 to 6 percent per annum) are surprisingly low when compared with the growth of social product (10-11 percent per annum) and of industrial output (10.2-11.2 percent per annum). Only in two of the previous five-year plan periods did the transport of goods (in tons and ton/km) grow at a lower rate than social product (Table 13.1), and even in those cases, the maximum deviation was not

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1/ The additions include 900-982 diesel and electric locomotives, 17,000-18,330 freight cars and 1,500-1,625 passenger cars. However, it is not available what portion of these would be for replacement or increased capacity.

2/ This would mean about 300,000 tons per day; it would require very large lock complexes to handle such volumes.

3/ The Plan includes the modernization of only 1,100-1,261 km of roads carrying heavy traffic, and light asphalt paving will be applied to 10,000-10,795 km of roads carrying light traffic.

more than one to 1 1/2 percentage points (or about 13 percent lower). The downward revision of the indicators accentuates this situation. Thus, it is difficult to reconcile the difference between the plan's growth estimates of transport of goods and that of social product. Initial excess line capacity on the railways has now been largely eliminated, and indications are that the railways are being used close to capacity, requiring a continuous program of increasing line capacity, locomotives and rolling stock. Evidence of strains on the system's capacity has been reported.

13.41 One explanation for the lower growth of goods transport, which has been advanced by the authorities is that the difference would be partially offset by an increase of own-account truck transport by the various industrial and construction enterprises as well as a more efficient utilization of transport modes (para 13.03). But, considering that road transport is still at most 12 percent of total traffic volume in ton kilometers, it would require a very large growth of the own-account trucking fleet to absorb the difference. Also, an analysis of disaggregated growth targets indicates that planned road transport growth is about half that experienced over the 1971-75 period while that of rail is about the same.

13.42 Another explanation given is that, because of regionalization, average length of trips will become shorter since production is now closer to consumption areas. Detailed data to assess this is not available. First, such developments will depend on the spatial distribution of all industries. While production outputs may be closer to consumption areas, production inputs of usually larger volumes than outputs may have to travel longer distances. Second, if the government's regionalization policy is to result in a wider and more equal spread of industrial activities, and thus of economic growth over the country, then the role of local road transport over district and village roads will become much more important and this will have to be reflected in the plan indicators.

13.43 While the prevailing policy of squeezing road investments to a minimum is compatible with current objectives in the allocation of resources, it may prove more costly in the longer run since the geometric and engineering standards applied for road modernization are below modern standards. Newly built roads have uneven surfaces, low embankments, inadequate drainage and show pavement failures at an early stage. This is not the result of a lack of know-how on the part of the highway engineers, but of insufficient funds to meet kilometer targets and the use of engineering practices which are not always appropriate.

13.44 The Government's aim to transport by 1980 50 percent of all sea-going trade under Romanian flag and to increase capacity from 1 million dwt to 3.5 million dwt through local shipbuilding is ambitious. First, because of physical constraints, it will be difficult to construct all vessels domestically within the five year plan period; a fleet expansion would then have to be met partly by purchases of vessels abroad. Second, UNCTAD, reflecting other developing countries' preferences, has advocated a 40-40-20 strategy for the carrying of foreign trade cargoes, i.e. the bulk of the cargoes to be shared by the trading countries while 20 percent to be carried by third parties'

vessels. The saving of foreign exchange expenditures by expanding the domestic fleet can also be overstated, as experience shows elsewhere. Even in domestic construction, some foreign currency is required for shipbuilding. Part of fuel, repairs, other consumables and crews' expenditures would have to be paid for abroad in foreign currencies. And part of the savings of foreign currency will be offset since payments for harbor and other dues, paid now in foreign currencies by foreign flag vessels, will be paid in local currency by Romanian vessels. Finally, the location of Romanian ports is very much at the end of the routes; this together with unbalanced port traffic, is likely to lead to relatively low load factors.

13.45 A final point addresses the issue raised earlier on the importance of cost considerations in developing the different transport modes in Romania. It appears that consideration is being given to the creation of "Transportation Units", to which shippers would present their transport needs at any given time. The decision of how to best meet these demands and by what transport mode would then be delegated to these transport units, which would no longer be restricted on road haul distances and would be in a much better position to reduce empty return trips. Such arrangements would have several advantages. It would introduce other factors than cost alone (para 13.04), such as greater flexibility, quality of service, speed of deliveries in determining mode utilization. Experiments along these lines would be very worthwhile.

CHAPTER FOURTEEN 1/

THE CONSUMPTION AND PRODUCTION OF ENERGY RESOURCES

A. The Energy Strategy

14.01 Romania is endowed with numerous sources of primary energy (see para 1.05), whose development has been closely linked with the energy requirements of the national industrialization and development effort. The Government's strategy has been aimed at the fullest use of its most productive domestic resources. For a considerable time, energy self-sufficiency was attained. The country's industrialization gradually outgrew the resource base, however, and in 1972/73, Romania passed from a net surplus to a net energy deficit. A net deficit in crude oil and oil products developed in 1975/76 and has continued since then.

14.02 The Government's policies for the development of energy resources during the period 1950-75 were articulated in three plan/congress directives:

(a) the electrification plan for 1951-60;

(b) the directives of the eighth Congress of the RCP for the period 1960-65;

(c) the directives of the ninth Congress of the RCP for the period 1966-70.

14.03 The Government's policy, in its electrification plan and directives during the period 1951-65, had two main objectives:

(a) to increase domestic energy production to meet the rapidly increasing industrial, and other fuel and power requirements, including a national electrification program; and

(b) to develop an energy infrastructure in terms of personnel, research, study and design institutes and enterprises to exploit its energy resources.

1/ The object of this chapter is to construct and discuss Romania's current and projected energy resource balance. No sector discussion similar to those in earlier chapters is undertaken because of insufficient data for all ministries involved in this sector. Even in the current attempt, because of limited information, estimates and projections have required a large number of assumptions and should be regarded as being an approximate order of magnitude rather than a fixed quantity. Inaccuracies are undoubtedly present due to the use of aggregated production figures and average calorific values for conversion of energy sources to heat equivalents, but they are not considered to be serious enough to invalidate the overall picture presented.

14.04 The increases in the demand for energy had already become substantial by 1965: total fuel consumption had increased threefold over 1950 levels and electric power consumption ninefold. Large investments, amounting to about 40 percent of total industrial investment, were undertaken during that period to expand the energy base and the country's electrification. Production targets were largely fulfilled. In electric power a 340 percent increase in installed capacity brought capacity to nearly 3,300 MW in 1965. During that year, exports of electrical energy were approximately 300 MW more than imports (see Annex 10.1).

14.05 With regard to the 1965-75 Plans, its most important objectives were:

(a) to increase output of primary energy in order to cover the economy's requirement as much as possible from internal resources, primarily coal and hydropower;

(b) to intensify efforts in conservation of hydrocarbon resources, and direct their use to petrochemical production;

(c) to increase efficiency in the utilization of plant capacity and also in the consumption of users;

(d) to expand oil and gas exploration, particularly in off-shore areas.

14.06 These plan themes also underlie present Government strategy. Since the oil crisis of 1973, they have been confirmed in an energy decree ordering more specific measures for development of the energy base and a more effective use of fuels and energy. The decree was issued in November 1973. Measures included the increased utilization of primary sources with low calorific levels for the generation of electricity, increased efforts to recover waste heat in industrial processes, and improved efficiency in energy use in industry, construction, transport, agriculture and other socio-economic activities. They also provided for acceleration in the program for construction of nuclear power plants, gasoline rationing and controls on space heating. The implementation of these measures in the immediate post-oil crisis period appears to have been successful, as evidenced by the decreased demand for energy in the economy in 1974-75 (Annexes 10.1 and 10.2).

B. Energy Management

14.07 There is no single ministry of energy in Romania; responsibility for energy production is divided among five ministries as follows:

Ministry of:	Area of Responsibility
Mines, Petroleum and Geology (Ministry of Mines)	Extraction of oil, natural gas, anthracite, coking coal, coal, lignite, bituminous shale.
Electric Power	Electrical Energy
Chemical Industry	Petroleum refining and petro chemicals
Metallurgical Industry	Coke and coke-oven gases, coal-tar
Forestry Economy and Construction Materials	Wood

The coordination of energy planning, which is undertaken on a sector by sector basis, is accomplished by the State Planning Committee.

14.08 The Ministry of Mines, Petroleum and Geology is subdivided into directorates dealing with oil and gas, coal, geological prospecting, technical development, planning and finance, training, investment and international co-operation (Organization Chart 7). All exploratory work for minerals and fuels is carried on by the General Directorate of Geology, which hands over economically exploitable deposits to other departments of the Ministry (once they are proven). The Ministry is responsible for primary production of mineral fuels and for the operation of specialized facilities, such as natural gas processing plants and oil and gas pipelines. Products like crude oil, natural gas liquids, natural gas, coal, lignite, are handed over to the end-users, who pay the Ministry for the substances at fixed prices. In the case of natural gas, the Ministry is responsible for delivering it to the ultimate consumer; it also exercises a control function by ensuring that individual consumers do not exceed their planned rate of consumption.

14.09 The Ministry of Electric Power (Organization Chart 8) is responsible not only for the operation of power stations and the distribution of electric energy from the national to the retail level, but also for the design and construction of thermal and hydroelectric generating facilities and transmission lines; demand forecasting for electrical energy; and for arranging for international connections and electrical energy imports and exports. The Ministry of Electrical Energy obtains coal and natural gas for its thermal generating plants from the Ministry of Mines, and fuel oil from the Ministry for Chemical Industry.

14.10 The Ministry of Chemical Industry receives from the Ministry of Mines all crude oil, natural gas liquids (extracted by the Ministry of Mines from associated gas) and a portion of the natural gas output, for processing into refined petroleum products and petrochemicals. The Ministry of Chemical Industry, in turn, sells its output on both domestic and international markets.

14.11 Similarly, the other two ministries (listed in para 14.07) are responsible for the production and marketing of the products in their areas of authority.

14.12 Even though the production activities of the ministries are coordinated by the Plan according to the same principles as in most of the other sectors, the dispersion of responsibilities among so many agencies has led to difficulties in administering the diverse measures to reduce energy consumption and to improve its efficiency of utilization. The 1973 oil crisis accentuated the need for a more effective coordination in these areas and the Permanent Commission for the Coordination, Guidance and Control of Fuel, Electric and Thermal Power Consumption was established for that purpose in November 1973.

C. The Supply and Demand of Energy Resources

(1) The Resource Base

14.13 The primary energy sources of Romania consist of crude oil, natural gas, (both associated and non-associated), coal, anthracite, coking-coal, lignite, brown coal, bituminous shale, and hydropower. Wood has played a small but significant part in the past as a domestic fuel, particularly in the countryside. There are important hydropower resources, and there is a geothermal potential that could be used for space heating. These resources are discussed in more detail below.

(a) Petroleum and Natural Gas

14.14 Romania was one of the earliest producers of crude petroleum 1/ and crude oil and petroleum products were important export commodities before the Second World War. During the war, the existing fields were severely damaged by overproduction and many of the installations were destroyed. Despite a vigorous rehabilitation and development program, it was not until 1952 that crude oil production surpassed the level of 1938. Oil and gas are found in four areas in Romania (See Map IBRD 12732), the most important of which is around Ploiesti. With the exception of this area, most of the fields are small and scattered and have thin reservoir sands at depths of 2,000 meters or less as well as very complex geological structures, many of which are of the salt diapir type. Geological conditions, combined with the advanced state of depletion of many of the larger oil-fields, tend to lower productivity per well, and raise production and transport costs. There is evidence that the individual productivity of most of the wells is low, on the order of 10 tons per day or less, although their producing life is long.

14.15 Within the arc of the Carpathian Mountains lies the Transylvanian Basin, in which between 60 and 70 non-associated gas fields are located, with multiple sand reservoirs at depths of around 3,000 meters. The gas is apparently of high quality, almost pure methane and has been extensively exploited, especially since 1960, when production began to climb rapidly.

1/ Romanian crude oil is for the most part medium gravity low sulphur brown or black oil of asphaltic or napthenic type with a specific gravity of 0.82 to 0.88. Some deposits contain light colored paraffinic oils with a lower specific gravity, 0.75 to 0.82, and there are some heavy viscous black crude oils with a specific gravity greater than 0.88.

14.16 No figures on oil and gas reserves are published by the Romanian Government. Based on the nature and history of the oilfields and the present oil production levels, it is likely that present known producible reserves are on the order of 100 to 200 million tons, 1/ which would presumably be produced over a period of 20 years or more. It is not possible to make any calculation of natural gas reserves on the basis of available information but present restrictions on new gas connections indicate some sort of resource constraint since the supply of natural gas to the petrochemical industry had not reached by 1976 3 billion cubic meters annually, out of a total production of 33 billion cubic meters per year. As a working hypothesis in this chapter, reserves on the order of 500 billion cubic meters have been assumed.

(b) Coal and Related Substances

14.17 Several geological periods of coal formation in Romania have resulted in a range of coal fuels, grading from anthracite through steam coal, brown coal, lignite to the so-called bituminous shales. Coking coal in exploitable quantities is limited to the southwestern part of the country, principally in the areas of Petrosani. The calorific value of these coals is variable but averages 3,600 to 4,700 kilocalories per kilogram, or little more than half the value of imported coal. This low value results from the high ash content, ranging from 10 percent up to 37 percent by weight.

14.18 Lignite deposits are widely distributed throughout the country, but many are of little economic value because the reserves are contained in a large number of thin seams (up to 15 in some places), and in some areas the geology is very complex. The principal economically exploitable deposits of lignite are located in Oltenia in the southwestern portion of the country, on the northern edge of the Danube plain, in the district of Gorj near the town of Tirgu Jiu. There are two principal deposits, Motru, which is mined principally underground, and Rovinari, which is mined principally by open-cast strip mining. The geology of these deposits is less disturbed than that of many others in the country, but is nevertheless quite complex. The lignite has a calorific value of between 1,600 and 1,970 kilocalories per kilogram, or

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1/ Oil reserves were estimated by taking existing production levels and assuming that they would decline exponentially over a period of 25 years from 1980 to a level of 1 million tons annually. The amount of oil to be produced during this period was totalled to give a figure of present producible reserves. The exponential rate of decline is a common feature of oil and gas production, especially in older and more mature fields. The period over which the decline takes place was an estimate based on the known production history of the Romanian oilfields and the physical properties of the oil reservoirs. Allowance was made for discovery of some new reserves during the decline period. The reserve estimate is by its nature no better than an educated guess and should be regarded as giving a reasonable order of magnitude rather than a precise figure. Gas reserves were estimated in a similar manner.

about one-quarter that of good steam coal. The moisture content is around 43 percent and the ash content around 36 percent. It is liable to spontaneous combustion in storage unless the stockpile is rolled and compacted. Owing to its low calorific value, it is uneconomic to transport lignite any great distance from the mine, and the greater part is consumed in large thermal power stations near the mines.

14.19 The so-called "bituminous shales" occur in association with some coal deposits in the Anina-Oravitsa region. They contain 76 to 85 percent ash and have a calorific value of about 1,000 kilocalories per kilogram. Nevertheless, experiments have been carried out to prove whether or not they can be used as fuel in thermal power generating plants and a rising production is expected, as discussed further below. The geology of these deposits is reported to be as complex as that of the coals with which the schists shales are associated. That the Romanian Government should contemplate mining such a low-grade fuel under difficult geological conditions is a demonstration of its policy to maximize the use of domestic energy resources.

14.20 Official estimates of reserves of these resources are the following:

Table 14.1: COAL RESERVES

	Proven	Probable	Possible
Anthracite	14,000,000 t	1,275,000 t	8,018,000 t
Coking Coal (huila)	18,712,000 t	325,612,000 t	52,724,000 t
Bituminous Coal	39,029,000 t	711,285,000 t	85,192,000 t
Lignite and Brown Coal	360,411,000 t	386,620,000 t	68,107,000 t

Source: Ministry of Mines, Petroleum and Geology.

It is not known whether these are recoverable reserves or known geological reserves. If the latter, the mineable reserves will be considerably less. With regard to bituminous shales, no figures of mineable reserves are given, but they must be of the order of 200 million tons to justify the proposed scale of development.

(c) Hydropower

14.21 The hydropower resources of Romania are estimated to be 12,300 MW, capable of generating 37,000 GWh per annum from some 630 sites. Only 75 percent of this is regarded as economically feasible for development at the present time, the remaining 25 percent being described as "technically feasible". Also Romania's five plants on the River Danube, which are being constructed in cooperation with other riparian states, should produce 2,400 MW and 12,300 GWh/annum. By 1975, 37 percent of the economically feasible hydrocapacity had been developed and the government expects the full potential to be tapped by 1985.

(d) Radioactive Materials

14.22 No information is available regarding the existence of radioactive minerals, but given the complex nature of Romanian mineral deposits, it is not unlikely that uranium may be present as a minor constituent as it is in many other parts of the world. One radioactive fuel rod bundle has been fabricated and is now undergoing testing, but whether this was prepared from uranium mined in Romania is not known.

(e) Wood and Other Vegetable Fuels

14.23 Wood is still quite widely used in Romania as a domestic fuel for cooking purposes. It is assumed that the availability of wood as fuel is limited and that it will stabilize at somewhat over 3 million tons annually on a sustainable yield basis. Other materials such as maize stalks and corncobs are used for domestic fuel in rural areas but no estimate of the quantities involved is available. Romania does possess some peat deposits but these are apparently not considered to be economically exploitable.

(f) Geothermal Energy

14.24 Exploration for deep oil reservoirs has shown the existence of widespread aquifers containing water at temperatures in excess of 100°C. The depth of these aquifers and the cost of producing water from them, combined with the relatively low temperatures, indicates that power generation from geothermal sources is unlikely to be economic.

(2) The Consumption and Production of Energy

14.25 Energy demand in Romania has risen dramatically over the last 25 years as a result of the policy of rapid industrialization, from about 6.8 million toe in 1950 to about 52.1 million toe in 1975 (Annexes 10.1, 10.2 and 10.3). Growth of energy consumption by non-industry uses is considerably below the average growth of energy in the whole economy. This is illustrated in Table 14.2 for the period 1970-75, for which some disaggregated information is available.

Table 14.2/1: INTERNAL ENERGY CONSUMPTION BY MAJOR SECTORS (1970 and 1975)

	1970		1975		Growth 1975/70
	Amount (in toe)	%	Amount (in toe)	%	
Industrial Consumption	30,614	79.2	43,394	83.3	42%
Non-Industrial Consumption	8,080	20.6	8,699	16.7	6%
Agriculture	1,430	3.7	1,771	3.4	24%
Transport and Telecommunications	2,358	6.1	2,240	4.3	-5%
Space-heating (homes, offices, etc.)	4,252	11.0	4,688	9.0	10%
TOTAL	38,654	100.0	52,093	100.0	35%

/1 This table is extracted from Annex 10.4 where an official percentage distribution of total energy consumption has been applied to estimates of total energy consumption. Total energy consumption has been estimated from Romanian data available in Anuarul Statistic, official data submitted to the United Nations and from World Bank project appraisals. Calorific values used for conversion of different energy sources to heat units in this chapter are as follows:

Natural Gasoline	11.4	million kilocalories per metric ton
Crude Petroleum	10.6	" " " " "
Natural Gas (dry)	8,150	kilocalories per cubic meter
Hydropower	2,380	" " kilowatt-hour
Coal (Romanian)	4,150	" " kilogram
Coal (imported)	8,000	" " "
Metallurgical Coke	7,500	" " "
Lignite and Brown Coal	1,785	" " "
Wood	2,800	" " "
Bituminous Shale	1,000	" " "

14.26 The energy demand in Romania prior to 1950 was met predominantly by oil and oil products, as illustrated in detail in Annexes 10.1 and 10.2, and the country exported crude oil until 1959. The development of heavy metallurgical industries, primarily iron and steel, necessitated increased production of coke and coking coal and since domestic resources were limited and of poor quality, imports of these fuels rose rapidly from 1955. By 1960, supplies of natural gas from the Transylvanian Basin became increasingly important and by 1965, this became the largest single energy source in the Romanian economy. Present consumption of natural gas amounts to 33 billion cubic meters annually, and this figure includes both associated and non-associated gas, but not gas reinjected into the reservoirs for secondary

recovery or pressure maintenance. This gas consumption is the equivalent of more than 25 million tons of crude oil and represents the major source of primary fuel in Romania at the present time. In 1975, total domestic energy production amounted to 50.260 million toe, imports to 8.819 million toe, and exports to 6.989 million toe. The changing structure in the contribution of primary energy resources is illustrated in Table 14.3. This table also shows that Romania had to increase gas production above previously anticipated levels in order to meet the growing industrial energy and the shortfalls in other sectors.

Table 14.3: CONTRIBUTION OF VARIOUS FORMS OF ENERGY, 1965 and 1975

	Directives /1		Actual /2
	1965	1975	1975
Crude oil (m. tons)	12.55	13.5-14	14.6
Ass. oil-gas (thou. mil. cu. m.)	4	some 4.5	33.3
Methane gas (" " " ")	13.7	19-20	
Coal (million tones)	12	35-40	29.4
Nuclear energy (m. tons cc)	-	about 2	-
Hydropower (TWH)	1.0	10	8.7

/1 Draft Directives of the Ninth Congress of the RCP on Power Resources and the Country's Electrification in the 1966-1975 period, Bucharest, 1965.
/2 Anuarul Statistic.

14.27 To avoid a rapidly increasing energy deficit, and to mitigate the implications of the oil crisis for the Romanian economy, swift action was taken. The emergency decree published on November 18, 1973 (para 14.06) laid down guidelines for accelerated development of indigenous energy resources and for cuts in specific consumption of energy in each sector of the economy, together with stringent restrictions on private consumption in the form of gasoline rationing. The price of motor fuels for the private consumer was raised from lei 2.5 to lei 4.50 per liter for premium gasoline and from lei 1.75 to lei 4.30 per liter for regular grade gasoline. The effect of these measures on the consumption of energy in the economy as a whole was marginal in that it reduced the growth of the energy deficit only slightly during 1974 and 1975. In any case the potential for reducing consumption in the private sector is very limited. The scope for reducing specific consumption in industrial production processes cannot be easily estimated because of a lack of detailed data relating to energy use prior to the oil crisis.

(3) Foreign Trade Aspects

14.28 Historically, Romania has been an exporter of crude oil and refined products since the latter part of the 19th century. To avoid the early depletion of indigenous crude oil reserves, crude oil exports were ended in 1959 and crude oil imports began in 1968. Exports of refined products continued on a steadily increasing scale from 1950 until 1968, when they amounted to 5.6 million tons, after which they declined to 4.9 million tons in 1973. In 1974 and 1975, exports of petroleum products rose again to 6.5 million tons and 6.2 million tons respectively (Table 14.4), as a result both of crude oil imports and restricted domestic consumption. The Government's objective is to increase export of oil products embodying higher value-added, such as synthetic rubber and fibers, vehicle tires, drugs and insecticides.

14.29 An increasing reliance on imported metallurgical coke and washed coal for coking has also developed as demand growth, especially of metallurgy industries, is outrunning the availability of local resources to sustain it. Another reason for the increasing imports is the low quality of Romanian coals; they have poor coking qualities and a high ash content. During the last 15 years, imports of these raw materials increased from about 1 million metric tons in 1960 to about 5 million in 1975.

14.30 Finally, with regard to the electric power sector, international power connections exist with Hungary at 220 kv, with Czechoslovakia at 400 kv, through USSR, with Bulgaria at 220 kv, and with Yugoslavia at 400 kv. Of the country's electricity production of 1975, about seven percent was exported, principally to Czechoslovakia in payment for plants supplied earlier. Imports of electricity are small and no reliance is placed on them.

D. The 1976-80 Plan

14.31 The Plan's goals 1/ confirm the country's long-term energy policy articulated in the mid-1960's (para 14.05), namely:

(a) maximum reliance on domestic production of primary energy resources;

(b) priority in the development of coal, hydroelectric and nuclear power, while utilizing hydrocarbons as long as possible as raw materials for the chemical industry;

(c) greatly increased utilization of indigenous solid fuels having low calorific value (lignite and bituminous shales).

(1) Consumption

14.32 Total domestic energy consumption in 1980 is estimated to increase to 78 million toe, as illustrated in Table 14.5, Figure 14.1 and Annex 10.4.

1/ The law of the five-year plan makes no direct reference to the increasing energy deficit in that period.

TABLE 14.4

PRODUCTION, DOMESTIC CONSUMPTION, EXPORT AND IMPORT OF OIL AND OIL PRODUCTS

	Crude oil			Total refined products				
	Production 1/	Import	Domestic consumption	Production	Export	Domestic consumption	Export	Import
	(In thousands of tons)						(In thousands of U.S. dollars)	
1970	13,759	2,291	16,050	15,835	5,370	10,465	123,083	24,000
1971	14,176	2,858	17,034	16,647	5,368	11,279	143,000	36,633
1972	14,483	2,873	17,356	17,059	5,096	11,963	137,811	47,920
1973	14,642	4,143	18,785	18,568	4,938	13,630	275,694	106,056
1974	14,839	4,538	19,377	18,866	6,502	12,364	535,271	434,668
1975	14,945	5,085	20,030	19,791	6,176	13,615	...	...
1976	15,052	8,475	23,527	23,133	7,842	15,291	603,000 2/	605,000 2/

Source: Data provided by the Romanian authorities.
1/ Includes a small amount of production of by-products from natural gas wells.
2/ Planned.

Table 14.5: DOMESTIC ENERGY CONSUMPTION

	1975	1980
Total (million toe)	52.1	78.0
of which:		
Industrial Sector	43.4	66.4
Non-industrial Sector	8.7	11.6

Source: Bank estimates but using percentage distributions published by the Government.

14.33 The internal energy consumption will expand substantially because of a planned massive expansion of metallurgical and petrochemical industries and thermal power generation (Figure 14.1). Iron and steel production is forecast to increase from about 9.5 million tons in 1975 to 17 million tons in 1980, necessitating imports of around 7 million tons of coking coal and/or metallurgical coke in 1980. Petroleum refining capacity is planned to increase from its 1976 level of 23 million tons of primary distillation capacity to 38 million tons in 1980.

14.34 The projected domestic consumption estimates are conservative as they include allowances for substantial targeted reductions in energy consumption in the industrial sector, amounting to 11.4 million tons of "conventional fuel" (coal equivalent) 1/ and, also, a substantial targeted recovery of waste heat, amounting to 6.7 million tons of conventional fuel. 2/

1/ The targets for reduction of industrial energy consumption (in percent of 1975 levels) are given below:

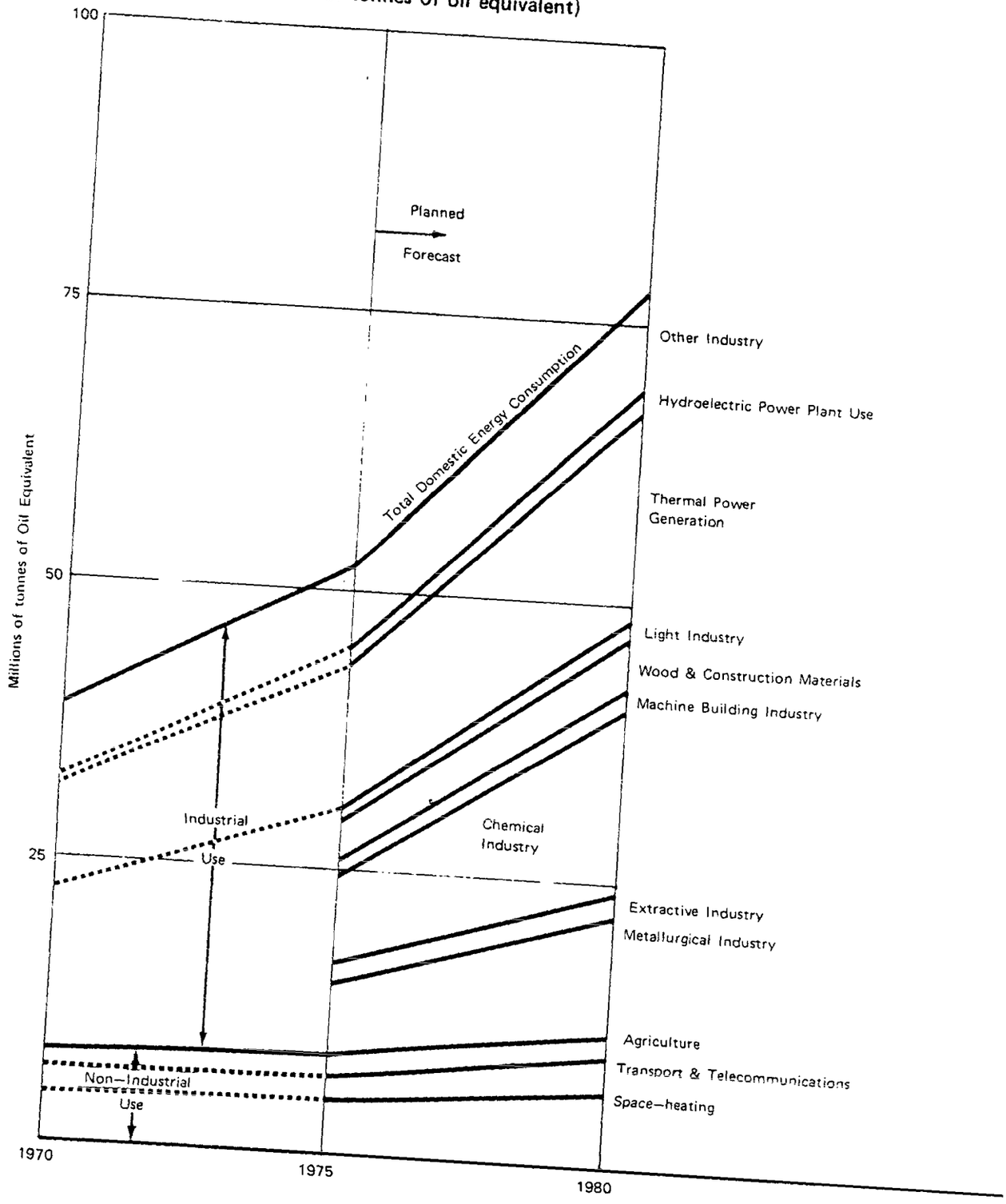
Branch	For Fuel	For Electric Power
Mining Extractive Industry	23	1 - 2
Metallurgical Industry	14	10 - 11
Machine Building Industry	26	18 - 19
Chemical Industry	11.5	20 - 22
Wood and Construction Material Industry	13	5 - 6
Light Industry	14.8	13 - 14
Food Industry	13.8	12
Consumption in Electric Power Plants	-	7.5 (at least)

Source: Ioan Herescu "Development of the Power Base", Revista Economica, Bucharest, 16 and 23 July 1976.

2/ The target for recovery of waste heat amounts to 5 million tons of crude oil equivalent. However, because of the inadequacy of the Bank's present information, it is impossible to measure energy utilization in individual industries. The targets for recovery of waste heat were increased in 1977 but the total impact of the expected increased recovery on the energy balance is marginal.

Figure 14.1

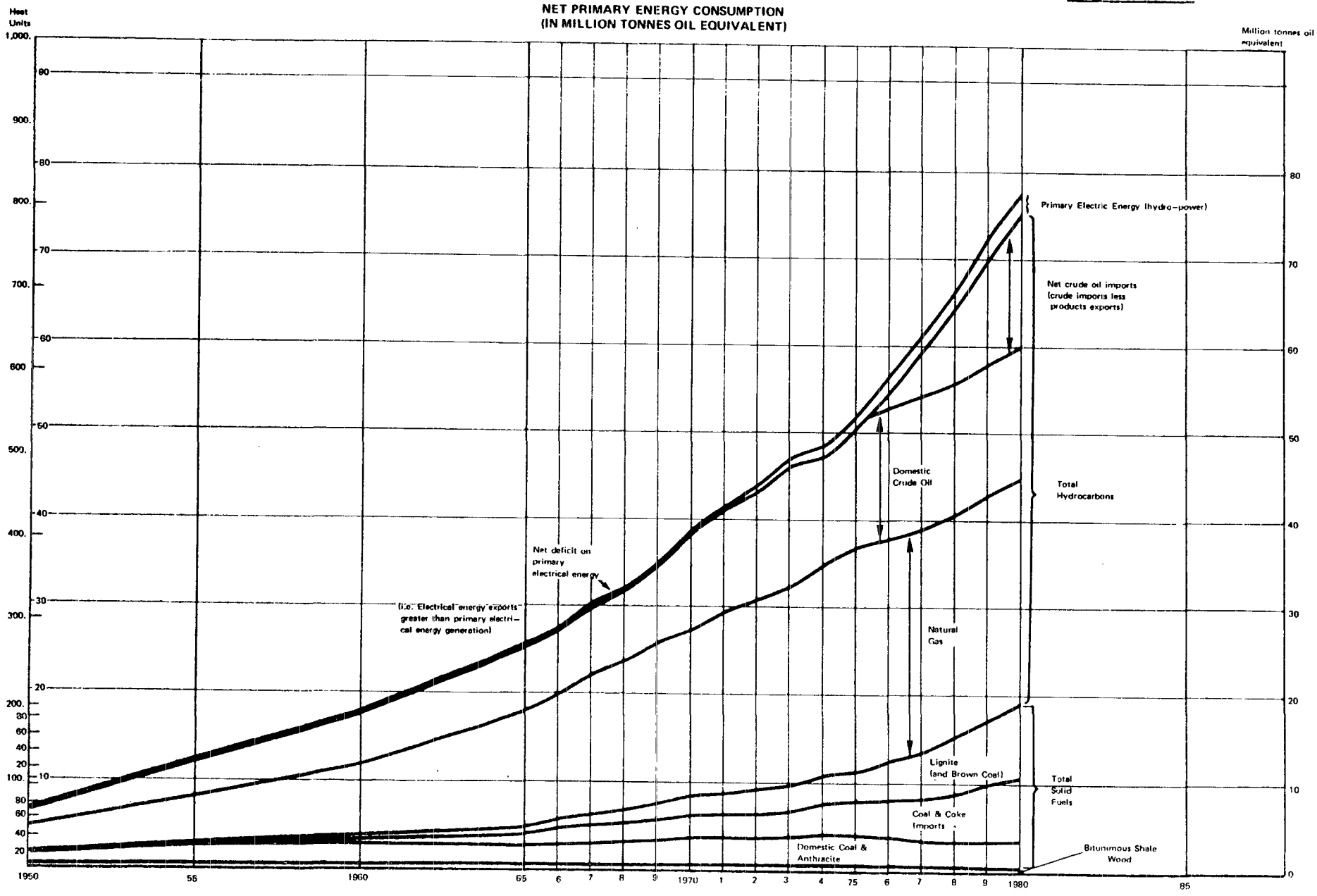
ENERGY CONSUMPTION BY SECTOR 1975 AND FORECAST 1980
(in million of tonnes of oil equivalent)



World Bank–17073

Figure 14.2

ROMANIA
NET PRIMARY ENERGY CONSUMPTION
(IN MILLION TONNES OIL EQUIVALENT)



World Bank—17074

(2) Production

14.35 The 1976-80 Plan includes specific production targets for four energy sources, as follows (Table 14.6):

Table 14.6: 1976-80 PLAN TARGETS FOR ENERGY RESOURCES

	1976	1977	1978	1979	1980
Electric energy (Twh)	57.5	63.1	65-67.7	70-73.4	75-78.8
Coal (net) (m. tons)	29.6	33.5	38-40.7	45.5-48.2	53-56.6
Petroleum Extracted (m. tons)	14.7	14.8	15.1	15.3	15.5
Methane Gas Extracted (b. m3)	26.8	27.8	26.8	26.8	26.8

14.36 It is evident that the weight of the increases in energy production in the five years will come from coal 1/ and electric energy production. 2/

1/ For the production of coal, the 1976-80 Plan includes the following targets:

(a) for coal and anthracite, a production level of 9.4 million tons by 1980, versus a 1975 level of 7.5 million tons;

(b) for bituminous shales, production to begin during the plan period and reach a level of 2.5 million tons by 1980; and

(c) for lignite and brown coal, production to rise very rapidly to 47 million tons by 1980, from 20 million tons in 1975.

2/ The developing structure of electric energy production has been projected as follows:

Structure of Electric Power Production

	1975	1980	1985
Total	100	100	100
hydroelectric plants	17	18.4	20.7
nuclear plants	-	-	7.3
thermoelectric plants using coal	29.4	44.0	57.6
thermoelectric plants using gas and fuel oil	52	33	8.7
from waste heat recovery	1.6	4.6	5.7

Source: Ioan Herescu, "Development of the Power Base", Revista Economica, Bucharest, 16 and 23 July 1976.

Crude oil production is planned to increase very slightly above current levels and remain at about 15 million tons per annum. Most of the fields are in an advanced state of depletion and much of the present production is obtained by secondary recovery methods from partially or nearly depleted oil fields. Any increases in production are expected to come from more advanced secondary and tertiary recovery programs (such as the one recently announced that would allow a recovery of an additional 2 m. tons) rather than from new discoveries. This is so despite the existence of an active exploration program that includes drilling exploratory wells to depths as great as 8,000 meters. Important new oil and gas reserves may be discovered on the continental shelf of the Black Sea where the first exploratory wells are now being drilled. However, given the time required to develop offshore reserves, any offshore production is unlikely to have a significant effect on the availability of gas and oil in Romania during the period 1976-80.

14.37 The Plan permits new gas connections only to the petrochemical industry, and production is expected to be held at a constant level in order to conserve reserves. Other energy resources have only limited potential. For example, geothermal energy is still at the experimental stage and will not affect energy production during the Plan period. The availability of wood and other vegetable fuels is limited and (as determined by the national program for conservation and development of forestry resources) somewhat over 3 million tons annually on a sustainable yield basis. The Government's own schedule for the operation of the first nuclear facility has been pushed to the early 80's.

14.38 With regard to hydropower, it is expected that by 1980, 57 percent of the economically feasible hydrocapacity will have been developed (versus 37 percent in 1975, para 14.21), generating about 14 TWh. Thermal power generation should increase to about 61 TWh. However, the production of thermoelectric power under the management of the Ministry of Electrical Energy is expected to consume a total of 19 million toe by 1980 (Annex 10.4), almost a quarter of total domestic energy consumption, again demonstrating the sub-sectors' strong dependence on coal and lignite production.

14.39 It is evident that the economy's requirements for energy during the five-year plan, and as discussed later during the longer term as well, will be for thermal and hydro-generated electric power and coal lignite production (Figure 14.3).

14.40 A lignite production increase of the targeted size can only come, however, from a rapid growth of open cast mining in the Rovinari area and other areas of Oltenia, and the whole planned program is geared to a very tight delivery schedule for new equipment. The development of new mines is also integrated with the construction of new power stations in which the lignite will be burned. The open-cast mining system employs electrically-powered mobile bucket-wheel excavators of German design, largely manufactured in Romania in cooperation with a West German firm. These are very large pieces of equipment, the largest in use in Romania, with a mining capacity of 2,000 cubic meters per hour. A delay of six months in commissioning a new excavator would result in a loss of production of around 1.5 million tons of

lignite. This represents the equivalent of some 250,000 tons of oil which would presumably have to be made up in oil imports, or an equivalent amount of production elsewhere in the economy would be lost. It is thus apparent that any substantial delays in delivery and commissioning of new mining machinery, or of new power stations in which the lignite is to be burned, will have other economic repercussions. A setback in implementing the lignite production targets already took place in 1976, when not only did production not increase, but because of delays in commissioning new plant, it reached only about 95 percent of 1975 levels, which in turn were below 1974 levels.

(3) The Energy Balance in 1980

14.41 Romania's energy requirements and projected production of energy resources are outlined in Table 14.7 (Production levels assume successful target implementation of the 1976-80 Plan.)

Table 14.7: ENERGY REQUIREMENTS AND PRODUCTION IN 1980
(in million tons of oil equivalent)

	Production	Exports	Supply Available for local Consumption	Total Domestic Consumption	Energy Deficit = Imports
Solid Fuels	12.6	-	12.6	19.3	6.7
Hydrocarbons	40.9	5.2	35.7	56.3	20.6
Electrical Energy (hydropower)	2.9	0.6 /1	2.3	2.4	0.1
Total	56.4	5.8	50.6	78.0	27.4

/1 This includes exports of electrical energy from plants burning solid fuels and hydro-carbons. When these are taken into account, no energy deficit in hydro-power is anticipated and the deficits for the sub-groups solid fuels and hydrocarbons will be slightly higher.

Source: Rounded from Annex 10.2.

Oil imports are based upon a historical relationship of primary petroleum products to primary distillation capacity during the period 1970-75. Projected to 1980, an estimated 36 million tons of crude oil will be required for the targeted refining capacity (para 14.33), giving a net crude oil import requirement of about 20.5 million tons in 1980.

14.42 Romania imports the bulk of its coke and coal requirements from the USSR, Poland and Czechoslovakia, with lesser amounts from the Federal Republic of Germany and the USA. Crude oil is imported principally from Iran and Iraq, with lesser amounts from Libya and Algeria. The actual prices paid for these imports are not known nor can reliable forecasts be made of the 1980 price levels of these commodities. Nevertheless, if it is assumed that coke and

Figure 14.3

ROMANIA
FORECAST OF NET PRIMARY ENERGY PRODUCTION
(in millions of tonnes of oil equivalent)

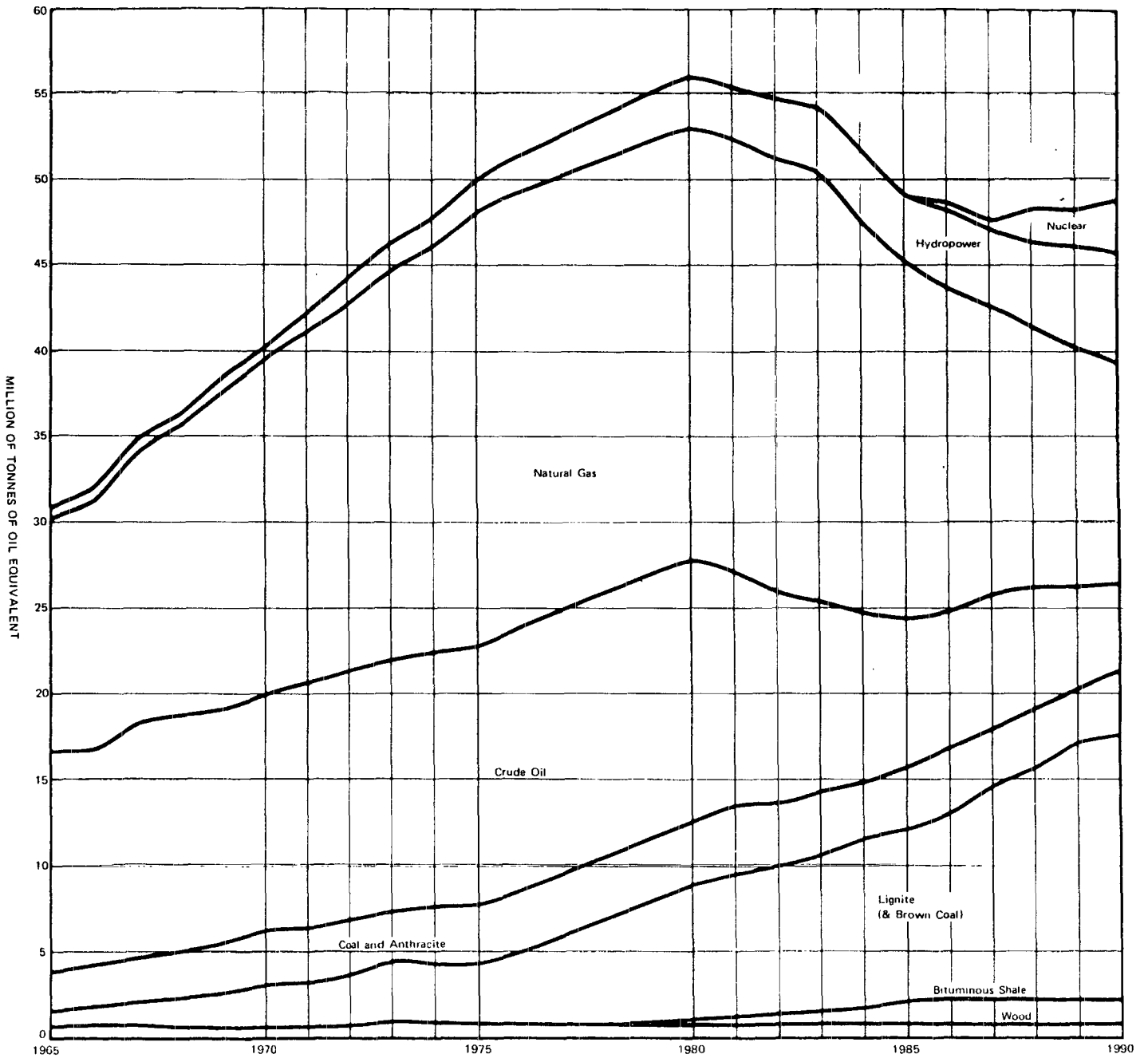


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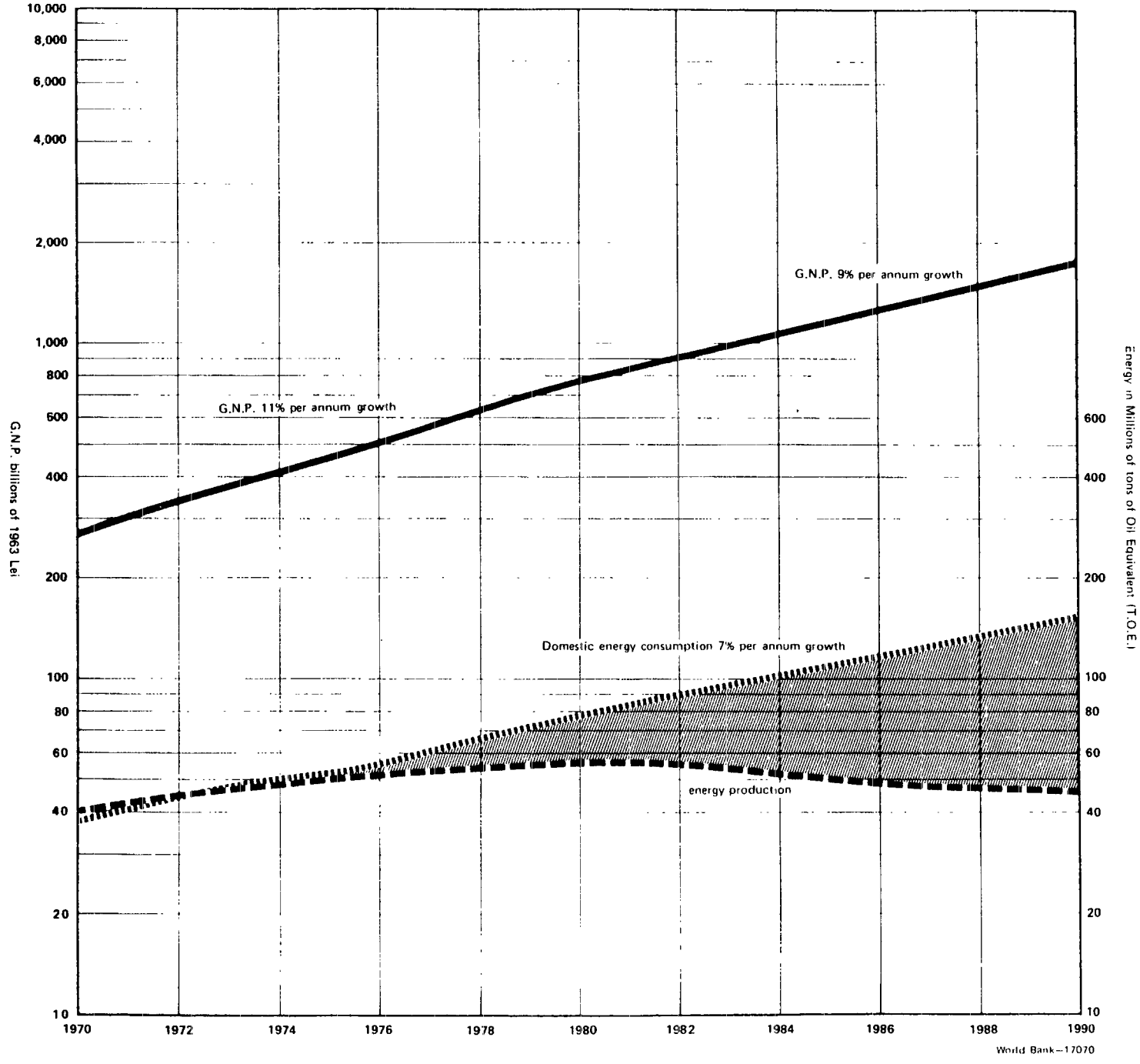
Figure 14.4

ROMANIA

FORECAST OF ENERGY CONSUMPTION AND PRODUCTION TO 2000



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coking coal will have a value of US$50 per ton on the same basis, the Romanian economy will have an external cost on the order of US$2.3 billion for energy imports in 1980 (in constant 1976 prices). Crude oil imports alone are expected to increase from about 14 percent of imports from convertible areas in 1975 to about one third in 1980. Such substantial increases would obviously put a further strain on Romania's already limited convertible currency availability and would create additional pressure to improve export performance in order to pay for the energy bill.

14.43 In order to secure the long term supply of key energy resources, recently the government has moved swiftly in two large commercial ventures: first, an agreement with Kuwait on an investment of US$1.25 billion including the construction of a refinery in the Black Sea and securing oil for it to meet demands of the Romanian market as well as to export products with a high value added. Second, an investment in a US mine operation that would provide Romania with about 27 million tonnes of high grade metallurgical coal over a ten year period, half of it at cost. 1/ The reported total value of this transaction would be in the order of US$2 billion.

E. Long Term Energy Requirements and Resources

14.44 The data and discussion in this section is taken from a long-term forecast of Romania's energy supply and demand for the period 1980-90 carried out by the Bank to see whether a turnaround of the energy deficit is likely beyond 1980. As illustrated in Figure 14.3, the findings of this study indicate that Romania's energy deficit would actually worsen in the long run (after 1980), in the face of a demand increasing at least at a constant rate, but with a declining primary energy production (Table 14.8):

Table 14.8: ESTIMATED LONG TERM ENERGY POSITION
(in m. toe)

	1985	1990
Total Production	50	49
Total Consumption	109	154
Domestic Energy Shortfall	59	105

Source: Bank estimates.

1/ The indicated current price for that coal was $63 per ton.

This forecast is based on an assumed growth in total consumption of domestic energy resources of 7 percent per annum 1/. The assumptions on the supply of energy resources are more complex and are discussed below. The estimates of primary energy production up to 1995, by energy source and also in thermal equivalent of toe, are given in Figure 14.4 and Annex 10.5.

14.45 The long range production forecasts for crude oil and natural gas production represent an estimate on what is likely to happen based upon the known history and characteristics of the Romanian oil and gas fields. As already noted, no information regarding oil and gas reserves is publicly available. Also, no production targets are available beyond 1980. While the forecasts in this section could easily be incorrect by as much as 20 percent either way, or even more in the later years, the overall conclusion drawn from them could only be invalidated by large new oil and gas discoveries, which could yield some 50 million toe by 1990. However, this would not affect the short run conclusions because of the lead time necessary to develop production on this scale. While it is not impossible that discoveries of new oil and gas fields on such a scale may be made, it seems unlikely that they could be made on the land and must therefore depend on the success of offshore exploration in the Black Sea. Production of this order of magnitude -- equal to 1 million barrels of crude oil per day or 5,700 million cubic feet of natural gas per day -- would imply recoverable reserves on the order of 1,000 million tons or 7.3 billion barrels of crude -- or more than 4 times the total crude oil produced from the Ploesti region up to 1968. While not absolutely impossible, discovery of such extensive reserves in the relatively restricted area of the Romanian continental shelf appears unlikely.

14.46 Long range planning, therefore, indicates a further shift in the primary energy supply from natural gas and petroleum to lignite. Production is planned to rise rapidly and stabilize at 115 million tons in 1990. Reserves are sufficient to maintain this level of production for more than 30 years, during which time lignite will be the principal fossil fuel resource of Romania. It will account for about 40-43 percent of primary energy production in 1990-95. A new source of energy, nuclear power, should also be providing a substantial contribution by 1995, in the order of 6 million toe (or about 13 percent of primary energy production in that year), almost equivalent to that of hydropower and natural gas.

1/ Consumption was estimated by establishing the historic relationship between the growth of GNP and energy consumption in Romania; the overall energy demand was found to be growing at about 7.5 percent. For planning purposes, the government is projecting a 7 percent annual growth of energy demand in the 1976-80 Plan, the difference probably being accounted for by Government's plan to reduce specific energy consumption across the whole spectrum of industry (discussed further below), and to institute a large program of waste heat recovery. Allowing for the possibility of success in this policy, the growth rate of 7 percent has been used for the long term estimates. Even with expected lower economic growth rate in the 1980's, and increased conservation that might reduce the present rate of increase of energy consumption to 5 percent per annum, the main conclusions derived from these estimates would remain.

F. Environmental Considerations

14.47 The planned shift from petroleum-based fuels to lignite in the Romanian economy will have an important environmental impact. The principal lignite mining area is in the district of Gorj in the southwestern part of the country, the open-cast mines are located in the Rovinari coal-field while the underground lignite mines are situated in the Motru area, some 15 kilometers to the west of Rovinari. Both coalfields are located near the River Jiu and its tributaries, and, in fact, it has been necessary to dam and divert the Jiu river itself in order to permit the development of open-cast mining on anticipated scale. The area to be mined is covered by good farming land in the Jiu valley, and there are numerous villages strung out along roads. It is estimated that by 1990, 30,000 hectares of prime agricultural land will have been used for industrial purposes, and ultimately the area mined will comprise one-half the total area of the district. There are already serious problems with air and water pollution from sulphur dioxide, power station fly ash, and from coal dust in the rivers. Dewatering of the mines has led to a lowering of the groundwater table so that the water supply must be secured by special works.

14.48 Remedial measures to minimize the environmental consequences of large scale mining and power generation are being undertaken. Soil from the mines and ash from the power-stations are dumped in worked-out areas and the land levelled and replanted; high smokestacks are provided at the power stations to aid in the dispersal of fumes, and electrostatic precipitators are to be installed to reduce the emission of fly-ash. New housing is being provided for persons displaced by mining operations and villages are being provided with deeper water wells. Nevertheless, the dislocations and environmental damage resulting from the rapid development of lignite mining are obvious and undeniable.

14.49 Outside the mining areas, the shift from natural gas to lignite as the prime domestic and industrial fuel has already led to serve atmospheric pollution in the towns and cities. This is particularly noticeable at certain times of the year in the Danube plain when atmospheric temperature inversions are common. It appears that no smokeless solid fuel is available even in Bucharest, which shares the common problem of urban air pollution.

14.50 Atmospheric pollution will also be increased by the change from low sulphur domestic crude oil to the high sulphur heavy oil imported from the Persian Gulf area. While some of the sulphur content of lighter petroleum distillates is removed and recovered in the refining process, the sulphur content of the heavy fuel oil is not removed.

14.51 To prevent atmospheric pollution in urban areas from becoming worse during the current Five-Year Plan, countermeasures are planned. Some relief could be obtained through the continued provision to the housing sector (which represents only a very small proportion of total energy consumption in Romania) of electricity from thermo-electric stations, natural gas and smokeless fuel, as well as through better consumption of solid fuels in industrial premises.

CHAPTER FIFTEEN

TOURISM: ASSETS AND DEVELOPMENT

A. Tourism Assets and Attractions

15.01 Romania is endowed with a wide variety of tourism assets. Along its 245 km. coast on the Black Sea are many wide beaches covered with fine sand, while the Danube Delta, stretching over 4,300 sq. km., shelters a wealth of flora and fauna.

15.02 In the center of the country, the Transylvanian plateau is encircled by the Carpathian mountains with summits of over 2,000 metres and picturesque valleys. Conveniently located near Bucharest, the scenic Prahova Valley in the Southern Carpathians is the seat of Romania's oldest mountain resort area, starting with Sinaia, Predeal and Busteni. The Carpathian mountains also contain numerous springs and lakes, both fresh and salt water, with mineral water originating in faults at various depths. There are more than 120 resorts for balneo-climatic therapy, some of them specializing in geriatric treatment.

15.03 Romania has a rich history with interesting archaeological remains and many treasures of medieval art to complement its natural assets. The monasteries of Bucovina in Northern Moldavia, whose exterior walls are wholly covered by frescoes of the 16th century, have drawn special attention from UNESCO and are probably the most original monuments of Romanian art.

15.04 The country's tourist assets might not have been realized, however, had the Romanians not developed a rather advanced tourism infrastructure to accommodate an increasing flow of domestic and foreign visitors. Romania is located on the international roads which connect Northern and Western Europe with the Balkan Peninsula and the Middle East, and can easily be reached by air, rail and road as well as on ships going down the Danube or landing at Constanta on the Black Sea. Accommodations of all types are being built--from deluxe hotels to mountain chalets and camping sites--and a wide range of holiday arrangements can now be organized through the elaborate network of tourist offices and agencies controlled by the Ministry of Tourism.

B. Government Policy and Importance of Tourism Sector

(1) Government Policy

15.05 The Government's recognition of the importance of tourism in the economy is rather recent and marked by three major developments in the early 1970's: (1) the formation of a Ministry of Tourism charged with the responsibility for formulating and coordinating tourism policy, (2) the institution of the sector as "productive" in the national accounts as of 1971; and, (3) the establishment of most of the 15 tourism offices around the world in the active promotion of the country's tourism attractions.

15.06 The thrust of the Romanian tourism strategy is towards the development of higher yield, higher quality and more diversified tourist facilities. The allocation of accommodation capacity to local and foreign tourism is planned on the basis of contracts signed with trade unions and foreign travel agencies in the fall of the year preceeding the tourist season and on projections of the flow of independent tourists and their transport modes. In the event that actual demand by foreign tourists exceeds that planned, it is met, where necessary, by adjustments in the allocation of facilities among local and foreign tourists not only because of the need for the foreign exchange brought in by foreign tourists but also because of the desire to satisfy foreign tourist demands. In order to establish a better control on the magnitude of foreign tourism, and make it compatible with the planned growth of the sector, various measures have been taken to encourage organized group tourism under the auspices of various agencies of the Ministry of Tourism.

15.07 Of all regulations concerning international tourism, the foreign exchange rate and related regulations are expected to have the most important effect on demand. They favor organized tourism which is more compatible with the planned nature of the economy. On October 2, 1974, the tourism rate of exchange was revalued by 17 percent to Lei 12:US$1 (from Lei 14.38:US$1), increasing the spread between the tourism rate of exchange and the conversion coefficient for foreign trade transactions. Officially, this revaluation was undertaken in order to achieve a purchasing power parity for tourist services in Romania and Western Europe. There is not yet enough information to study the impact of this move on the foreign demand for tourism services, but it is reasonable to assume that the revaluation of the tourism rate would have an adverse impact on the number of tourists who have to exchange their currencies in Romania. Organized group tourism would not be affected because these tourism services are paid for in advance in foreign currencies. In order to compete effectively with other areas in southern Europe whose tourism assets are equally attractive, the authorities have also maintained competitive tariffs and the implicit exchange rate of the package deals offered has been favorable and closer to the official trading rate. On the other hand, when demand is relatively inelastic, as with tourists visiting for a health cure or some other specific reason, the revaluation may have increased the economic returns to the Government.

15.08 As per day expenditures of individual tourists average higher than those of tourists in organized tours, the Government's policy is to encourage the entry of individual tourists in the country. At the same time, by introducing compulsory currency exchange regulations for individual tourists (amounting to US$10 per day per capita, or the equivalent in other currencies, for the number of days they wish to stay in Romania) individual tourists not wishing to purchase accommodations are discouraged.

(2) Importance of Tourism Sector

15.09 Although international tourism has made a definite and increasing contribution to the national foreign exchange earnings, its overall impact on the balance of payments is still very small. As shown below, foreign exchange earnings from international tourism have increased from $27.9 million in 1967

to $188 million in 1975. The share of convertible currencies in these earnings was $21 million in 1967 and $134 million in 1975, or slightly over two-thirds of the total, an average annual increase of 26 percent throughout the 1967-75 period. When compared with earnings from merchandise exports, however, the sector's contribution is small and has actually declined in relative terms (to less than 5 percent of export earnings in convertible currencies in 1975 from 6 percent in 1971), reflecting Romania's reliance on industrial exports for financing the import program.

Table 15.1: IMPACT OF TOURISM ON THE BALANCE OF PAYMENTS
(in $ million)

	1967	1971	1972	1973	1974	1975
Relations with All Areas						
Receipts from international tourism	27.9	76.9	96.0	134.4	152	188
Payments connected to Romanian tourism abroad /1	2.0	15.3	24.9	38.8	53	47
Net impact	25.9	61.6	71.1	95.6	99	141
Relations with Convertible Area Only						
Receipts from international tourism	21.0	51.8	68.0	96.2	102	134
Payments connected to Romanian tourism abroad /1	0.1	9.4	17.2	21.5	22	19
Net impact	20.9	42.4	50.8	74.7	80	115

/1 Includes promotional and other government expenditures to bring foreign tourists to Romania.

Source: Ministry of Finance.

15.10 Similarly, the sector's importance in the economy, as measured by allocations of investment funds (one-tenth of one percent) and its share of total employment, is small. Total sectorial investment in 1971-75 amounted to Lei 5.1 billion, or less than one percent of investment. The average number of people employed directly by the Ministry of Tourism and its subsidiaries amounts to about 54,000 or an insignificant five-tenths of one percent of

total employment. 1/ No information is available on the sector's contribution to national income but presumably it would also be minute.

C. Organization of the Tourism Sector

15.11 The Ministry of Tourism, through its 39 district offices or various subsidiaries, owns about two-thirds of all lodging establishments considered suitable for international tourism, as shown in the table on page 5. The Ministry coordinates the activities of the various agencies that own assets in the tourism sector.

15.12 The highest tourism policy-making body in the Ministry is the Management Council (Consiliul de Conducere), a collective body (39 members) of all ministries and agencies concerned directly or indirectly with tourism. (The structure of the Ministry of Tourism is given in organization Chart 8.) The Policy Council, whose members are appointed by the Council of Ministers, defines the broad guidelines and leaves responsibility for more detailed policy formulation to an Executive Board (Birul Executiv). The Minister of Tourism presides over both the Policy Council and the Executive Board. Except for Bucharest, Brasov and the seaside, the Ministry's district offices have the responsibility for the administration of local tourism assets and facilities.

D. The Demand for and Supply of Tourism Services

15.13 Foreign tourism remains the minor component of tourism traffic in Romania. Of a total of 33.5 million tourist nights spent in 1975 (Annex 11.1), a full 72 percent was spent by Romanian tourists; of the remainder, 3.7 million nights (11 percent) was spent by tourists with residence in socialist countries and 5.7 million (17 percent) by tourists with residence in non-socialist countries. The number of foreign tourists visiting Romania peaked in 1974 at 3.8 million and has been declining since but the total tourist nights spent in the country has been steadily increasing.

(1) Foreign Tourism

15.14 Over 3.2 million foreigners visited Romania in 1975 (Annex 11.2). This is a very high figure considering the fact that arrivals of foreigners numbered only 120,000 in 1961, 675,000 in 1965 and 2.3 million in 1970. These figures, however, and the very high growth rates they suggest (average annual growth of more than 50 percent between 1961 and 1965, 28 percent between 1965 and 1970 and about 7 percent between 1970 and 1975), reflect very different situations depending on whether the foreigners visiting Romania came from socialist or non-socialist countries. As shown in Table 15.3, socialist countries have been numerically the most important source for visitors to

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1/ A strong seasonal variation exists with a maximum of 73,000 employed in the peak season.

Table 15.2: OWNERSHIP OF LODGING ESTABLISHMENTS 1975

	Ministry of Tourism	Ministry of Internal Trade	Judet Popular Councils	Central Union of Consumer Cooperatives	Central Economic Office Carpati-BTT-MAI	Trade Unions	Total
All Lodging Establishments	1786	58	114	211	203	27	2399
Hotels	431	29	62	23	50	1	596
Motels	19	4	-	24	-	-	47
Villas	60	4	-	-	126	-	190
Establishments for rest and treatment	1043	-	38	-	9	25	1115
Inns	2	2	4	32	1	-	41
Chalets	153	11	3	37	6	-	210
Camping	78	8	7	95	11	1	200
Of which Establishments for International Tourism	587	7	5	40	113	-	752
Hotels	385	4	4	2	50	-	445
Motels	16	-	-	6	-	-	22
Villas	52	-	-	-	56	-	108
Establishments for rest and treatment	56	-	-	-	-	-	56
Inns	2	-	1	9	-	-	12
Chalets	19	2	-	-	1	-	22
Camping	57	1	-	23	6	-	87

Source: Ministry of Tourism

Table 15.3 Foreign Tourist Arrivals in Romania

(including tourists in transit and board visitors)

	1965		1970		1971		1972		1973		1974		1975	
	in '000	in %	in '000	in %	in '000	in %	in '000	in %	in '000	in %	in '000	in %	in '000	in %
Tourists from socialist countries	475.0	70.3	1,911.2	83.5	2,213.3	81.2	2,297.4	79.1	2,769.2	82.9	3.181.5	83.2	2,575.2	80.3
of which organized tourism	105.9	15.7	218.8	9.6	215.5	7.9	240.7	8.3	281.6	8.4	335.0	8.8	361.9	11.3
Tourists from non-socialist countries	200.7	29.7	378.3	16.5	513.1	18.8	606.0	20.9	573.1	17.1	643.7	16.8	630.7	19.7
of which organized tourism	76.7	11.3	206.0	9.0	290.1	10.6	337.5	11.6	352.2	10.5	369.0	9.6	423.9	13.2
Total tourist arrivals	675.7	100	2,289.5	100	2,726.4	100	2,903.4	100	3,342.3	100	3,825.3	100	3,205.9	100.0
of which organized tourism	182.6	27.0	424.8	18.6	505.6	18.5	578.2	19.9	633.8	18.9	704.0	18.4	785.8	24.5

Source: Ministry of Tourism.

Romania. However, these high figures conceal the fact that a great proportion of visitors from socialist countries were in Romania either in transit (1.2 million out of 3.2 million in 1974) or as border visitors. Only slightly more than 10 percent of them were members of organized tours who made arrangements for their stay through agencies of the Romanian Ministry of Tourism. The numbers of visitors from non-socialist countries, on the other hand, increased at an average annual growth rate of 13.4 percent between 1965 and 1970 and about 11 percent between 1970 and 1975. Only a marginal proportion of these were in transit (4,100 in 1974), and since 1970, more than half of them have made arrangements for their stay through agencies of the Romanian Ministry of Tourism. The frequency of such arrangements has increased in the most recent years, possibly in response to the 1974 policy measures (para 15.07).

15.15 The statistics on tourist nights provide a truer picture of foreign tourism, however, and here the predominance of visitors from non-socialist countries is strongly evident. Foreign organized tourism accounted for about 80 percent of registered tourist nights (and of this, 67 percent was from non-socialist countries). Among the non-socialist countries, the Federal Republic of Germany is by far the most important tourist generator (Annexes 11.1, 11.3).

(2) Domestic Tourism

15.16 Domestic tourism has increased substantially with growing income levels within Romania (Chapter Nine). At present measures have been taken to obtain higher facilities' occupancy during off season by offering domestic tourists discount prices and the accommodations which during the peak-season are used by the international tourists. 1/ For this reason, legislation has been adopted to spread holidays more evenly throughout the year. Particular emphasis is placed on the promotion of health and spa resorts open all year round and tourism in the hinterland. As a result, Romanian tourists account for about 95 percent of tourist traffic in health and spa resorts, 85 percent in mountain resorts and 84 percent in the other localities.

15.17 Another trend is the Romanian tourists' growing sophistication as their own incomes have increased. They are now asking for better accommodations, better means of transportation and access to all the best resorts.

15.18 Visits abroad have increased too--from 321,200 Romanians traveling to other countries in 1972 to 477,000 in 1975 (Annex 11.4). The increase has been particularly substantial for tourists going to neighboring socialist countries, except Yugoslavia. Tourism to non-socialist countries decreased slightly between 1972 and 1975 and represented less than 10 percent of Romanian tourism abroad in 1975.

E. Supply of Tourist Facilities and Services

15.19 In 1975, there were 2,399 lodging establishments with about 86,000 rooms and 279,000 beds in Romania. However, only 747 of these establishments, with about 59,000 rooms and 159,000 beds, offered standards suitable for international tourism. The distribution of this capacity between types of establishments and tourist areas is shown in Annex 11.5. So far as the regional distribution of capacity is concerned, the striking feature is the concentration at the seaside. In 1975, the Black Sea Coast accounted for more than half of the total supply of beds, and two thirds of the beds suitable for international tourism (Annex 11.5).

15.20 The 1971-75 Plan provided for the establishment of facilities with 35,000 beds, of which about half were located at the seaside. The average cost per bed was about Lei 70,000 at the seaside, Lei 115,000 in the mountain resorts and Lei 150,000 in spa and health resorts. (All costs are in 1963 prices and do not include cost of land and infrastructure such as power, water and sewerage.) As in other sectors, Romanian policy has minimized the foreign exchange component of investment expenditure in the tourism sector. It never exceeds 20 to 25 percent for first class accommodations and 30 percent for deluxe accommodations.

1/ About 70 percent of foreign tourists visit the Black Sea, most of them during the summer months.

15.21 The data provided by the Ministry of Tourism on capacity utilization in the years 1970-75 (Annex 11.6) suggest a definite improvement not only for the sector as a whole, with bed-occupancy rates increasing from 67.1 percent in 1970 to 76.7 percent in 1975, but also for each single form of accommodation. In comparing capacity utilization with other countries, these figures have to be interpreted with great prudence, however, as they measure capacity utilization only during the period when accommodation is available to the public and do not reflect the strong seasonal element affecting the tourist industry, particularly at the seaside.

15.22 To get a more accurate picture of the situation, specific bed-occupancy rates in the main tourist areas are computed in Annex 11.7, and these take into account the fraction of the year in which the various lodging establishments are open. They show interesting disparities, both among tourist areas as well as forms of accommodation. While for the country as a whole, capacity utilization on a 365-day basis was 40.8 percent (36.6 percent in establishments for international tourism), it was only 24.8 percent (25.7 percent in establishments for international tourism) at the seaside where most the lodging establishments are closed except for the four-month summer season. In health and spa resorts, mountain resorts and other localities, on the other hand, capacity utilization on a year-round basis was estimated at 67.5 percent, 56.4 percent and 53.5 percent, respectively (65.0 percent, 62.4 percent and 64.2 percent, in establishments for international tourism). This reflects the importance of rest and treatment in domestic tourism as well as the efforts of the government in encouraging off-season tourism. Further improvements in the utilization of facilities are still required, though.

15.23 Another area in need of much improvement is the quality of tourism services. The expansion of the sector was initially undertaken without a parallel intensive effort to develop a human resource infrastructure meeting the quality requirements of international tourism. As a result, service and managerial performance in the sector have lagged. Corrective actions have been taken but their impact is still limited in view of the large needs for improvements. The most concerted effort to meet middle level manpower requirements has been undertaken since 1971 under a UNDP training project. About 15 percent of those permanently employed in the sector have attended intensive training or refresher programs under this project. However, the requirements for qualified higher level technical and managerial staff in the sector have not been addressed yet systematically.

F. Costs, Tariffs, Profits and Control

15.24 A breakdown of the principal categories of costs in the tourism industry in 1974 and 1975 is given in Table 15.4. Overhead and depreciation account for more than 60 percent of the total. The high figures for repair and maintenance reflect the fact that most of the hotels have had to be completely renovated in recent years to improve the quality of their services. In other accounting systems, such expenditures may be handled as investments.

Table 15.4: PRINCIPAL CATEGORIES OF COSTS IN TOURISM INDUSTRY. 1974
(in percentage)

	Hotel Industry /1		Restaurants and public food supply /2	
	1974	1975	1974	1975
1. Wages and social security contributions	18.7	19.0	45.9	46.6
2. Overhead, including	48.7	46.0	23.6	24.7
- Reparation and maintenance (major works)	25.6			
- Reparation and maintenance (minor works)	1.9			
- Rents /3	1.8			
- Trips of official delegations	0.12			
- Heat, light, water, power and other overhead	19.3			
3. Transportation			12.5	13.0
4. Depreciation	13.1	14.0	7.9	6.7
5. Administration and management	8.2	6.9	6.6	6.3
6. Promotion	3.1	-	0.3	-
7. Other costs	8.2	14.1	3.2	2.7
Total	100	100	100	100

/1 Only hotels depending on the Ministry of Tourism.
/2 Includes many restaurants or estabishments that do not belong to the Ministry of Tourism and cater to the needs of the local population as much as those of foreign tourists.
/3 Rents are charged only for lease of premises that do not belong to the Ministry of Tourism.

Source: Ministry of Tourism.

15.25 Tariffs are established centrally by the Ministry of Tourism and are subject to a periodic review to take into account trends in international tourism prices. In recent years, the Government has raised tariffs for non-organized tourism in line with average international prices while tariffs for organized group tourism have been kept at a lower level to maintain their competitive advantage. Tariffs for domestic tourism involve a different set of criteria and may be at variance with those for international tourism.

15.26 Profitability has improved in recent years for hotels of the deluxe and first class categories, which have benefited from an increase in capacity utilization and from the influx of foreign tourists who are charged full international rates. On the other hand, hotels of the second class category registered a decrease in their profitability as increases in costs, particularly in wages, could not be compensated for by increases in costs in domestic tariffs

or in capacity utilization. The distribution of profits in the hotel industry is subject to very detailed rules. Since 1974 half of the profits have been forwarded to the national budget, about 15 percent retained to increase working capital, 18 percent transferred to the centralized investment fund of the Ministry of Tourism, about four percent, respectively, went to the staff's compensation fund, the repair and modernization fund and to the special equipment fund; the rest has been for miscellaneous provisions.

15.27 The Ministry of Tourism exercises a very strict control over all lodging establishments. In addition to auditing the accounts of individual units, the Ministry also assesses the efficiency of operations using such techno-economic indicators as: (1) expenditure in Lei per US dollar of foreign exchange earned. The objective is to reduce the ratio for this indicator. Targets have changed substantially in recent years as a result of the devaluation of the US dollar. While a few years ago an expenditure of 20 Lei per-dollar-earned was considered satisfactory, the objective now is to spend only 12 Lei per-dollar-earned; in the peak season it seems possible to spend even less. Until recently the tourism sector outperformed all other sectors working for exports in this respect. However, it now seems that this advantage over other sectors is narrowing; (2) ratio of receipts (or profits) to the average value of fixed invested capital, as expressed in Lei. The objective is to maximize this ratio. Achievement of the target established for this indicator is monitored even more closely than the first.

G. Development Prospects

(1) The 1976-80 Plan

15.28 The 1976-80 Plan provides for the creation of 46,300 beds, a 23 percent increase over the target in the 1971-75 Plan, which is already rather a large program. The total cost of the planned investment in the tourism sector for the 1976-80 period is Lei 5-6 billion. While this represents a 27 percent increase over the expenditure of the previous plan period, the sector's share in total planned investment continues to be insignificant, about half of one percent. These allocations reflect the strong emphasis on industrialization in Romania's development strategy as well as the Government's desire for a gradual and controlled development of the sector during the Plan period. A case could be made, however, for the allocation of more resources to a sector that has earnings in convertible currencies. 1/ To look at one rough comparison: while in recent years investment in tourism has represented less than 1.5 percent of investment in industry, the convertible currency earnings of the tourism sector were almost 20 percent of those in industry.

15.29 It should be noted, however, that the case for allocation of more resources to the sector cannot be based exclusively on the generation of additional net foreign exchange earnings. The data publicly available are

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1/ In the past five years, these earnings have more than doubled.

not sufficient to establish the profitability of additional investment in tourism and a more detailed analysis, based on occupancy rates, tariffs, operational and investment costs, is needed before any conclusions can be reached in this respect.

15.30 As shown in table 13.5, the 1976-80 Plan represents a radical change of emphasis in the regional distribution of investment. Only 15.4 percent of the planned investment will be allocated to the seaside; mountain resorts will receive 27.2 percent; spa and health resorts, 23.5 percent; and other towns along tourist itineraries the biggest relative share, 33.9 percent. This new emphasis on the hinterland has not only been stimulated by the problems of seasonality and lower occupancy rates encountered in the seaside, but by studies showing that tourist demand is becoming more diversified with a greater proportion of tourists expressing interest in organized tourism taking them to different parts of the country. Diversification is also seen as a way to prevent a reduction in the average length of stay of foreign tourists--and possibly to increase it. Emphasis in the 1976-80 Plan will also be on the creation of high quality accommodations. Quality standards will be reinforced throughout the country and many investments will seek to upgrade existing capacity to meet international tourism standards.

Table 15.5: INVESTMENTS IN THE HOTEL INDUSTRY

	1971-75 Plan		1976-80 Plan	
	In lei (million)	In %	In lei (million)	In %
Seaside	2,494	48.8	867	15.4
Spa and health resorts	579	11.3	1,315	23.5
Mountain Resorts	417	9.7	1,527	27.2
Other tourist itineraries	1,538	30.2	1,906	33.9
	5,108	100.0	5,615	100.0

Source: Ministry of Tourism.

15.31 Foreign tourist arrivals are expected to increase at an average annual growth rate of 6.5 percent, reaching 4.4 million in 1980 (Table 15.6).

Table 15.6: FOREIGN TOURIST ARRIVALS PROJECTIONS
(in thousands)

	1974 (actual)	1975 (actual)	1980 (estimates)	Average annual growth rate 1975-1980
Tourists from socialist countries	3,181.5	2,571	3,630	7.2%
Tourists from non-socialist countries	643.7	635	770	3.9%
- organized	369.0	428	555	5.4%
- non-organized	274.7	207	215	0.8%
Total	3,825.3	3,206	4,400	6.5%

Source: Ministry of Tourism.

The growth rate is estimated to be about 7 percent for tourists from socialist countries and only 4 percent for those from non-socialist countries (representing an increase from 635,000 in 1975 to 770,000 in 1980). The rather moderate growth rates in all categories, with organized tourism having a slight edge over the others, reflects the deliberate policy choices discussed earlier. It should be noted that the growth estimate for tourists from socialist countries has been reduced from a previous higher level (4.7 million by 1980) possibly to eliminate the favorable balance Romania has been enjoying with its CMEA partners in this area. Also, the estimates have not been adjusted to account for the impact of the earthquake on foreign tourism. The earthquake in March 1977 occurred at the beginning of the period when foreign reservations are confirmed. By May 1977, it was clear that over two thirds of the expected foreign tourists had changed their holiday plan because of the earthquake.

15.32 The Romanians give higher priority to providing better and more diversified services so as to increase per-day expenditures and are interested in increasing the influx of tourists from non-socialist countries. Assuming that no substantial increase in the average length of stay of foreign tourists is to be achieved, increased expenditures per day per capita, particularly in the case of tourists from non-socialist countries, should play a very important role in achieving the objective assigned by the 1976-80 Plan, that of doubling gross foreign currency earnings of international tourism.

(2) Longer Term Plans

15.33 For the decade of the 1980's, the only projected expansion so far is in tourist bed capacity. The additional number of beds planned for 1981-85 is 100,000 beds, with another 120,000 planned for 1986-90. This

is quite an ambitious plan of expansion, especially if it means a continuation of a strategy directed toward the development of higher yield and higher quality tourism facilities. If successful, it could more than double the sector's contribution of foreign exchange and create new employment opportunities within the economy. Of course, domestic tourism would also benefit from such a policy but the underlying assumptions regarding domestic occupancy rates and the like are not available.

15.34 Notwithstanding the positive aspects of the sector's potential, even a doubling in activities by 1990 would have slight effect on its economic importance. And while every effort should be undertaken to make the fullest use of the national tourism assets, the potential contribution of the sector, particularly as an earner of foreign exchange, should not be overrated. It can provide a considerable sum of foreign exchange to finance the development effort but it cannot be relied upon as a stable or major foreign exchange earner because of its dependence on international economic conditions and potential volatility. Perhaps the latter is recognized by the Government and explains why neither the Annual nor the Five-Year Plan include any references whatsoever to the sector. Faster and more expanded growth is not likely because of two major constraints: first, such sector growth would encounter strong competition from tourism services provided in neighboring Balkan states; and second, the authorities' desire for an orderly and controlled growth of tourism to ensure compatibility with plan objectives.

PART IV: DEVELOPMENT PROSPECTS

CHAPTER SIXTEEN

DEVELOPMENT PROSPECTS

A. Perspective Prognosis to 1990 and the 1976-80 Five Year Plan

16.01 Examination of Romania's achievements has shown the 1950s and 1960s to be the years in which a strong base was being created for the rapid fulfillment of the country's economic and political goals. During the 1960s, the momentum of economic growth was more firmly establishsed and the country's long term perspectives more clearly defined.

16.02 The 1970s have been planned as the decisive period in the achievement of Romania's long term development objectives. The economy is to move from a state of underdevelopment to one of economic strength. Industrial strength, in particular, is expected to be solidified, with 1990 as the target for Romania's economic parity with other Eastern European economies. A per capita income of $2,500-$3,000 is projected (in 1963 prices). Economic performance in 1971-75 was reviewed in Chapter Six, the record was one of the most successful in Romania's economic history. Growth targets were ambitious but on average they were overfilled. Macro-economic targets of the perspective and current five year plans are reviewed in this chapter. (The 1976-80 plan targets and objectives for the major sectors have already been discussed in earlier chapters of this report.)

16.03 The perspectives to 1990 were established by the Eleventh Congress of the RCP in 1974 in its Directives for the 1976-80 five year plan and its guidelines for the country's socio-economic development in 1981-90. 1/ The plan targets are given in Table 16.1. These figures were drafted on the basis of 1974 data and will be modified depending on the outcome of the 1976-80 Five-Year Plan.

1/ Directives of the Eleventh Congress of the Romanian Communist Party convening the 1976-80 Five Year Plan and the Guidelines for Romania's Economic and Social Development over the 1981-90 period.

Table 16.1: 1976-90 PERSPECTIVE PROGNOSIS
(1990 vs. 1975)

National Income	3.5x - 3.8x
Gross Industrial Production	3.5x - 4.0x
Gross Agricultural Production	1.5 - 1.8x /a
Investments in National Economy (five year average)	
- 1975-90 vs. 1961-75	7.3x
- 1981-90 vs. 1971-80	more than 2x
Distribution of National Income	
Consumption Fund (%)	68-70
Accumulation Fund (%)	30-32
Volume of Foreign Trade	3x /b
Real Incomes Per Capita	216-252
Real Remuneration	170-190
Volume of Retail Sales	2.9x - 3.4x /c

/a 1986-90 over 1971-75.
/b In 1975 prices.
/c In current prices.

Source: Ibid.

16.04 A large, if slightly lower, share of resources are targeted for investment, mainly industry. The high growth rates of heavy industry will continue their momentum furthering this sector's pivotal role and its contribution to Romania's social product, which should read 78-80 percent by 1990. Within this framework, the guidelines provide high growth rates for the engineering and chemical industries, whose contribution to gross industrial production will rise from some 44 percent in 1975 to almost 50 percent in 1980 and 55-60 percent by 1990. An ambitious program of development of the power resources is envisaged (discussed in detail in Chapter Fourteen) to meet the industrialization requirements, coupled with a most intensive energy saving drive that is intended to contain the increase of energy consumption to about double the 1975 levels in face of a more than tripling expansion of national income.

16.05 In agriculture, emphasis will be placed on intensive development, with priority given to (a) the livestock subsector, whose share in total agricultural production is targeted to rise to 50 percent by 1990; (b) irrigation, reaching 5 million ha by 1990, or about half of the country's arable land; (c) mechanization; and (d) increased application of chemicals, reaching 300-325 kgs per hectare by 1990 (compared to 115 kgs in 1975). With intensive mechanization the bulk of its manpower is expected to be released for the industrialization drive, leaving only about 12-15 percent of the labor force in the sector by 1990.

16.06 Improvements in consumption are planned both in quantitative and qualitative terms. Real incomes per capita are projected to increase annually by 5-6 percent from 1975-90 and real remuneration is planned to be 1.7-1.9 times bigger at the end of the period. By 1990, provision of social funds (pension, health, recreation, etc.) will have reached the level where it accounts for 30-32 percent of the population's total income. The most important improvements in standard of living would be in the reduction of the work week (to 44-46 hours by 1980, and 40-42 hours by 1990) and the provision of more and improved housing. Because of the earthquake, however, the implementation of the program for the reduction of the work week has been postponed to begin in 1978 instead of 1977 and end by 1982 instead of 1980.

16.07 As Table 16.2 indicates and Figure 16.1 illustrates, the perspective prognosis is divided into two distinct periods with considerably different plan targets. The high growth of 1971-75 is planned to continue its momentum throughout the 1970's under the current five year plan but with a lower growth rate in the 1980s. In absolute terms, though, the planned growth is still very substantial. Separate plans for these two periods are reviewed briefly below.

(a) The 1976-80 Plan

16.08 First, it should be mentioned that some of the planned levels of output for 1975, as for example in agriculture, that have been used as the base for the Directives for the 1976-80 plan were too high because of the subsequent flood damage. Details of the macro plan targets are shown in Table 16.2 and the implications have been graphed in Figure 16.1. National income is planned to grow at an annual average real rate of 10-11 percent, which is only fractionally lower than the actual level achieved for 1971-75. Social product is expected to grow at 8.4-9.4 percent, 1/ gross industrial production at 10.2-11.2 percent and gross agricultural production at 5.0-7.6 percent; except for agriculture these are slightly lower than the level previously achieved. Total investment, on the other hand, is planned to increase its rate of growth from 11.5 to 12.7 percent.

16.09 The volume of foreign trade (valued in 1975 prices) is planned to double over the period following a doubling in current prices during 1971-75. The Directives indicate that exports are planned to grow faster than imports and an overall trade surplus is expected by 1980, especially with the convertible area. This will permit Romania to pay off a significant proportion of her convertible currency foreign debt.

1/ The planned lower growth rate of social product compared with national income indicates the expected decline in proportion of material expenditures because of increased efficiency in production.

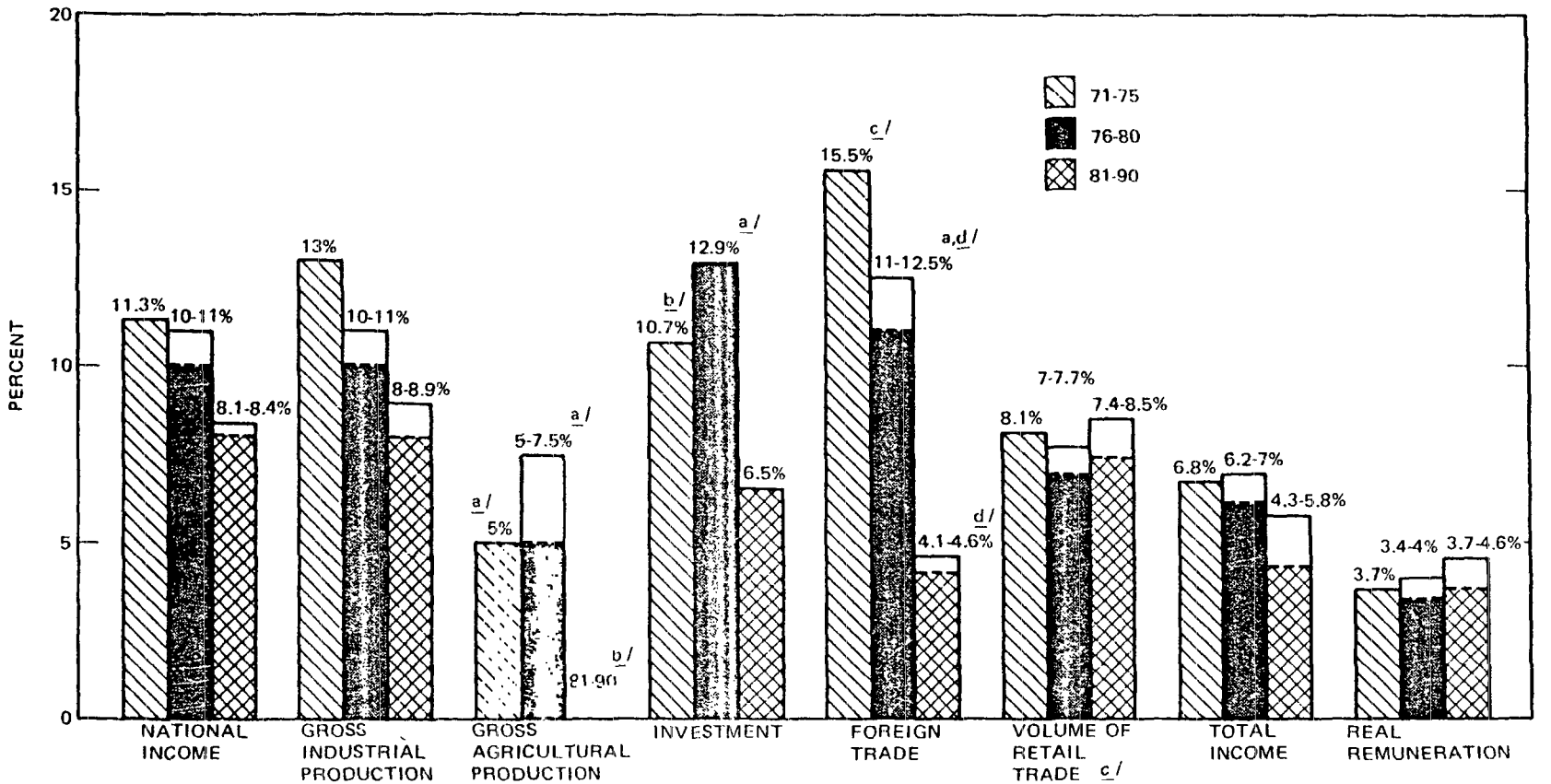
Table 16.2: PLAN TARGETS AND ACHIEVEMENTS
(in comparable 1963 prices)

	1971-75 Actual (1975 vs. 1970)	1976-80 Directives (1980 vs. 1975)	1976-80 Plan (1980 vs. 1975)	1976-90 Perspective (1990 vs. 1975)
Social Product	165	147-154	150-157	3.5-3.8x
National Income	171	154-161	161-168.5	3.5-4.0x
Gross Industrial Production	184	154-161	162-170	1.9x 6/
Gross Agricultural Production 1/	125	125-134	128-144	7.3x 5/
Investments in National Economy 1/	166	165-172	183.4	3.1x 6/
Distribution of National Income:				
Consumption Fund (%)	66	66- 67	66- 67	68-70
Accumulation Fund (%)	34	33- 34	33- 34	30-322
Volume of Foreign Trade 1/2/	206	172-180 3/	190-201. 3/	300x 3/4/
Exports 1/2/	213	175-185 3/		
Imports 1/2/	200	160-170 3/		
Average Number of Employees	123.3	116-119	116-119.2	
Labor Productivity (present work week)				
: in industry	136	138-142	150-153.8	
: in construction	146	150-156	150-156.9	
: in railways	127	120-126	120-127.3	
Cut in material expenditures per 1,000 lei of marketable output in national industry (%)	9.2	6.5-7.0	8.5-9.5	
Total Real Incomes	146	135-137	135-140	
Real Incomes per capita	139			216-252
Population (%)				
Remuneration Fund		151-155		
Real Remuneration	120	118-120	118-122	170-190
Real Incomes of Peasantry per capita	120	120-125	120-129	
Volume of Retail Sales 2/	148	140-145	145-147.5	2.96-3.4
Services to Population	169	161-168	161-168.6	

1/ Five-year averages
2/ Current prices
3/ In 1975 prices
4/ 1990 as against 1975
5/ 1975-90 vs. 1971-75
6/ 1986-90 vs. 1971-75

Sources: Anuarul Statistic; Law on the Adoption of the Unified National Plan of Economic and Social Development of the Socialist Republic of Romania over 1976-80; Directives of the 11th Congress of the RCP concerning the 1976-80 Five-Year Plan and the Guidelines for Romania's Economic and Social Development over the 1981-90 period.

FIGURE 16.1
ANNUAL PLAN TARGETS (1971-90)
(Actual 1971-75, Plans 1976-80 and 1981-90)



a) Five year averages
b) Gross agricultural output (annual average) in 1986-90 is expected to be 1.5-1.8 times bigger than the annual average of 1971-75 period.
c) Current prices
d) In 1975 prices

Sources: Annual Statistic; Law on the Adoption of the Unified National Plan of Economic and Social Development of the Socialist Republic of Romania over 1976-80; Directives of the 11th Congress of the RCP concerning the 1976-80 Five-Year Plan and the Guidelines for Romania's Economic and Social Development over the 1981-90 period.

World Bank—17429

16.10 The indicators of the standard of living once again show rates of growth lower than those for the productive sectors as would be expected with such a high reinvestment ratio, but until their recent revision the rates were very similar to those achieved in the previous plan. Total real incomes per capita are now planned to increase at about 7.2 percent p.a. versus an initial target of 6.2-7.0 percent p.a., real wages at 5.4 percent per annum versus 3.4-4.1 percent initially planned, the real income per capita of the agricultural workers at 3.7-5.2 percent and the growth of the consumption fund 8 percent p.a.

16.11 The overall picture for 1976-80 appears to be that of an even more intensive industrialization drive. National income is to grow at a faster rate than social product, indicating a reduction, on average, of material inputs per unit of output in the productive sector. Industry is still leading the way with high growth rates accounted for by large and increasing doses of investment. About 75 percent of the growth of the sector would come from increased investment, and a total of 2,400 new plants are expected to be operational during the plan period. The policy for the past 20 years is that the only way to achieve a multilaterally developed socialist society is through rapid industrial growth; the 1976-80 plan continues that policy with chemicals and mechanical engineering as the major growth sectors. 1/

16.12 As a result of this growth, the structure of the economy will show further changes. By 1980, for example, the share of industry in social product is expected to increase to 69 percent from the 1975 share of 68 percent. Perhaps more important is the role of foreign trade. It is estimated that, in 1975 prices, exports reached the high level of 27 percent of national income. By 1980 this is planned to increase to approximately 30 percent, involving Romania more deeply in world economy.

(b) The 1981-90 Perspective

16.13 The picture for the 1980s is somewhat different. While the indices of the standard of living continue to grow at a constant rate, the macro targets indicate a slight slowdown in the rate of growth (Table 16.2 and Figure 16.1). The growth of national income during the decade is planned to be 8.1-8.4 percent p.a., which, although lower than before, is still very high in comparison with the rest of the world. Similarly, growth of gross industrial production will drop to 8.0-8.9 percent p.a. from the 10-2.-11.2 percent of the 1976-80 plan. The growth of investment is more difficult to calculate as data is only provided in five year totals but the magnitude of the scale-down can be seen in the figures for total investment 1976-80 which are 1.834 x that of 1971-75; in 1981-90 there will be twice as much as in 1971-80. One estimate shows that the 1976-80 annual average growth rate of 12.7 percent is likely to be cut in half. This is consistent with the fact that the consumption fund will increase its share in national income to 68-70 percent for the whole 1976-90 period, which in turn implies that by 1990 the share will be

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1/ See Chapter Ten and Appendix 5, for more detailed discussions of the plan for the industrial sector.

even greater and it can be assumed that by then the growth of real incomes will be close to that of the national income. 1/ The targets for trade show a similar reversal of a previous trend. Trade volume for 1976-80 is planned to be twice that of 1971-75 while the total volume in 1990 is only three times that amount. In other words, the increase in trade over 1971-80 in absolute terms will be the same as over the entire 1981-90 period. It is estimated that with this slowdown in the rate of growth, exports will be reduced to 28 percent of national income by 1990 from 30 percent in 1980.

(c) Additional Development Objectives

16.14 Both the 1976-80 plan and the long term perspectives indicate problems that Romania anticipates and also some directions in which the policies are intended to take the economy. These are:

(i) improving equity in regional development;
(ii) encouraging scientific and technological development;
(iii) improving work efficiency and product quality; and
(iv) reducing consumption of energy and raw materials.

16.15 The details of the plan given above are all macro growth targets but as Chapter Six has already brought out, from the late sixties, regional development has also been a priority. This priority has not been reduced as development continues but instead has increased. It is also now being linked with a new development objective: town development and redevelopment.

16.16 The Directives devote a complete section to the "Development of Counties and Economic and Social Planning", where it states:

> "The process of a balanced economic and social development of all counties and of physically planning of the territory will grow more marked under the next five year plan, favorable conditions being ensured to a general raising of the civilization standards in all regions and a growing material level and spiritual standard of the whole people."

16.17 Not only is a high growth rate desirable but it is also essential that the benefits be distributed to all sectors. As before, the main instrument of regional equalization is industrial investment, with particular emphasis being placed upon the less developed judets. The 1976-80 plan envisages a further regional redistribution of industry, stating that by 1980 there should be no judet whose gross industrial output is less than the 10 billion lei in comparable prices. Of the 40 judets of Romania, 16 would rank at production levels between 10-15 billion lei, 12 between 15-25 billion lei, 8 between 25-50 billion lei and in only four judets (Brasov,

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1/ It is anticipated that in 1990 the growth of real incomes will be greater than that of national income. However, because of the relatively low growth rate of real income between 1976 and 1980, real incomes will increase by a smaller percentage than national income over the whole period, 1975-1990.

Galati, Prahova and the municipality of Bucharest) would the value of gross industrial output exceed 50 billion lei. 1/ The highest average annual rates of growth of production (15 percent and more) would be achieved in the industrially less developed judets of Bistrita-Nasaud, Salaj, Tulcea, Vaslui, Covasna, Botosani, Vrancea, Gorj and Ialomita. Industrial investment is not, however, the Government's only instrument of regional equalization. As a departure from previous policy, the Five Year Plan also establishes the prerequisites for making each judet self-sufficient in meat and eggs.

16.18 As part of the general policy of regional development, the first stage of the provisions of the National Program of Physical, Urban and Rural Planning will be implemented. Under this program, big city growth will continue to be controlled and a more rational geographic distribution of the population will be effected through the development of a network of towns and urban centers distributed throughout the country. A total of 400-500 of these centers is planned for 1976-90, about 120 of them during 1976-80. The economic activities and viability of each town center would depend on its comparative advantage.

16.19 Another theme that recurs throughout the literature on the plans is that of the technico-scientific revolution to take place in the coming years. For example, the preamble to the 1976-80 Plan Law states:

> "To obtain the objectives assigned it is planned to broaden the contribution made by Romanian scientific and technological research and development to resolution of the problems raised by fulfillment of the plan, so that the 1976-80 Five Year Plan may be characterized as Five Year Plan of the technical and scientific revolution in all sectors of the national economy."

16.20 The role of science is seen in several lights. 2/ First, it is considered to be a major way in which economic efficiency can be increased. Second, it is to have a leading role in the creation of new products and techniques in order that Romania may develop and utilize industrial processes that can compete with the most developed countries of the world. Emphasis is given to developing new products using local raw materials and technology. 3/ Finally, it has a significant role in the search for, and utilization of, raw materials and energy resources.

1/ For distribution of judets by industrial outputs in earlier time periods, see Table 6.9 and discussion in paras. 6.26-6.32.

2/ See also discussion on scientific and technological research in Appendix 11.

3/ For example, in 1976-80, over 85 percent of new or modernized technologies are provided to be achieved on the basis of Romanian know-how.

16.21 For at least the past decade, all Romanian plans have emphasized the same problems, namely those of efficiency and quality. The 1976-80 plan is no exception, and in fact both these problems appear more critical now than when they were first raised. 1/ The Directives point out that:

> "Under the 1976-80 Five Year Plan an essential target, besides the fast rate of development of material production, is the growing efficiency, the raising to a high qualitative level of the whole economic and social activity. This calls for firm activity to raise labor productivity, cut down production costs, improve the quality of products and better use the fixed assets of all material and financial resources of the country. Special attention will be paid to the cutting down of material expenditures."

16.22 The increased seriousness of the problem has emerged at a time when growth has been the prescribed goal. Many of the expanding industries have been supplying internal markets and have been protected by tariff walls and import restrictions. 2/ At the same time, planned targets and prices have not necessarily been conducive to creating the optimal technical or economic methods of production. This suggests that inefficiencies have remained in some production processes despite planners' exhortations to the contrary. With enterprises striving to meet high growth targets efficiency has suffered in some cases.

16.23 Various exhortations throughout the plan documents show awareness of these problems. The full use of existing capacities and fixed assets emerges as a major priority and one which, in a planned economy, should not be too difficult to achieve. Improving product quality, however, is a more difficult task. It cannot only be legislated and it requires the creation of engrained conditions in the system to induce improvements to it.

16.24 The final theme which runs through the plan is that of reduction in the consumption of energy and raw materials. Chapter Fourteen has indicated that the days of energy self-sufficiency are now past. Although Romania has a wide range of mineral resources, it is realized that they are insufficient to supply the country's needs. As a result, the plan consistenly emphasizes the need to minimize raw material and energy intputs in all sectors and to maximize the internal output of both. 3/ It is planned that until 1990 national income will increase 3.5-3.8-fold, while consumption of primary energy

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1/ It is interesting to note that reduction of material expenditure per unit output has now become a compulsory target but there are difficulties achieving it.

2/ Actual tariffs have been low but physical restrictions on imports have implied effective protection of many products.

3/ This is consistent with the continuing general policy of import substitution wherever possible.

will about double. In order to accomplish this, priority has been given to "those sub-branches and highly technical equipment that use less power" and it is also planned to reduce the energy consumption of existing processes. The 1976-80 Plan also calls for reduction in consumption of material expenditures amounting to 90 billion lei. 1/

B. Major Issues and Problems

16.25 Romania is now in a transition stage, having become a net importer of energy resources in the early 1970s. It is expected to rely heavily on imports of raw materials and crude oil in order to attain its future growth targets. Although endowed with a wide variety of energy resources including crude oil, natural gas, coal, lignite, and hydropower, reserves of these are not adequate to meet the domestic energy requirements arising from the government's strategy of a rapidly growing industrial sector. The resource demands of the expansion and diversification of industrial output have now outgrown the country's resource base. The resource gap is being met by increasing imports of raw materials such as metals and energy resources.

16.26 As a consequence, the scenario of Romania's future economic development is changing dramatically. Its investment policies will be more and more bound up with the expansion of the foreign trade sector. To sustain its present growth momentum and the structure of its industrialization program its manufactured goods will have to penetrate world markets much more deeply. A greater integration into the world economy will also introduce another complication: a degree of unpredictability in the foreign trade sector with an uncharted effect on a previously totally planned economy.

16.27 If all plans are fulfilled, Romania will have 'taken off' and become an industrialized economy by 1990, on a level with many other countries considered developed. By then, the consumption fund will have increased its share in national income to approximately 70 percent. Despite continuing policies of import substitution, Romania is expected to remain a trading nation with an exports national income ratio of about 28 percent. Her major exports are expected to be chemicals and machinery and her imports will be mainly fuels and other raw materials.

16.28 In order to utilize resources fully, the present plan is very tight in the sense that the margins for error or underfulfillment are small. With the economy becoming more complex and its increasing number of linkages among sectors and with other economies, unplanned disturbances are likely to set off reverberations through many sectors, making the process of planning more difficult. In principle, each plan provides reserves in order to offset the influence of some external circumstances. For example, as shown in para 3.13, the material balances include such plan reserves. The impact, though, of a major catastrophe (such as the recent earthquake and the flood in 1975) cannot be anticipated and these are likely to have longer term effects on the economy requiring some adjustments in the implementation of the plan.

1/ Sector and product specific targets have been discussed in Chapters Ten and Twelve on the industrial and construction sectors.

16.29 Previous sections in this report have also been able to identify difficulties that are emerging in the sectors of industry, construction, transportation and energy and their potential impact on overall growth, but have also noted that the Government appreciates these problems. It is likely from past experience that it will adapt measures oriented in achieving the main objectives of the five-year plan. A more extensive discussion of the implications of these constraints as well as requirements for their elimination is given below.

16.30 With domestic resource mobilization already at sustained higher levels, the major challenges facing the Romanian economy are:

(a) to increase economic efficiency in resource utilization and to improve product quality;

(b) to contain imports to planned levels to achieve sufficient export penetration of world markets to sustain the targeted high growth rates;

(c) to develop adoptability of the economic sectors in order to respond to world market changes and to offset the vulnerability of the economy to external economic oscillations.

(a) Efficiency and Product Quality

16.31 It is apparent from earlier discussions that the Government has long recognized the need to increase efficiency in resource utilization and to improve product quality. But it has also been shown that despite progress, the scope for further improvements is great. Some of the internal problems can be regarded as constraints that can be removed through the present planning and administrative system; for example, improvements in the accuracy of the planning and monitoring powers, and corresponding changes in resource allocation, could alleviate such potential problems as labor shortages in construction or in the rapidly growing sectors. Similarly, corrective actions in the industrial sector, such as increasing specialization in plants and thereby reaping benefits of economies of scale, might be undertaken relatively easily.

16.32 But there are other problems whose resolution is more difficult. For example, product quality and the maximization of returns on investments are important objectives to be achieved. Product quality will be a major factor in determining Romania's capacity to become a significant exporting nation and compete with established firms in these fields. But the system's indicators used to evaluate and reward performance will have to emphasize in much greater measure quality performance parallel to volumetric achievements. Another area of potential improvement in resource utilization is in the country's project selection criteria, as has already been noted in para 3.34.

(b) The External Sector

16.33 The internal problems described above assume greater importance once their impact upon the foreign trade performance is considered. The improvements in economic performance required to eliminate the problem of quality and efficiency can be built into the domestic plan and can be made gradually without providing fundamental obstacles to the fulfillment of objectives. However, these issues must be solved more quickly in the trade sector if plans are to be implemented. Foreign trade has become a crucial sector in the economy both in terms of absolute size and interrelationships with the other sectors and the fulfillment of the foreign trade plan is essential if the main targets of the five-year plan are to be reached.

16.34 The plan expects an increase in the export ratio to more than 30 percent by 1980 and even with a minor reduction to about 28 percent by 1990, the plan implies an increase in the volume of trade by 300 percent by 1980 over 1975 levels. The visible problems in the external sector are of course twofold: the containment of imports to planned levels and the promotion of sufficient exports to achieve targets.

16.35 The review of 1971-75 showed that imports of all raw materials increased more rapidly than all the output indexes, with the share of fuel and raw materials increasing from 43 percent of all imports in 1970 to 52 percent in 1975. With the economy moving into a deficit position in the resource field, unless the growth of raw material inputs is reduced, the rapid growth rates in industrial production and national income are going to necessitate a continuing growth in imports.

16.36 Evidently, the Romanians are fully cognizant of this; as para 16.24 indicates a more economical use of raw materials, coupled with efforts to find additional resources at home and abroad, and to produce more synthetic substitutes at home, are all major priorities in the plan. Nevertheless, the targets -- such as the cut in material expenditures per 1000 lei of marketable output in industry of 8.5-9.5 percent between 1975-80 -- are quite high. If they are not met, imports will grow faster than planned and efforts to contain them under these circumstances to planned levels could hold production back for lack of imports and/or lead to a deterioration of product quality if domestic substitutes of insufficient quality are utilized.

16.37 The import substitution policy is in fact broader than indicated above as there are efforts to produce as much as possible within the country. In some cases, such as the production of certain consumer goods, the decision to proceed with the establishment of a domestic industry is taken even if the ground rules using the trading rate of $1 = 20 lei are not met and the initial cost of the goods implies a higher rate. The policy is that in the long run any process must be efficient (i.e. infant industries may be protected in the short run). Import substitution on a massive scale has been reinstimulated since the 1975 floods and this will undoubtedly continue in the aftermath of the earthquake.

16.38 The more serious problem, however, is likely to be on the export side. In 1975 prices, total exports are required to grow at an average annual rate of about 12-13 percent until 1980, and then at an average rate of some 6-7 percent until 1990. Three sectors in particular are expected to take the lead in this expansion: machinery and equipment, chemicals and, to a lesser extent, industrial consumer goods. The official documents allow some deductions with regard to the growth of the main industrial sectors. By 1980, chemicals and machinery and equipment are expected to increase their share in total exports to 50 percent and 38 percent in 1975 and this will increase further to about 60 percent by 1990. A growth rate of approximately 20 percent p.a. is estimated until 1980 and after that a lower rate of slightly under 10 percent p.a. Industrial consumer goods are projected to grow at about 15 percent p.a. until 1980 and 10 percent thereafter.

16.39 The magnitude of these increases can be seen from the fact that exports in constant prices will be 90-101 percent higher in 1980 than they were in 1975, 1/ and three times higher by 1990. In absolute figures, it is predicted that exports will increase from $5.3 billion to $8.0-$9.0 billion in 1980 (in 1975 prices). Such an increase will not be easy to achieve in terms of output. But it will be even more difficult to sell this quantity of goods on the world market especially as even under favorable circumstances the international economy is not expected to grow more than 5-6 percent per annum. In other words Romanian trade would be growing faster than world trade and would compete with others' shares in the world market. This could lead to retaliation and quota restrictions.

16.40 The greatest problem is likely to be in the field of machinery and equipment in convertible areas, where Romania will have to compete with such countries as West Germany, U.S.A., U.K. and France. In order to break into the market substantially, Romania will have to produce exceptionally high quality equipment and to deliver it expeditiously for these two elements probably outweigh others, including price. So far, Romania has a relatively limited number of capital goods which have successfully penetrated the convertible markets. Because of inadequate marketing and support services, a number of products with competitive quality have to be sold at discount prices while in other products substantial efforts have to be made to raise the quality level to that of world competition. In the case of oil drilling equipment for example, which is a quality product, Romania had the equipment on the shelf when a world shortage occurred. But it would have been more difficult to sell such amounts of equipment if, for example, American drills had been available at that time. If Romania has made an inroad into the markets, it is likely to be uphill work to increase, or even maintain her stake.

1/ This target refers to the volume of trade in 1976-80 over 1971-75.

16.41 Certain avenues around these problems are being sought. One is a move to increase bilateral trade agreements 1/ and the second, in some ways complementary, is to attempt to move towards more trade with the developing world. In 1975, about 18 percent of trade was with developing countries and by 1980 it is planned to increase to 30 percent. Almost half of the incresae in trade will be with the developing countries between 1976-80. They may have less stringent demands for sophisticated machinery and equipment and are likely to pay for them with raw materials, which is precisely what Romania requires. However, the group of developing countries now includes the majority of oil producers who have recently shown themselves to be very demanding about the quality of the goods they buy and have oriented their purchasing towards products of the developed economies.

16.42 Other problems exist in the field of machinery and equipment. At present, the greatest advances are being made in import substitutions. The purchasing of licenses has been a means of achieving that. Some licenses and patents, however, specifically exclude the possibility of exporting in competition with the mother firm. 2/ If Romania is to obtain a permanent role in the world market for machinery and equipment she will have to develop a technology that can stand up to the competition in specific fields.

(c) Responsiveness to World Economic Conditions

16.43 Furthermore in the world market there are constant changes in requirements and demands. If Romania is to be successful, it must be responsive to these changes and apply a flexible planning system. In this sense, the planning system would have to encourage in greater measure more diversified production to satisfy the demands of world customers in producers' and consumers' goods areas. Some decentralization of decision making along with a system of incentives would develop initiative in identifying and satisfying these demands.

16.44 The lower flexibility of the Romanian system also handicaps it to a certain degree in facing the cyclical trends of the world economy, particularly in chemicals and machinery. A slump in the world economy will hurt the country's exports to convertible currency areas and affect total exports which are expected to retain a rather high share of about 28 percent of national income by 1990. The majority of imports will be raw materials and intermediate products rather than goods in the final demand sector so any containment of imports in the face of adverse exports will directly limit the level of production. Furthermore, as noted in para 16.28 above, the linkages in the economy are becoming more extensive and any disruptions will have far-ranging effect on the economy. Until recently, exogenously determined factors had little impact on Romania's economy. But the country's increasing trade interaction with the world economy will increase the domestic economy's dependence

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1/ Amounts indicated in such agreements are targets and their fulfillment, therefore, remains to be seen.

2/ A good example is the recently signed agreement with Citroen.

to world market oscillations--and these new conditions are exogenous to the economy.

C. The March 1977 Earthquake and its Economic Impact

16.45 The economy was dealt a severe blow on March 4, 1977 when a violent earthquake occurred in the east of the country, centered in the judet of Vrancea. The earthquake, the effects of which were most severe in the vicinity of Bucharest, killed 1570 people, injured 9300 and caused damage valued by the Government at US$2 billion. A large proportion of the damage was to fixed assets, mainly buildings, and of the US$1.4 billion damage to buildings, US$1 billion was in housing. The damage to fixed assets in the productive sector was relatively small and foregone production and destruction of inventories was estimated at approximately US$500 million. The earthquake also had a substantial impact upon the country's balance of payments prospects. Government projections suggest that the impact upon the balance of payments will be approximately US$630 million during 1977 and 1978, consisting of US$350 million in lost exports (as a result of lost orders, production losses and diversion of production to the domestic economy), US$250 million in additional imports, chiefly machinery and equipment for the construction sector, and about US$30 million in lost tourist receipts.

16.46 Immediately after the earthquake, the Government began clearance and reconstruction work and was very successful in overcoming its immediate effects. Debris was cleared, housing was found for the vast majority of those left homeless, chiefly by giving them priority for new housing, and most enterprises were returned within a few weeks to full production. To deal with the substantial longer-term impact, the Government instituted a comprehensive reconstruction program which is planned to permit both the impact of the earthquake to be eliminated by 1980 and the targets of the 1976-80 Plan to be met. The major components of the reconstruction program are first, an acceleration in the expansion of the construction sector and those industrial branches supplying equipment and materials to the sector; and second, the construction of an additional 200,000 houses during the 1976-80 period so as to replace the housing destroyed by the earthquake and also to ease more quickly than previously anticipated the housing constraint. The resources for the additional tasks during this Plan period are expected to be secured from three sources: first, from the greater efforts of the population, notably compulsory and unpaid work initially on all Sundays and still on one Sunday each month, voluntary work, a deferral of the reduction in the working week, financial contributions from workers and utilization of the army for reconstruction work; second, savings of production expenditures obtained from improvements in the efficiency of production, which are now expected to be greater than originally anticipated; and third, external borrowings to finance those imports not paid for by intensified export efforts.

16.47 While the Government has clearly stated its determination that the earthquake will not prevent the implementation on schedule of Plan targets, it is also clear that the earthquake has made this achievement more difficult. In the external sector, the earthquake adds to the difficulties, referred to

earlier, in meeting foreign trade targets. In the domestic sector, the earthquake also accentuates a number of difficulties. In the first place, the reconstruction program imposes additional tasks upon the construction sector which, as discussed in Chapter Twelve, has been operating close to its capacity and, in particular, has been finding recruitment of additional labor difficult. While the reconstruction program will provide additional fixed assets and material resources in the sector, they must be complemented by increases in the labor force. In the second place, the Government's plans to maintain the Plan targets and to neutralize the effects of the earthquake, can be put into effect only by mobilizing more resources, both by increasing the efforts of the labor force and by securing additional savings of production expenditures through greater efficiency. This chapter has identified improvements in efficiency as targets which have in the past been difficult to fulfill. In view of this, a further acceleration in the rate of improvement of efficiency may be difficult to secure, although the recasting of Plan targets has been made on the basis of the improved performance in this area during the first two years of the Plan period. Furthermore, not all of the savings from this source can be channelled into additional investment and production. Some must be allocated to the consumption fund, to provide the goods and services required for the higher increase in the population's standards of living announced in July 1977.

D. Bank Projections of the Balance of Payments

16.48 The discussion has so far outlined the main issues and challenges facing the economy in meeting the 1976-80 and perspective plan targets. The rest of the chapter illustrates in a number of projections made by the Bank, under different growth assumptions, the convertible balance of payments constraint and Romania's possible convertible debt posture. The model used for all projections in this chapter is the Bank's revised minimum standard model. 1/

16.49 As a starting point, the ideal situation of the full implementation of the government targets is presented. Where these targets have not been directly or openly stated, they have been deduced from official documents. Two runs of the model were obtained: one based on the additional assumption that the trade surplus to be established by 1980 in order to pay off the foreign debt, would be maintained until 1990; and, another, assuming that after 1980 imports would increase faster than exports leading almost to an elimination of the trade surplus by 1990. Total trade has been assumed to increase by 11.2 percent in 1976-80 2/ and triple by 1990, according to the

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1/ A word of caution is in order on the use of the Bank model. It has been formulated to meet general and standardized Bank needs. The logic of the structure of its equations is not necessarily appropriate for this economy. Its use is undertaken in order to obtain a general framework of reference and the results, even if found generally meaningful, should be interpreted with caution.

2/ Exports have been assumed to increase by 12.1 percent per annum during the same period and imports by 10.4 percent.

Plan. Trade with the convertible areas is assumed to increase in 1976-80 with exports reaching 57 percent and imports 55 percent of the total by 1980. The same shares are assumed for 1990.

16.50 The results derived from these assumptions are summarized in Table 16.3, where column (a) presents the results from the first model run, and (b) the ones from the second. If these external sector targets were to be fully implemented, the outstanding convertible debt as of the end of 1975 would be eliminated by 1981. Under the first model run, notable surpluses amounting to about eight percent of exports would begin accumulating after that year, leading to a fast reserve build-up and substantially expanding Romania's capacity to extend credit to other countries.

Table 16.3: CONVERTIBLE BALANCE OF PAYMENTS PROJECTIONS
(million dollars in current prices) /1

	Actual	Estimates		
	1975	1980	1985	
			(a)	(b)
Exports /2	2,839	8,603	16,151	15,950
Imports /2	2,950	7,709	14,768	15,688
Trade Balance	- 111	895	1,383	262
Net Factor Services	- 149	- 68	334	127
Balance of Current Account	- 261	827	1,717	389

/1 IBRD price indices.
/2 The real growth rates used for exports and imports for the two model runs are as follows:

	1976-80		1981-1985	
	(a)	(b)	(a)	(b)
Exports	13.5%	13.5%	6.0%	6.0%
Imports	11.5%	11.5%	6.5%	6.9%

Source: IBRD estimates.

E. Other Alternatives

16.51 It is clear from the earlier discussion in this chapter that Romania is facing a period of challenge. It is trying to open new markets in many areas where competition is already well established. Under these circumstances, attainment of all the medium- and long-term targets as currently set, will be difficult. This raises the question of other viable alternatives that may exist for Romania in pursuing its development strategy. Two such alternatives are explored below, along with their implications and the feasibility of their implementation. One is based on the assumption that the implementation of the high growth targets is an absolute necessity for the country to achieve stated objectives by 1990. In the event of reversals in achieving

export targets to convertible areas in 1976-80, substantial resort to external markets will be undertaken to finance the export shortfall so that both the investment program and the import of technology will not be affected. The second assumes that in the event of such export reversals, the Government, rather than resorting to a substantially increased dependence on the international capital markets to finance its growth which is not part of Government policy, will trim some of its growth targets and finance externally only a small proportion of import requirements.

(a) External Resources

16.52 In the event of reversals in achieving export targets to convertible areas in 1976-80, the question arises as to how much possible leeway may exist for the Government to borrow in the international capital markets, without jeopardizing its creditworthiness, in order to meet its energy and raw material requirements and to sustain the presently planned import program.

16.53 The results of a number of runs of the model indicate that reversals in exports amounting to as much as 20 percent of present targets can be reasonably accommodated through international borrowing. That is, assuming an export growth rate to the convertible areas of close to 11 percent per annum in 1976-80 (versus 13.5 percent assumed with previous run, para 16.48), which marginally betters the 1971-75 performance, and a similar import rate, the debt service ratio will reach a trough in 1982 at about 9.5 percent, 24 percent in 1989 and 26 percent in 1990. Debt service to total debt outstanding will continue to be high, in the order of 25 percent reflecting the built-in assumptions in these projections that the bulk of borrowing will be on medium-term (eight years for repayment with up to two years grace period).

16.54 Such rather large scale resorting to the international capital markets to finance growth is possible, but given past experience, is not likely. First the Government is on record to attempt to reduce substantially its external debt by the early 1980's. Second, in the event of slow growth of exports, it is probable that Romania would, as in the past, place stringent controls on imports. In 1975, for example, when a reduction in exports due to the flood reduced convertible currency earnings, imports were permitted to increase only US$5 million more than 1974. The same policy is in force in the post-earthquake period, to make up for foregone exports and to save foreign exchange required for replacement of damaged and destroyed capital stock.

16.55 The second alternative, which is more realistic, is for Romania to limit imports to exports levels, or to even lower levels to allow for debt repayment. Such a policy would lead to desired balance of payments outcomes. However, there are some long term implications that need to be highlighted.

16.56 The substitution of local technology for foreign can only be limited. Substantial restrictions on the import of modern technology could affect the country's future capacity to penetrate international markets.

Also, the substitution of foreign technology, to the extent it can be undertaken, can be accomplished only with higher costs. If these are of substantial magnitude they could affect the growth of income, given the fact that the current domestic savings effort can be considered the highest realistically achievable.

16.57 Because these factors can potentially constrain the achievement of Romania's growth targets and long term objectives, it is possible that the government would favor financing a small proportion of its import requirements by borrowing in the international capital markets. The revised minimum standard model has been used to illustrate quantitatively the implications of the arguments above and establish what the respective convertible debt and creditworthiness ratios would be.

16.58 More specifically, two alternative sets of real growth rates of exports to convertible currency areas in 1976-80 have been used, 8.5 and 10 percent per annum. It has also been assumed that the government will contain imports within half a percentage point of export growth rates (9 and 10.5 percent respectively). For 1981-85 the substantial reduction in the growth of the volume of trade anticipated by the government is reflected in the assumptions: the growth of exports and imports has been assumed at 5.5 and 6 percent per annum respectively. It is also assumed (i) that the bulk of borrowing will be on medium-term (eight years for repayment with up to two years grace period); (ii) reserves will increase annually at the rate of $30 million. Table 16.4 gives a summary of the results derived from those assumptions; column (a) indicates the lower growth rate assumption and column (b) the higher.

Table 16.4: CONVERTIBLE BALANCE OF PAYMENTS PROJECTIONS
(billion dollars in current prices) /1

	Actual	1980		1985	
	1975	(a)	(b)	(a)	(b)
Exports	2.84	6.7	7.2	12.3	13.2
Imports	2.95	7.0	7.5	12.5	14.3
Trade Balance	-0.11	-0.3	-0.3	-1.1	-1.1
Net Factor Services	-0.15	-0.3	-0.3	-0.7	-0.7
Balance of Current Account	-0.26	-0.6	-0.6	-1.8	-1.8

/1 IBRD Price Indexes weighted per assumptions on composition of Romania's trade:

	1975	1980	1985
Exports	100	144	200
Imports	100	143	200

Source: IBRD Estimates.

16.59 These are not unreasonable growth scenarios. Actual export performance in 1976 indicates that the growth of exports over 1975 to convertible currency areas was within the assumed range above. It should be noted, though, that it is difficult to assess a priori the likelihood of implementation of these scenarios. They imply certain trends, yet, in an economy like Romania's where trade is a public monopoly good projections require not just a good trend estimate but, more importantly, second guessing planners' preferences.

16.60 Irrespective of which growth scenario will be implemented certain conclusions can be derived about Romania's development prospects. Its growth rate will remain quite high by international standards and by maintaining, to a considerable degree, its present momentum Romania will be among the more developed of the high income developing countries in the 1980s. This growth will be attained with continuing Government emphasis on, first, the utilization of the country's own resources and a large local investment effort and, second, more effective use of human, capital and natural resources. Finally, for Romania to attain its growth targets and its plans for creating a competitive industrial economy, it will have to attract foreign resources and secure loans to support its development efforts.

F. Creditworthiness

16.61 The organization of economic activity in Romania, the pursuit of a development strategy involving high investment and savings rates, the country's major efforts to expand exports and its debt management policies suggest that Romania is now creditworthy. Under the assumptions of the estimates above, the debt service ratio remains easily under manageable proportions in the order of 20 percent, although at generally higher levels than in the 1971-75 period. Because of the built-in assumptions on the terms of borrowing, the proportions of annual debt service to total debt outstanding is expected to continue to be relatively high, in the order of 20-29 percent.