



COMMISSION OF THE EUROPEAN COMMUNITIES

STUDIES

*The development
of Flemish
economy
in the international perspective*

Synthesis and options of policy

REGIONAL POLICY SERIES – 1973 – 1

The development of Flemish economy in the international perspective

Synthesis and options of policy

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PREFACE

On 30 July 1970 a contract was concluded between the Belgian Government (Secretary of State for Regional Economy) and the Committee of the European Community (Directorate-General for Regional Policy) as commissioners and the Regional Economic Council for Flanders as executant, with the aim of carrying out a survey of the development of Flemish economy in the international perspective.

This survey was completed in accordance with the terms of the contract at the end of 1972. It com-

prises 22 detailed reports (2780 pages in all) and a synthesis report which is presented here.

Besides an analysis in depth of the socio-economic development of the Flemish region in all its aspects, the survey also reveals the elements of the options of policy.

The survey was carried out on the sole responsibility of the executant, the Regional Economic Council for Flanders. The opinions expressed in the following pages represent exclusively the standpoint of that institution.

INTRODUCTION

In defining the concept of the survey 'The Development of Flemish Economy in the International Perspective' three objectives were taken as the point of departure. In the first place the survey must be of use to the institutions and persons responsible for economic policy in Flanders and to the development planning of the Provincial Economic Councils. In the second place, the survey must be set within the context of the EEC. Finally, the growth rate of income per head was adopted as the basic essential variable for the long-term prosperity of a region. This choice was not seen as a contradiction to the endeavour to obtain full employment in certain areas of Flanders which have lagged behind the general development. In respect of the latter consideration a second correction has to be applied. Growth must be seen in the perspective of optimization.

In drawing up and elaborating the program of the survey it was thought necessary first of all to position the Flemish economy in a West European perspective. This position is considered from four angles: population expansion, level of prosperity, economic growth and economic structure. This pin-pointing in a wider perspective constitutes the basis for the actual predictions made. The results of these predictions have a direct repercussion on the development of economic growth, the balance of labour, the required industrial sites with their infra-structure of transport, on higher education and on many other facets of social-economic life.

The conclusions drawn are not however necessarily to be regarded as the best possible. In this survey the optimum is adjusted to three levels: regional, national and the EEC.

This report is the synthesis of a long period of preparation and two years' work on the part of more than forty scientists. Their research is recorded in 22 reports. A list of these with their respective authors is appended to this synthesis as Appendix 1.

A remarkable point is not only the large number of scientists cooperating but also the large number of cooperating institutions. Of the latter the first group is constituted by the economic councils of the four Flemish provinces and the Economic Council for Flemish Brabant.

In the second group of cooperating institutions are the study centres of the Flemish Universities: The

Centre for Economic Studies of the Catholic University of Louvain, the Department of Applied Economics of the State University of Ghent, the Centre for Financial Economy of the Free University of Brussels and the factual combination of the three academic centres of Antwerp. Two centres of this factual combination took part, i.e. the Study Centre for Economic and Social Research of the St. Ignatius University Faculty and the Antwerp Study Centre for Economic Development of the State University.

Certain sections of the surveys are the work of the Company for the Promotion of Economic Expansion (C.V. Venex: Vennootschap ter Bevordering van de Economische Expansie).

In conclusion mention must be made of the co-operation of the Economic Council for Flanders (ERV) and the Department of the Marketing Science of Agricultural and Market Gardening Produce of the State University of Ghent and the Centre for Agrarian-Economic Research of the Catholic University of Louvain. In this way the survey 'Development of Flemish Economy in the International Perspective' is seen to be the outcome of the combination of the valuable resources of a large number of Flemish institutions. This type of economic analysis requires a basis of extensive statistical material. The statistics made available by the National Institute of Statistics, the European Economic Community, the various government departments, the provincial economic councils and other bodies provided us with a most valuable foundation. It was noted however that in some cases the basic data were not sufficiently regionalized.

However extensive these statistical sources, they did not enable all the various facets of the survey to be brought to a satisfactory conclusion. For this reason provision was made from the outset for the organization of a very exhaustive inquiry in industrial and commercial circles in cooperation with the economic councils of the Flemish provinces. In order that we should not have to make more than one appeal to the cooperation of commerce and industry an exhaustive questionnaire was compiled, in cooperation with the assisting institutions, to cover the following aspects:

- composition of exploitation costs;
- regional technical liaison;
- export;

- technical training ;
- key personnel ;
- frontier friction points ;
- adaption of a concern to its environment ;
- social measures ;
- future development of the sector ;
- geographical, sectoral and professional mobility ;
- establishment factors ;
- technology and research, and
- transport.

So far as we know this inquiry is probably the most extensive ever organized in Belgium, and this may possibly be generalized at the European level. The scope is indicated not only by the number of firms involved (4128 firms with 20 employees and over) but also by the number of questions put.

Flemish industrial circles reacted positively to this inquiry, encouraged by the intensive follow-up given by the provincial economic councils. Certain factors emphasize the representational nature of the inquiry.

A total of 885 firms, or 21.4% of the total number of industrial production units approached, gave their cooperation. With 246000 paid employees these firms constituted 46.1% of the total employment capacity of industrial firms with 20 or more employees. This shows that the figures are reasonably representative. It applies to all industrial sectors. Representation per branch of industry is fairly satisfactory, except for the leather and shoe industry (11.9%). This branch, however, is the least important of the Flemish industries in respect of employment potential.

The inequality in the degree of cooperation per province, shown below, necessitated in most cases a special evaluation in order to make the data applicable to Flanders in general.

	<i>Number of firms cooperating</i>	<i>Share of the cooperating firms in terms of employment capacity</i>
– Antwerp	16.7%	43.0%
– Limburg	50.0%	86.8%
– East Flanders	16.0%	29.8%
– West Flanders	32.1%	53.2%
– Flemish Brabant	11.7%	33.0%
– Rural Flanders	21.4%	46.1%

These few percentages show that the larger firms cooperated better than those of small or medium size. The following figures are expressed in terms of the number of firms :

Firms with 20 to 100 employees	17.5%
Firms with 100 to 200 employees	28.6%
Firms with 200 to 500 employees	33.1%
Firms with 500 employees and over	55.6%

Thanks to the results of this inquiry a three-fold aim was achieved. In the first place the realization of certain sub-reports was made possible. As an example may be quoted the report on technical inter-connections and the factors at present governing regional establishment. In the second place it permitted the enrichment of a number of other sub-analyses by quantitative and above all qualitative data. Last but not least the survey was brought closer to the economic reality. Through direct consultation with industrial circles a link was forged between the economic approach and the needs and requirements of practical industrial life. Nor was such consultation restricted to industrial circles only. Provincial authorities and labour organizations were also consulted in respect of certain specific aspects of the study. This too helps to base the survey more firmly on reality and increases its operational value.

In the treatment of the various sub-aspects the operational character of the survey was constantly borne in mind. In each case the questions requiring an answer were discussed at length with the various cooperating bodies and with fellow researchers. In other words, each sub-aspect was brought into focus with the basic issues of the survey. This particular method of approach, the subdivision into a large number of sub-reports and the large number of cooperating institutions all meant, of course, that continuous coordination was required to ensure universality of approach, working methods and viewpoint.

Universality of viewpoint was realized not only at coordination level but also at the level of the institution concerned. Each report was submitted to a corresponding Advisory Committee and to the Managing Committee of the ERV, later to the Bureau of the Regional Economic Council after the Regional Economic Council for Flanders had been set up in 1971. After approval each report was then discussed by the 'Group of Advisers', under the chairmanship of E. Dutilleul, Director of the European Committee, which was appointed by the commissioners of the survey, the Belgian Government (Department of Flemish Regional Economy) and the European Economic Community for Coal and Steel, represented by the Committee of the European Communities.

The present synthesis report is further subdivided into two sections. The first comprises mainly a synthesis of the more important aspects of the

survey. This does not mean however that the aspects of policy are entirely neglected. Their presence is frequently implied. The second section is concerned largely with the options of policy, the various aspects of the synthesis being used to provide a general background.

This synthesis does not of course deal with all possible policy options in the socio-economic field. Some of these which figured in the general study have been omitted here. This means in fact that no closer consideration is given to subjects such as housing, environmental management, distribution planning, the service sector, etc. The financing aspects have been dealt with only in cases in which they were susceptible of accurate definition. This was unfortunately not the case for the transport infra-structure.

The survey closes with a general statement of policy concerning the basic problems of Flemish economy during the coming decade.

May I, at the end of this introduction, set aside for a moment the actual limits of my task as scientific coordinator of the survey 'The Development of Flemish Economy in the International Perspective' in order to express my gratitude for the support I have received.

In the first place I would like to thank the Economic Council for Flanders for their confidence in entrusting me with the task of coordination. The excellent

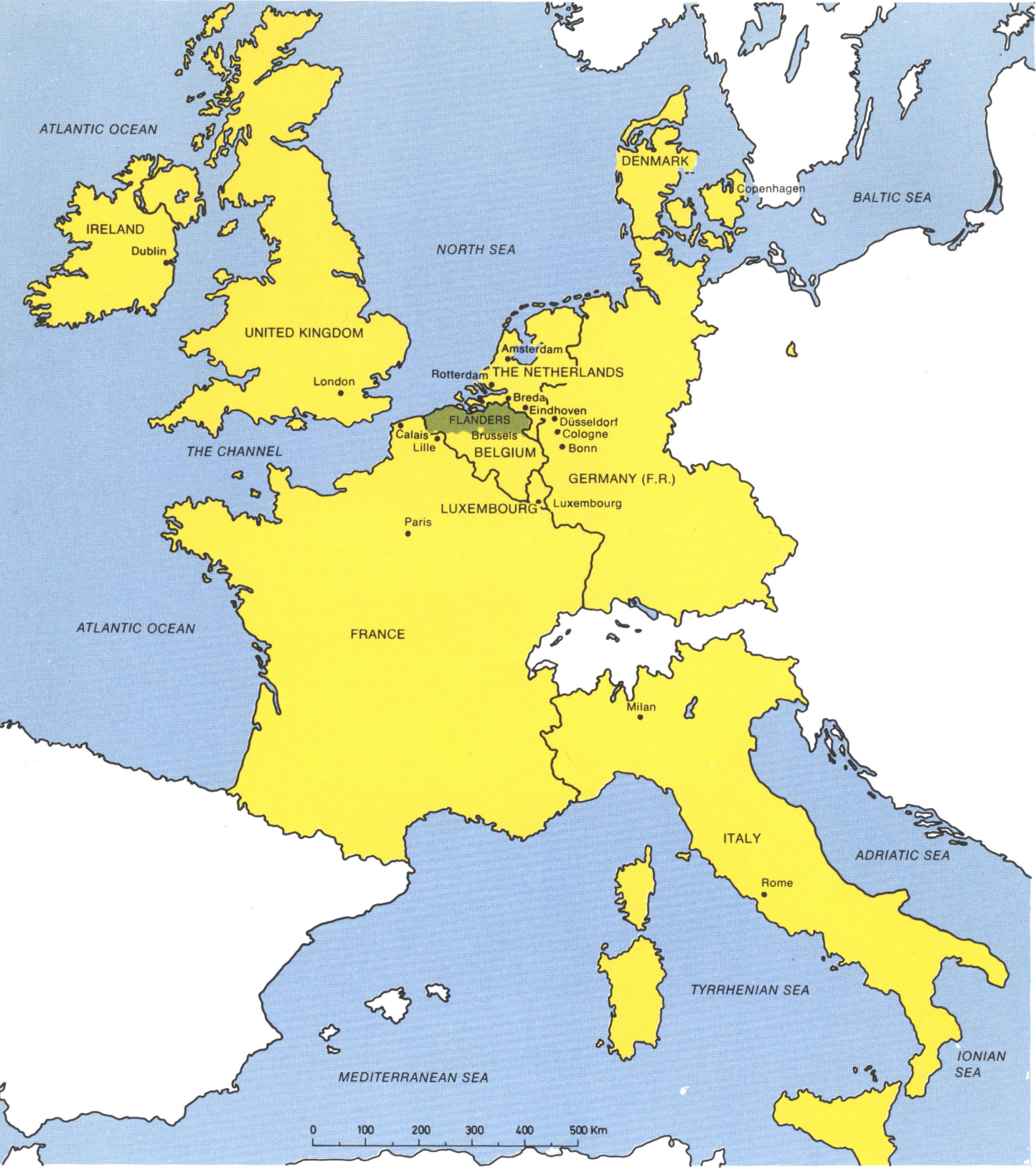
cooperation of the Managing Committee of the ERV and subsequently with the Bureau of the Regional Economic Council for Flanders and with the administration of the ERV and the GERV has greatly lightened my task.

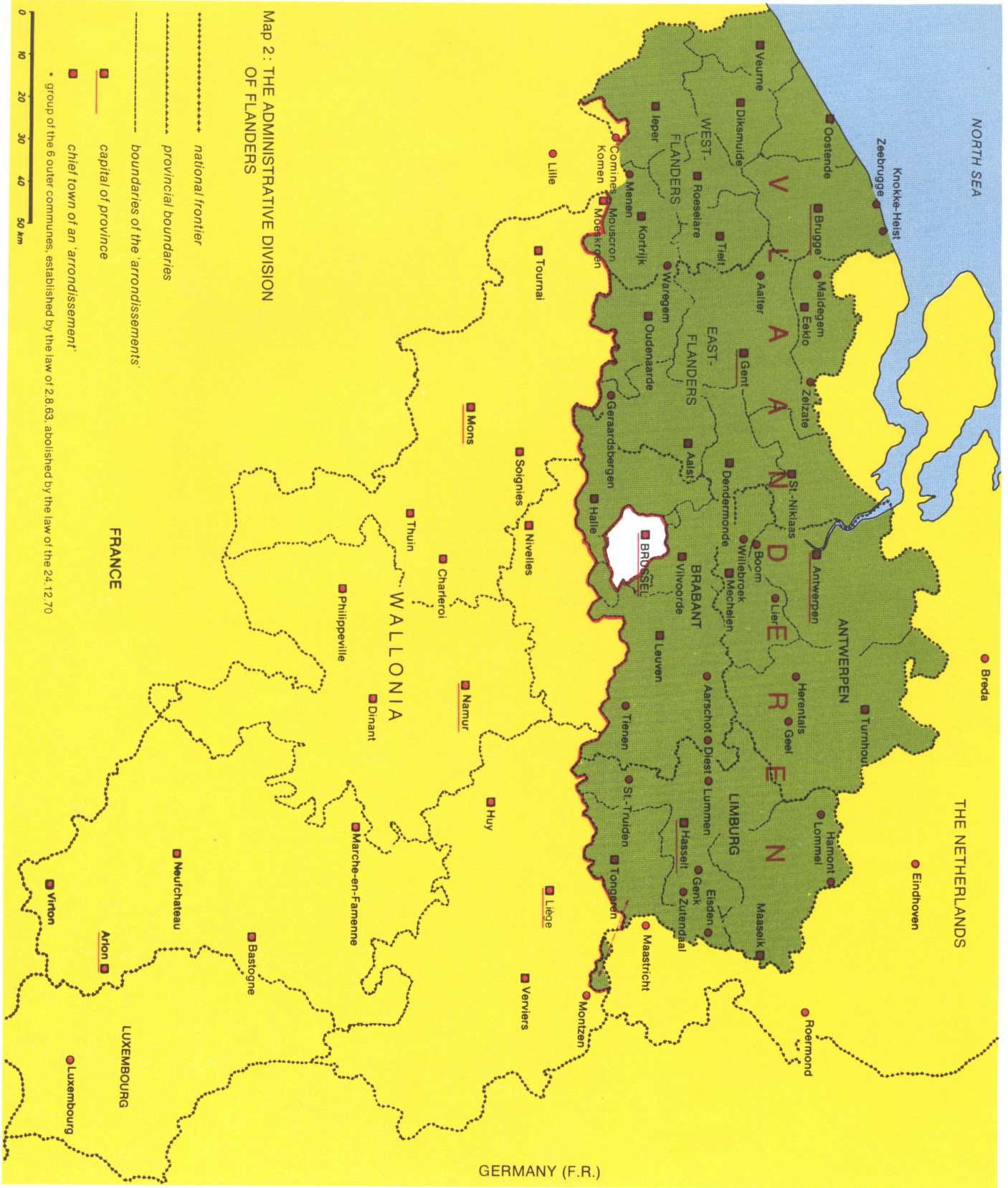
The suggestions put forward by these bodies have enriched this study in many ways. I would like in particular to express my special gratitude to Mr. A. Kinsbergen, Chairman, and Mr. G. van Gheluwe, Secretary-General.

My particular thanks are due to the managements and collaborators of the institutions mentioned above, who each in their own way contributed to the final result. No effort was spared to furnish original and realistic contributions in an atmosphere of mutual solidarity. Such cooperation was not only most valuable but also most enjoyable.

Many other persons and institutions have voluntarily contributed their mite towards the success of this survey. This applies in particular to the industrial firms who replied to the specially compiled questionnaire, thus enabling a number of analyses to be made. To all we express our warm appreciation of their assistance. I would like to name in particular two persons with whom I have had the pleasure of many interesting discussions, Professor Dr K. Tavernier and Mr. J. van Ginderachter, Departmental Head of the European Committee. Each in his way has contributed to a deepening of the study in its concept, its preparation and/or its execution.

Map 1: THE SITUATION OF FLANDERS IN THE EUROPEAN ECONOMIC COMMUNITY





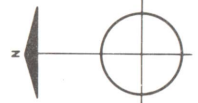
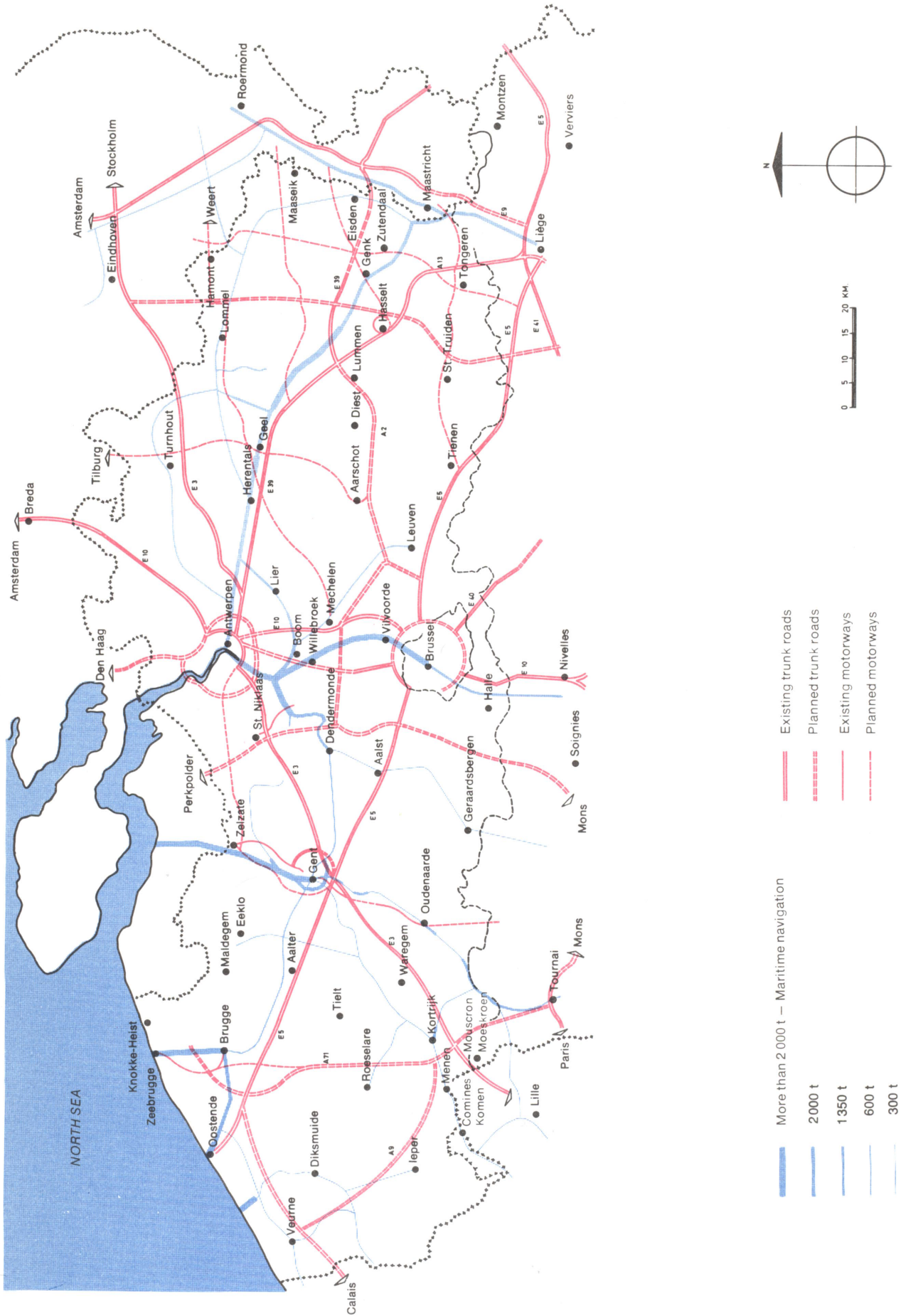
Map 2 : THE ADMINISTRATIVE DIVISION OF FLANDERS

- national frontier
- provincial boundaries
- boundaries of the 'arrondissements'
- capital of province
- chief town of an 'arrondissement'

* group of the 6 outer communes, established by the law of 2.8.63, abolished by the law of the 24.12.70



Map 3: EXISTING AND PROJECTED MOTORWAYS, TRUNK ROADS AND WATERWAYS



PART ONE: SYNTHESIS

In this first part of the general synthesis attention is focussed on five main points: (a) the position of Flemish economy in the West European perspective, (b) the evolution of the labour factor, (c) the development of the economic sectors, (d) the balance of labour and (e) aspects concerning the localization of industry.

§1. Position of Flemish economy in the West European perspective

The position of Flemish economy in the West European perspective can be viewed from a number of angles. In this survey special attention is given to four aspects, the evolution of population, the level of prosperity, growth and the structure of the economy.

It is perhaps expedient to draw attention in the first place to the geographical description of Flanders (see Map 1). In this survey Flanders is considered as comprising the provinces Antwerp, Limburg, East and West Flanders together with the districts of Halle-Vilvoorde and Louvain. As a result of the Act of 23 December 1970 the district of Brussels-Suburban was added to the district of Halle-Vilvoorde, and it is in this form that Halle-Vilvoorde is described here. In certain parts of the survey it has been necessary to accept a different definition of Flanders for statistical purposes. The region covers an area of 13502 km². The frontier situation is unusual. In the north and east it is bounded by the Netherlands, while part of the south borders on France. In the west it is separated from the UK only by the North Sea. To facilitate reference to the text the administrative division of Flanders is shown in Map 2, which also gives a few place names occurring in the text.

A. Evolution of the population

At the end of 1969 Flanders had a population of 5403377 distributed over five distinct areas as shown in Table 1. Flanders thus comprises 55.9% of the population of Belgium (9660000) and 2.9% of the population of the EEC (188973000).⁽¹⁾ The density of population is 400 inhabitants per km².

⁽¹⁾ EEC defined as before the expansion. This share drops to 2.14% in the greater EEC with its 252435000 inhabitants.

The analysis of the evolution of population is based on the figures for the last decade, 1961-69. The choice of this period is based on two considerations: (a) the availability of homogeneous statistical material and (b) the belief that only recent trends can be of use as a basis for a forecast of the evolution of population

The first factor affecting the evolution of the population is undoubtedly the rather low rate of growth. This was found to be 8.4‰ per annum. Though higher than the Belgian average of 6.4‰ this rate is lower than that of the other EEC countries, excluding Luxembourg. The EEC growth rate is 10.0 per thousand.

In Flanders itself the trend is not homogeneous. The growth rates of the various provinces vary as widely as from 17.1‰ in Limburg to 3.8‰ in East Flanders.

It is also remarkable that the growth of the population in Flanders can be ascribed for about 80% to the indigenous population, 20% being ascribable to the development of the population determinants of immigrants. This trend in Flanders is in marked contrast to the evolution of the other two Belgian regions. In Brussels-Capital and in Wallonia the growth is ascribable solely to the foreign element. In Brussels-Capital the drop in the Belgian population is very pronounced.

During the sixties the growth rate of the population declined considerably. There are several reasons for this:

- (a) a fall in the birth rate;
- (b) a rise in the mortality rate;
- (c) a decrease of the migration balance of the foreign population.

The figures for the decline in fertility during the sixties provide special food for thought. In respect of the extent of this decline a general picture for each district is given in Appendix 2. The birth rate as traditionally defined fell from 18.4‰ in 1962-63 to 15.4‰ in 1968-69. On the other hand the mortality rate for the same period rose from 10.8‰ to 11.1‰. The decline of the natural accretion is thus mainly due to the fall in the birth rate. The migration balance at the end of the last decade was less than half of that at the beginning. Migration therefore played an unimportant part in the evolution of the population as a whole.

Table 1 : The evolution of the population of Flanders during the period 1961-69.

Area	Number of inhabitants 1969 (× 1,000)	Proportion in Flanders	Average growth rate in ‰		
			Total	Subdivision total growth	
				Belgians	Foreigners
Antwerp	1.530	28,3	7,5	6,0	1,5
Limburg	650	12,0	17,1	13,0	4,1
East Flanders	1.311	24,3	3,8	3,0	0,8
West Flanders	1.052	19,5	6,8	6,4	0,4
Flemish Brabant	861	15,9	13,1	10,8	2,3
Flanders	5.403	100,0	8,4	6,9	1,5
Wallonia	3.184	—	3,3	—0,1	3,4
Brussels-Capital	1.073	—	6,1	—5,3	11,4
Belgium	9.660	—	6,4	3,1	3,3
Germany	61.195	—	10,2	—	—
France	50.522	—	11,0	—	—
Italy	54.304	—	8,9	—	—
Luxembourg	339	—	7,9	—	—
Netherlands	12.958	—	13,2	—	—
EEC	188.978	—	10,0	—	—
North Rhine-Westphalia	17.044	—	8,0	—	—
Rhineland-Pfalz	3.660	—	8,9	—	—
Champagne	1.301	—	9,8	—	—
Lorraine	2.289	—	5,6	—	—
Nord	3.842	—	6,2	—	—
Picardy	1.608	—	10,5	—	—
N. Brabant	1.788	—	19,8	—	—
Limburg	999	—	11,0	—	—

The average figures for 1968-69 are revealing in this context.

	<i>Average internal migration rate</i> ‰	<i>Average foreign migration rate</i> ‰	<i>Overall migration rate</i> ‰
Antwerp	—0.1	—	—0.1
Limburg	—2.2	+0.7	—1.5
East Flanders	—0.6	+0.1	—0.5
West Flanders	+0.1	—	+0.1
Flemish Brabant	+6.7	+0.8	+7.5
Flanders	+0.6	+0.2	+0.8

The relatively slow growth of the Flemish population in the EEC perspective must be ascribed in the first place to a low birth rate. For the reference years 1968-69 only Luxembourg of all the member states had a lower rate.

In the second place the relatively slow growth is ascribable in a wider context to the net migration rate. Germany in particular, and to a lesser degree Luxembourg, France and the Netherlands all show higher net migration rates. In Italy emigration exceeded immigration in 1968-69.

On comparing Flanders with the whole of the surrounding areas in Belgium, the Netherlands, Germany and Luxembourg it is found to hold an average position. Of a total of 12 regions Flanders takes seventh place. A higher growth rate is found in particular in the areas to the north and east of Flanders, i.e. the Dutch and German regions.

A final population characteristic is the relatively advanced age structure of the population. The age index is typical in this respect (index 48). It is however true that the age index for Flanders approaches that of the EEC and the region also has a relatively younger population than Wallonia (index 64) and Brussels-Capital (index 83). Within Flanders itself large differences are again found, from 58 and 53 for East Flanders and Flemish Brabant respectively to 25 for Limburg.

B. Level of prosperity

Although the concept of prosperity has a number of dimensions we may start from a single synthetical figure to express and pin-point the prosperity level of Flanders. This synthetical figure is made up of the net internal product against factorial costs (this will be called the net regional income in the following). International placings is made even more difficult by the fact that rates of exchange reflect only very partially the respective proportional spending powers.

The net regional income per capita (1963 prices) in Flanders in 1968 was on average Fr. 66200. This puts Flanders slightly below the average Belgian level of Fr. 69700. The two other Belgian regions, Brussels and Wallonia, had an income level of Fr. 93800 and Fr. 63500 over the same period. (1)

Flanders thus shows a level of income which is roughly equal to that of the European Economic Community before its enlargement. For this international comparison the official rate of exchange was not used, but replaced by a calculated buying power ratio which in so far as possible takes into account international differences in spending patterns and the corresponding price structures. In the regional context the income level of Flanders is placed in a fairly homogeneous field. The lag in comparison with the most prosperous adjacent region is about 16% (North Rhine-Westphalia). The superiority over the poorest adjacent region is about 9% (Rhineland-Pfalz). This means that these differences are less pronounced than the differences within Flanders itself. (2) This is shown by the per

(1) For statistical reasons Flanders is here defined as the four Flemish provinces and the districts of Louvain and Halle-Vilvoorde. Wallonia is defined as the whole of the Wallon provinces plus the district of Nijvel. In other words, the regional data for Brussels cover a part of the territory of Flanders as defined in this survey in general.

(2) The size of the areas plays an important part here.

capita income level per province as compared with the Belgian level taken as 100.

Antwerp	104.1
Limburg	73.4
East Flanders	94.3
West Flanders	92.6

The differences in level of prosperity are due to the specific economic structure with unequal degrees of activity, especially in the case of women.

	Men	Women	Total
East and West Flanders	54.3	21.9	37.9
Antwerp and Limburg	51.4	18.0	34.8
Flanders	52.8	19.9	36.3
Brussels	56.2	26.4	40.8
Wallonia	51.0	18.1	34.3
Belgium	52.7	20.3	36.3

The level of prosperity as apparent from the income analysis is however slightly altered when the negative wealth factors such as unemployment and commuting are taken into account. The present level of unemployment gives rise to no special concern from the general point of view, as is also the case in the other regions of Belgium and northwestern Europe; the same cannot be said of commuting. (3) By national as well as international standards the socially unfavourable prevalence of commuting is considerable and constitutes a considerable loss in wealth. The Flemish outgoing shuttle, especially into Brussels, shows further a tendency to increase.

C. Economic growth

During the past decade (1961-68) the growth of regional income in Flanders exceeded that of the regions of Brussels and Wallonia both in total and per capita.

	Index 1968 (1961 = 100)
Flanders	131.6
Brussels	124.0
Wallonia	121.5
Belgium	126.9
EEC	130.1

(3) At the moment of finalizing this report the situation is less favourable than when the survey was begun in 1970. It must also be appreciated that not all the unemployed can be regarded as fully employable.

The absolute growth of income is lower than that of the EEC. The low population growth however results in a slight excess of the growth of income per head over the EEC rate.

The growth determining factors of Flemish economy as manifested over the past decade obviously demanded further investigation. For this the well-known Denison method⁽¹⁾ was employed. This method was chosen for its pragmatic character, the statistical sources available and the possibility of comparison with the nine other countries to which E. F. Denison has already applied his method.

Comparison of the results for Flanders with the growth patterns of these other countries permits us, more effectively than by any other means, to throw light on the specific growth forces and friction points of Flemish economy (see Appendix 3 and 4).

For the period 1955-62 the growth rate was 3.4%. Of this 50% must be ascribed to an increased and improved factor input and the other half to a better distribution of economic activity, scale influences and an increase in technological knowledge. It is the labour factor in particular which fosters the growth of the factor input. In this respect Flanders reveals a characteristic growth pattern of its own. The larger part played by the labour factor in contrast to most of the other regions under consideration is composed of three elements: (a) a considerable expansion of employment, (b) a noticeably higher level of education among the employed and (c) the orientation of the new opportunities for employment towards the high side of the wage scale in the case of male workers. The labour factor's contribution to the growth is as encouraging as that of increased capital investment is discouraging. Of the 12 regions and/or countries studied only Wallonia and the UK showed a lower contribution. Nor can any relatively strong forces of growth be identified for Flanders when the contribution of the factors which affect productivity (better distribution of industry, scale influences and technical knowledge) are analysed.

These considerations apply to the period 1955-62. Since 1962 an acceleration of growth has been experienced in the Flemish region. Over the period 1962-68 the annual growth rate was 1.23% higher than for the years 1955-62. Application of the Denison method gave the following explanation of this.

The improvement is ascribable not so much to a further increase of the labour input as to the so-

called productivity factors. In respect of the labour input the educational level continues to rise while the growth stimulant provided by an accelerated rate of employment has somewhat declined. The growth contribution of capital investment is increasing, but still remains rather weak in comparison with the European level.

The greater contribution of the productivity factors is mainly on two levels, the scale effects on the one hand and on the other a dramatic improvement in factors which are not specifically analysed in the method, but which come under the so-called residual factors. Further analysis permitted the identification of the following residual factors: an improvement of the industrial structure, more emphasis on an optimum size of industrial unit and a rejuvenated capital structure. The analysis of the economic structure confirmed this.

D. The economic structure

The economic structure was examined in particular from the point of view of growth potential, under direct reference to the Denison method. For this purpose the index of the structural growth potential was determined. Growth per sector and the sectorial structure within the EEC was taken as the point of departure (= 100).

Table 2 : The index of structural growth potential, 1955-68

Area	1955	1961	1968
Antwerp	95.6	100.2	103.7
Limburg	60.7	69.1	82.3
East Flanders	87.1	85.0	92.4
West Flanders	82.2	83.7	87.7
Flanders	88.3	89.9	94.7
Wallonia	83.6	89.8	89.3
Belgium	89.8	90.9	94.7
EEC	100.0	100.0	100.0

Table 2 shows clearly that from the point of view of internal growth the dynamic force of the sectorial structure in Flanders is weak. Only the province of Antwerp gives a relatively favourable picture. The improvement of the index of the structural growth potential during recent years confirms the results obtained by the Denison analysis.

(1) E. F. DENISON, *Why growth rates differ*, Washington 1967.

Within the existing industrial framework, however, Flanders achieved satisfactory results. The index of the growth realized over the period 1961-68 was 117.4 for Flanders as against 81.8 for Wallonia and 100.1 for Belgium (the growth in the EEC was taken as the norm = 100). This means that within the existing structure Flemish economy put up a better performance than the EEC. This is in sharp contrast to Wallonia, which combines a poor structure with an equally poor growth effort within that structure.

It also means that the difference between the index of the growth potential (94.7) and that of the growth effort (117.4) indicates that the population of Flanders must intensify its performance considerably if it is to catch up with the general EEC level of prosperity.

In the future more attention must undoubtedly be paid to the growth sectors. On the basis of the EEC growth rate per sector, the dispersion forces within the sectors and the sectorial labour productivity in the past, the following sectors may be regarded as growth sectors: the metalworking industry, the chemical industry, iron, steel and non-ferrous metals, and the transport sector. Three other industries may be classified in a second group: timber and furniture, financial services and the sub-group electricity, gas and water. Later on in this survey another analysis of the growth sectors will be made, based on the future expectations.

Flanders is also not fortunate in its dimensional structure. Flemish industry is made up on average of smaller businesses than Belgium as a whole, which in its turn lags a good deal behind all the other EEC countries except Italy. In a survey of the dimensional structure, the sectorial structure must however be taken into account. When this aspect is included the Belgian lag by comparison with the rest of the EEC is less marked. It should also be remembered that the largest size is not always the most efficient. A larger dimension must however ultimately lead to a better competitive position. On the sectorial scale some improvement in dimensional structure was observable in Flanders during the period 1961-68. The link with the adjusted contribution of the residual factors in the Denison method is again very clear.

§2. The development of the labour factor

A. The anticipated evolution of population

In the preceding section where Flemish economy was viewed in the European perspective, the low growth of population was already seen as a major factor. On the basis of predictions in respect of fertility, mortality and migration the population growth in Flanders will continue to remain weak during the period of forecast, 1970-85.

Table 3 : Evolution of the population of Flanders per province from 1970-85 (× 1,000)

Province	Number				Evolution 1970-85	Index (1970 = 100)		
	1970	1975	1980	1985		1975	1980	1985
Antwerp	1,543.0	1,583.0	1,618.7	1,653.8	+ 110,8	102,6	104,9	107,2
Limburg	657.2	688.9	718.9	750.1	+ 92.9	104.8	109.4	114.1
East Flanders	1,313.1	1,326.2	1,337.9	1,348.2	+ 35.1	101.0	101.9	102.7
West Flanders	1,059.1	1,080.5	1,100.1	1,118.9	+ 59.8	102.0	103.9	105.7
Flemish Brabant	870.9	911.2	944.4	975.3	+ 104.4	104.6	108.4	112.0
Flanders	5,443.3	5,589.8	5,720.0	5,846.3	+ 403.0	102.7	105.1	107.4

In the period 1965-70 the increase was 179 000 inhabitants. This figure will fall to 146 000 in the period 1970-75, 130 000 in the period 1975-80 and 126 000 in the period 1980-85. Expressed in relative terms this means an annual growth of 0.66% for 1965-70 and 0.47% for the forecast period 1970-85. As in the past the evolution of population per province and per district will be very unequal. Although the fertility rate in Limburg will decline to a greater degree than that of the other Flemish provinces, the growth rate in this province is double that of the Flemish region as a whole.

Expressed in absolute figures the increase in the number of inhabitants will be highest in the province of Antwerp, with an average annual increase of 7 to 8,000 inhabitants. The increase in Flemish Brabant is also noteworthy, with an anticipated increase of 8 000 in the next five years and 6 000 in the five years after that.

Not only is a lower growth rate expected, but the age structure will also alter during the period 1970-85.

Over the period 1970-80 a constant absolute decline in the younger age group 0-14 years may be expected. After that stagnation will be reached. Over the period 1970-80 the decrease will amount to 6.4%. The middle group, that of the productive labour force (15 to 64 years), will however continue to increase throughout the periods under consideration. The survey period in general shows an increase of 381 000 or 11%. This increase will be still greater in the case of the elderly (16.8%). This growth will however be distributed integrally over the period 1970-80.

In respect of higher education it is important to stress that during the seventies the younger group of 15 to 24 years will increase by 118 000 persons. In the following five years however a drop of 31 000 is to be anticipated.

Table 4 : The evolution of the population of Flanders per age group, 1970-85 (× 1,000)

Age Group	1970		1975		1980		1985		Evolution 1970-85	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-14 years	1,342.4	24.7	1,299.2	23.2	1,243.9	21.8	1,257.1	21.5	- 85.3	93.6
15-64 years	3,459.9	63.6	3,581.6	64.1	3,724.3	65.1	3,840.9	65.7	+ 381.0	111.0
> 65 years	640.9	11.7	709.0	12.7	752.0	13.1	748.4	12.8	+ 107.5	116.8
Total	5,443.2	100.0	5,589.8	100.0	5,720.2	100.0	5,846.4	100.0	+ 403.2	107.4

B. The supply of labour

The anticipated population development per age group is one of the elements which reflect directly upon the supply of labour. It has already been pointed out above that the age group containing the productive labour force will increase by 11.1%. On the basis of the expected population structure and the assumed degree of activity the economically active population will increase from 2 066 000 to 2 379 000 persons over the period 1970-85 i.e. a growth of 313 000 inhabitants or 15.1%. It should be noted that women represent two-thirds of the growth of the economically active population. Parallel to the general population development the

age structure of the Flemish population will be subject to a marked change over the forecast period. Predictions indicate a decreased relative share of the extreme age groups (15 to 24 and over 55 years). This trend affects males as well as females and occurs in each of the provinces. The strong growth of the middle group (25 to 54 years) improves the supply of labour qualitatively. The volume of productivity will therefore increase by 2.2% for men and 3% for women over the period.

A second qualitative factor is linked with the level of education. As the available figures are very out of date recourse was had to the results of the

industrial inquiry carried out among industrial and commercial firms in Flanders.

In the industrial sector only 16.7% of the workers have received secondary education, excluding those with higher education. ⁽¹⁾ In respect of the

regional differences in secondary education the higher level of the province of Antwerp is noteworthy (20.4%). Its individual sectorial structure combined with the larger size of the businesses in this province explain this circumstance. ⁽²⁾

⁽¹⁾ This relates to the levels A3 (lower secondary technical education), A2 (higher secondary technical education) and C2 (lower grades training for girls) and C1 (average secondary trades training for girls).

⁽²⁾ The size of a firm is however not always either the cause or the results of a higher educational level.

Table 5 : Evolution of the economically active population of Flanders per province, 1970-1985.

Province		Absolute Number (× 1000)				Evolution 1970-85	
		1970	1975	1980	1985	Number	Index (1970 = 100)
Antwerp	M(ale)	421.3	425.6	434.6	445.8	+ 24,429	105.8
	F(emale)	164.8	182.1	201.3	222.7	+ 57,928	135.1
	Total	586.1	607.7	635.9	668.5	+ 82,357	114.1
Limburg	M	169.4	180.8	194.2	207.9	+ 38,478	122.7
	F	59.1	73.9	90.8	107.4	+ 48,333	181.8
	Total	228.5	254.7	285.0	315.3	+ 86,811	138.0
E. Flanders	M	357.8	354.1	355.4	360.6	+ 2,853	100.8
	F	155.2	162.9	170.0	177.8	+ 22,610	114.6
	Total	513.0	517.0	525.4	538.4	+ 25,463	105.0
W. Flanders	M	285.1	287.6	292.6	296.7	+ 11,588	104.1
	F	116.6	126.8	138.8	149.6	+ 32,988	128.3
	Total	401.7	414.4	431.4	446.3	+ 44,576	111.1
Flemish-Brabant	M	240.9	252.8	264.2	276.0	+ 35,099	114.6
	F	95.7	109.5	123.0	134.2	+ 38,476	140.2
	Total	336.6	362.3	387.2	410.2	+ 73,575	121.9
Flanders	M	1,474.5	1,500.9	1,541.0	1,587.0	+ 112,447	107.6
	F	591.4	655.1	723.9	791.7	+ 200,335	133.9
	Total	2,065.9	2,156.1	2,264.9	2,378.7	+ 312,782	115.1

For the determination of future labour requirements it is not alone the labour supply which must be taken into account but also the negative prosperity phenomena mentioned above, such as unemployment and recoverable commuter migration.

In the spring of 1971 the effective unemployment reserve was fairly low on the basis of the hypotheses employed. It amounted to 1690 persons, almost entirely concentrated in the province of West Flanders. Far greater was the reserve in the recoverable commuter labour force. It should be emphasized that the hypotheses used were strict

but probably quite realistic (sub-division in respect of distance and sector). On the bases of these hypotheses it was found for 1969:

- that in Brussels-Capital there is a realisable reserve of 35 000 workers for Flanders;
- that there is a second migration reserve in the Louvain district (6 700 workers);
- that the migration movement from foreign countries constitutes an important labour reserve for certain regions (16 200 workers);
- that about three key points in Flanders form not only the poles of attraction for foreign labour

but also draw labour from the reserves of other Flemish regions. For Antwerp the balance is negative (-5000), for Ghent it is positive (+3300), also for Bruges (+1000).

A final component of the labour reserve lies in the potential reserve of female labour. The unequal share of the female population of Flanders in the economic life shows that some regions have a

potential labour reserve which has so far not been evaluated.

The average employment quotas of the Flemish textile areas were taken as the basis of comparison, while it was assumed further that the potential reserve of women workers will have been reduced to zero by 1985. Table 6 gives a general picture of the estimated reserves.

Table 6 : The potential reserve of female workers 1970-85 (× 1,000)

Province	Potential reserve			Reserve to be activated per period		
	1970	1975	1980	1970-75	1975-80	1980-85
Antwerp	23.2	16.2	8.7	7.0	7.5	8.7
Limburg	20.4	14.8	8.1	5.6	6.7	8.1
East Flanders	4.8	3.2	1.7	1.6	1.5	1.7
West Flanders	12.5	8.4	3.8	4.1	4.6	3.8
Flemish Brabant	12.6	9.1	4.8	3.5	4.3	4.8
Flanders	73.5	51.7	27.1	21.8	24.6	27.1

This gives a total of 73 500 for Flanders for the overall period 1970-85, of whom 21 800 to be activated over the period 1970-75, 24 600 over 1975-80 and 27 100 over 1980-85. ⁽¹⁾

The employment of foreign workers is a special aspect of the labour supply. In 1970 there were 41 000 wage-earning foreigners in Flanders, or about 4% of the corresponding R.M.Z. employment quota. ⁽²⁾ These wage earners are employed mainly in the industrial districts of Antwerp (11 100), Hasselt (10 200) and Halle-Vilvoorde (6 400). Most of the foreign labour is employed in the sectors extractive industries (44%) and machine construction (33%). An important factor is the attitude of the regional governments, commerce and industry and the labour unions towards the future employment

of foreigners in Flanders. The general opinion appears to be that the further recruitment of foreign labour into Flemish economy should be restricted as far as possible. Arguments put forward are the present labour surplus, the growth of the native productive population, the anticipated laying off of workers in certain stagnant sectors, under-employment in some groups of the population, low productivity of the foreigners, higher costs of education, different ways of life and psychological difficulties.

All this does not imply that further recruitment of foreign labour must be 'entirely' excluded. This is in any case legally impossible under the agreement on the free movement of persons which Belgium signed along with the other EEC members. From the point of view of economic necessity too it is not inconceivable that in certain regional or sectorial sub-markets the internal labour potential will prove inadequate—despite increased internal migration—so that points of friction may well arise.

⁽¹⁾ On the basis of the working hypothesis these 73 500 form part of an estimated general accretion of 313 000 workers.

⁽²⁾ Including workers from the Dutch frontier zone.

C. *Mobility of the labour factor.*

1. Economic importance

The Denison method revealed that the post-war development of the Flemish economy was to a large extent fostered by the quantitative and above all the qualitative improvement of the labour input. On the basis of this finding an economic policy aimed at the stimulation of growth and a harmonious spatial distribution of wealth must give high priority to ensuring that the labour factor is put to the best possible use in the production process.

In respect of mobility three aspects may be distinguished: geographical mobility, occupational mobility (adaptability of occupation and education) and sectorial mobility (reallocation of labour to different sectors and branches of industry).

The question may be raised as to how far these various forms of mobility contribute to a higher growth of productivity and income and to a more homogeneous distribution of wealth.

The Denison analysis showed clearly that in the case of Flemish economy a considerable fund of growth potential lies in better education and increased labour productivity, and to a lesser degree in an expansion of employment and more effective sectorial distribution. From this point of view economic growth in Flanders would be best served

by an increased mobility of skilled labour. In practice however it is difficult to maintain a division into the sectorial, occupational and geographical forms of mobility. On a macro-economic scale geographical mobility must be seen as a necessary but in itself insufficient condition for further growth. The most effective dose of geographical mobility depends, however, on the relative importance which the community attaches to the costs (cost of transport, psychological and social problems), and the profits (job availability, wage differences, differences in productivity) of a higher degree of mobility.

2. Geographical mobility

The sectorially more favoured regions exert an attractive force on the weaker regions with a resultant positive balance of commuting and migration. Mention has already been made above of the first aspect of geographical mobility, namely commuting. So far we have discussed only the recoverable commuter reserve. It is however necessary to point out some further aspects of geographical mobility.

Through the lack of recent statistical data concerning the commuter flow recourse was again had to the results of the inquiry carried out in commerce and industry. It became clear from this that the recruiting radius of commerce and industry is much smaller than was generally claimed. This applies equally to small, medium and large firms.

Table 7 : The recruitment radius of industrial firms in Flanders, 1971

	Antwerp	Limburg	East Flanders	West Flanders	Flemish Brabant	Flanders
<i>Workers</i>						
-15 km	78.6	83.4	88.2	87.1	71.7	82.5
15-30 km	15.0	13.2	9.5	11.0	20.1	13.2
30 km & over	6.4	3.5	2.3	1.9	8.3	4.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
<i>Clerical staff</i>						
-15 km	75.9	79.1	76.6	83.7	71.5	77.0
15-30 km	17.3	13.8	14.7	10.3	18.2	15.5
30 km & over	6.8	7.1	8.7	6.0	10.3	7.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

About four-fifths of the employed are recruited within a radius of 15 km. This gives a very important indication of the spread of the industrial cores of Flanders. To be employed near home can be interpreted as a sign of increased prosperity.

These figures, however, give a distorted picture of long-distance commuting in Flanders as a whole because they do not include either labour in the building industry and the tertiary sector or the workers and office staff employed in the centres of attraction outside Flanders (Brussels, Louvain and the frontier zones).

The available statistical sources do at all events indicate that commuting in Flanders poses much greater social problems than in Wallonia.

A second aspect of geographical mobility is that of definitive migration. This is in many cases a substitute for commuting. A typical example is provided by the Westhoek and Tielse districts. There may also be a counter-flow. Some districts with a very large outward commuter flow such as Alost, Dendermonde, Oudenaarde and Louvain have a very small emigration surplus, or even a marginal immigration. In these districts commuting is apparently a substitute for the trend towards migration to Brussels.

It appeared from the regression analysis that job availability in the surrounding regions has a much greater influence on commuting than regional differences in wages. Wages are however an explanatory factor for the labour flow between those regions in which job availability is equal.

In respect of definitive migration M. Termote indicates as explanatory factors: (a) job availability, (b) the part played by the agricultural population in the economic pattern and (c) the average wage level. ⁽¹⁾

3. Sectoral mobility

An analysis of the employment opportunities per sector gives an initial but by no means clear picture of sectoral mobility. Sectors in which labour was laid off during the post-war period were the primary sector and the extractive industries. Intake sectors were in particular the building industry and the tertiary sector. The transport and industrial sectors remain fairly stable in respect of employment opportunity. Although employment has become stagnant in the industrial sector this overall statement conceals a diversified pattern which can be described as 'industrial mobility' (see below).

⁽¹⁾ M. TERMOTE, 'Un modèle de migration pour le Belgique', Louvain, 1968.

A first specific aspect of sectoral mobility concerns the sectoral turnover. In respect of the workers of Flemish industrial firms, as the inquiry conducted in 1970 revealed, an average of 24.2% were recruited and 17.3% were dismissed or left voluntarily. ⁽²⁾ For clerical staff the figures were 12.2% and 6.2% respectively. In all sectors except the mining industry recruitment figures were higher than those of dismissals or voluntary departure.

The part played by the labour exchanges of the State Department for the Recruitment of Labour (RVA) in the total of sectoral recruitment is extremely low for white-collar workers (1.4% of the whole recruitment total). The workers rate is 6.6%. The RVA plays a more important role in the food supply and non-metal minerals sectors.

A second specific aspect of sectoral mobility is the sectorial origin of the newly recruited labour. Generally speaking inter-industrial mobility (i.e. recruitment from other industrial sectors) is greater than mobility within a given industry.

	Workers	Clerical staff
Primary sector	3.4% ⁽¹⁾	0.5%
Extractive industries	1.4%	0.8%
Building	4.8%	1.5%
Transport	2.3%	1.0%
Trades & services	5.2%	17.2%
Own industrial sector	24.9%	19.5%
Other industrial sectors	37.1%	21.6%
School leavers	20.8%	38.0%
Total	100.0%	100.0%
⁽¹⁾ Of 100 workers recruited 3.4% are recruited from the primary sector.		

This has important consequences for on-the-job training by industrial firms. The preponderance is probably due to reallocations on the labour market within a given region. As has already been shown, an employer recruits within a limited radius. Within this radius he will not always be able to find a sufficient supply of workers in his own sector. Only the regionally concentrated sectors such as textiles and clothing are an exception to this rule.

The group 'school leavers' is also of importance in the context of new recruitment: 20.8% for workers and 38% for white-collar workers.

⁽²⁾ Including retirement and death.

The analysis of sectoral and industrial mobility shows clearly that an expansion of employment is almost always accompanied by a wage increase. This is not the case for the sectors with a shrinking employment capacity.

In respect of sectoral (+ occupational) mobility mention may be made of the closing down of businesses in the recent past. During the period 1965-79, 956 Belgian firms went out of business, involving 80900 workers. Flanders (excluding Halle-Vilvoorde and Brussels-Suburban) accounted for 501 of these, involving 31900 workers. Sectors particularly affected were the metal industries (in the wider sense) with 195 closures, textiles (134) and clothing (115). This typifies the distribution per province within Flanders.

	Number of firms	Number of workers affected
Antwerp	131	7,380
Limburg	39	7,190
East Flanders	171	10,524
West Flanders	146	5,413
Louvain district	14	1,432

4. Occupational mobility

The problem of occupational mobility comes sharply to the fore in those regions which have a large share of the branches of industry with a shrinking employment capacity (agriculture, mining, textiles).⁽¹⁾ In this respect the need for re-training is particularly urgent in the provinces East Flanders and Limburg, to a lesser degree also in West Flanders.

Occupational mobility is mainly achieved through retraining, either by the RVA or by private firms. For men, retraining by or under the supervision of the RVA from other trades is directed chiefly towards the building and metal industries. During the sixties a large number of miners were also retrained. Female applicants for retraining were schooled as seamstresses, machinists, waitresses, kitchen help or typists.

In addition to retraining by the RVA (State Department for the Recruitment of Labour), the re- or further training provided by numerous firms, with or without the assistance of the RVA, constitutes an important factor in occupational mobility. In order to form some idea of the scope of such training the results of the industrial inquiry were analysed.

⁽¹⁾ The drain from agriculture must be viewed not so much in the light of a move to another sector but rather as the end-of-the-line for a particular occupation.

Table 8 : Proportion of workers receiving re- or further training in Flemish firms during the years 1969 and 1970 (in % of number of workers or white-collar workers on 1 March 1971)

SECTOR	Workers		Clerical staff	
	No of workers in the firms questioned on 1.3.1971.	Proportion receiving re- or further training 1969 & 1970	No of clerical staff in the firms questioned on 1.3.1971.	Proportion receiving re- or further training 1969 & 1970
Extractive Industries	20,238	11.9	1,061	1.1
Foodstuffs	15,038	2.0	3,702	2.6
Chemicals	10,759	8.4	4,788	6.6
Timber	9,504	4.0	1,127	2.9
Paper	6,654	10.9	1,650	3.7
Leather	1,306	9.2	154	8.4
Textiles	19,754	14.8	2,348	2.8
Clothing	10,289	17.5	822	3.5
Non-metal minerals	9,148	9.1	1,469	0.3
Sheet & non-ferrous metals	25,056	19.3	6,149	14.8
Metal industry	65,610	38.8	15,660	32.1
Sundry	5,826	8.4	1,221	1.9
Unknown	5,261		1,367	
Total	204,493	20.7	41,518	16.4

Source : Inquiry conducted by the Provincial Economic Councils.

The re- or further training given in the industrial firms is thus a fairly important factor, even allowing for the fact that the results are somewhat distorted by one firm in the metal industry which gave a short training course to almost 10 000 workers.

In practice such re- or extended training is spread over unequal periods. In general the training course is brief (maximum 4 weeks).

	Workers	Clerical staff
Less than 2 weeks	6.7% ⁽¹⁾	7.9% ⁽²⁾
2 to 4 weeks	2.7%	6.9%
1 to 2 months	6.2%	0.2%
2 to 4 months	2.6%	0.5%
4 to 6 months	1.1%	0.3%
6 months & more	0.1%	0.2%
Period unspecified	1.3%	0.3%
Total	20.7%	16.4%
<small>(¹) Percentage of the number of workers per 1.3.71. <small>(²) Percentage of the number of clerical staff per 1.3.71.</small> </small>		

The training of white-collar workers is not only less frequent than for industrial workers, but also covers a much shorter period. The reasons given by the firms for re- or further training vary considerably:

- (i) insufficient adaption of level of technical education to the requirements ;
- (ii) intensive specialization in certain jobs which cannot be covered in the standard curriculum ;
- (iii) necessity of recruiting unskilled labour because of shortage of labour ;
- (iv) introduction of new techniques and machinery ;
- (v) the aim of an increased stability of the labour force.

§3. The development of the economic sectors

The development of the economic sectors was viewed from two angles in accordance with the aims of the survey. The first angle was that of job availability ; the second is based on the gross added value. In both cases a further subdivision into two

parts was aimed at: in the first the emphasis is on the various economic sectors, in the second on regional distribution.

A few preliminary remarks are necessary to enable a correct interpretation of the survey results summarized in the following tables.

1. Because of the differences in point of departure and definition of the field of survey in the two main sectors, the relative share of each main sector in the matter of job availability cannot be determined. It follows that the total figure contains a fictive figure. The main trend is however made clear. The difficulty does not arise in respect of the gross added value, for which Flanders is defined as the whole of the four Flemish provinces with the addition of the Louvain district. (Only the agricultural sector is related to the survey definition of Flanders).
2. The survey does not in fact cover all sectors. In respect of the primary sector neither fisheries nor forestry was included. The industrial sector covers approximately 97% of the total field; no attention was paid to the sector sundry trades. These sub-branches play only a marginal part in the whole complex of Flemish economy. The tertiary sector however is fully incorporated in the survey.
3. The amount of difficulty encountered in determining the job availability per main sector varied greatly. In the agricultural and secondary sectors the methods peculiar to these trades were applied; for the tertiary sector the results are based on the national figures of the five-year plan 1971-1975. Caution must therefore be exercised in the interpretation of the tertiary sector.

A. The development of job availability

During the post-war decade many agricultural units went out of existence. Of more than 100 000 farms worked in Flanders in 1960 about 3 000 dropped out each year in the following decade. A forecast based on the Markov Series applied to the age structure of master farmers indicates that the number of farms will have fallen to 58 000 units in 1975. This number would probably decrease still further to 42 000 in 1980. This means that the number of older master farmers is rapidly and steadily declining and the supply of younger farmers is gradually decreasing.

Through the decrease in the number of farms and their labour requirements and the decline in the number of persons continuously employed in the opportunity sector it is estimated that the number

of persons engaged in Flemish agriculture will drop to one half during the period 1970-80. It is forecast that of the 54000 expected to be still employed in this sector 20000 will be working in West Flanders. For Flemish Brabant the expectations are that the effective agricultural labour force will drop by two-thirds during the coming decade.

The supply of casual labour changes little in this general picture. It may thus be predicted that the number of fully skilled farm workers will be nearly halved during the period 1970-80.

This represents an annual decrease of 6.1%. The forecast for West Flanders is 3.1% and for Flemish Brabant 9%. The remaining Flemish provinces fall between these two extremes. One important point must be made in respect of job-availability in agriculture: more than in the past, and increasingly

in the future, we have an increase in the indirectly associated trades in the secondary and tertiary sectors (seasonal labour, cattle fodder production etc.) which will suffer by the reduced employment opportunities in the primary agricultural sector. As a result of the mechanization of agricultural production processes and a corresponding specialisation of labour we have a continuous narrowing down of what was traditionally understood by on'.

2. Industry

The forecast for job availability in industry shows a virtual stand-still. Over the period 1970-1975 the number of employees may be expected to increase from 786000 to 820000, or a growth of only 34000 jobs; for the following five years the growth drops to about 4600. Thus industrial job availability in

Table 9 : The evolution of job availability per sector 1970-1980 (× 1,000)

Sector	1970	1975	1980	1980 (1970 = 100)
A. Agriculture (a)				
1 Masters	73.6	57.8	41.7	57
2 Total permanent workers	106.3	81.2	53.8	51
3 Casual labour	80.0	62.4	49.6	62
4 Skilled workers	109.7	84.4	58.3	53
B. Industry (b) (c)	785.7	819.5	823.8	105
1 Food, drink, tobacco	98.9	94.1	90.2	91
2 Textiles	92.8	87.8	73.2	79
3 Clothing, leather	68.3	63.8	54.6	80
4 Timber	43.8	42.7	43.0	98
5 Paper, printing	27.1	30.9	32.5	120
6 Chemicals	40.9	47.4	51.7	126
7 Building materials	30.2	31.1	31.7	105
8 Raw metal industry	15.9	17.2	18.4	116
9 Metal industry	172.7	196.3	210.0	122
10 Building	160.8	178.2	191.3	119
11 Power, water	34.3	31.0	27.2	79
C. Tertiary sector (a) (d)	875.2	933.6	995.8	114
1 Services	450.0	488.7	529.5	118
2 Trades	252.3	260.1	269.1	107
3 Transport & communications (e)	140.8	146.3	152.4	108
4 Financial services	32.1	38.5	45.8	143
D. Total (A₂ + B + C) (e)	1,767.2	1,834.3	1,873.4	106
(a) Survey definition of Flanders (b) The four Flemish provinces and the Louvain district (c) Excluding the group: sundry industries with 28000 units (d) Including garages (e) The total should be interpreted in the light of the comments made in the text.				

Flanders will rise only by 5% over the whole period 1970-80. The very small increase in employment after 1975 is explained by two hypotheses of the survey. Firstly, an acceleration of productivity is expected after 1975, and secondly a less rapid increase in the added value of most of the industrial sectors.

It is true that the evolution is not equal in all provinces and all sectors. The development per province may be summarized as follows. During the next five years industrial employment opportunities will increase in all the Flemish provinces, but to an uneven degree. The predicted number of autonomous additional jobs is put at 21200 for Antwerp,

8700 for Limburg, 4900 for West Flanders and 800 for East Flanders. (1) After 1975 industrial employment will continue to rise slightly in Antwerp and Limburg but it will decrease in East and West Flanders.

The growth of employment is centred on two major sectors, the metal industry and building. In the period 1970-75 these two industries will create respectively 23 600 and 17 400 new jobs.

(1) These predictions are based on an autonomous development of the existing firms. It should be noted further that a subdivision into smaller sub-areas increases the chance of divergency between the predicted and actual growths.

Table 10 : The evolution of job availability per province and per main sector 1970-1980 (× 1,000) (1)

Main sector	Antwerp	Limburg	East Flanders	West Flanders	Flemish Brabant
A. Agriculture					
1 Master farmers					
1970	12.2	8.7	19.1	19.0	14.5
1975	9.6	6.9	14.3	17.2	9.8
1980	6.8	4.8	9.7	15.2	5.2
2 Total permanent workers					
1970	17.7	12.3	28.1	27.6	20.6
1975	13.6	10.1	19.8	24.4	13.4
1980	8.7	6.2	12.2	19.8	6.8
3 Casual labour					
1970	13.2	13.4	17.7	14.3	21.3
1975	10.2	10.7	13.7	10.6	17.1
1980	8.1	8.6	10.9	8.3	13.6
4 Skilled workers					
1970	18.2	13.5	28.3	27.2	22.4
1975	14.0	11.0	20.3	23.8	15.3
1980	9.4	7.3	13.2	19.6	8.8
B. Industry					
1970	257.0	92.3	218.5	173.5	n.a.
1975	278.2	101.0	219.3	178.4	n.a.
1980	289.2	105.0	209.3	175.1	n.a.
C. Tertiary Sector					
1970	316.8	83.1	193.4	175.0	106.8
1975	337.0	91.5	201.6	186.7	116.7
1980	358.5	100.6	210.1	199.2	127.5
D. Total (A₂ + B + C)					
1970	591.5	187.7	440.0	376.1	n.a.
1975	628.8	202.6	440.7	389.5	n.a.
1980	656.4	211.8	431.6	394.3	n.a.

(1) Notes as in Table 9.

This growth will slow down to 13700 and 13100 respectively during the period 1975-80. These two sectors are also ahead in respect of relative growth (+22%) coming immediately after chemicals (+26%).

Four sectors, however—food, textiles, clothing (incl. leather) and power-water—will have far fewer jobs to offer. The drop in employment capacity varies from 10% to about 20% over the period under consideration.

A forecast was also made of the development of employment opportunity per sector ⁽¹⁾ in relation to the sectoral growth pattern. It would therefore appear relevant to compare the results of the two methods of approach. This however presents a number of difficulties.

- (a) In studying the sectoral growth pattern it was necessary to use the national figures. This gives an initial distortion.
- (b) The definition of the sectors is also not constant. A different definition had to be adopted in the use of certain specific parameters.
- (c) Finally, attention should be drawn to the dissimilarity of the points of departure inherent in the method; the forecast is influenced in particular by the hypotheses in respect of the growth of productivity in the sectorial approach.

	<i>Sectoral approach</i>	<i>Sectoral growth pattern</i>
Food, drink, tobacco	-0.9%	-0.2%
Textiles & clothing ⁽¹⁾	-	-1.1%
Textiles	-2.0%	-
Clothing & leather	-1.9%	-
Timber and paper	-	+1.1%
Timber	-0.2%	-
Paper, printing	+1.9%	-
Chemicals	+2.4%	+1.6%
Building materials	+0.5%	+0.8%
Metals	-	+1.9%
Metal industry	+2.0%	-
Raw metal industry	+1.5%	-
Building	+1.8%	+1.6%
Power ⁽²⁾	-	+0.8%
Power & water	-2.0%	-
Total	+0.5%	+1.1%

⁽¹⁾ This includes skins and leather in the sectoral growth pattern.
⁽²⁾ Includes coal in the sectoral growth pattern.

⁽¹⁾ The sectoral approach was adopted in the sub-report: L. PUYLAERT, under supervision of R. DE FEYTER, 'The future development of the major industrial sectors'. The results of the sectoral growth pattern are contained in the sub-report: L. DONCKELS, W. KENNES AND L. DE LOREL, under supervision of K. TAVENIER AND P. VAN ROMPUY, 'Optimum structure'.

The following figures express the results of the two predictions in respect of the annual growth in employment opportunity over the period 1970-80.

In general terms three conclusions can be drawn from this comparison:

- (a) In both cases the expected growth in employment opportunity over the next decade is seen as small. The hypothesis concerning productivity adopted in the sectoral approach explains the lower growth rate figure as compared with the sectoral growth pattern (0.5% against 1.1%).
- (b) Both methods show a similar general trend.
- (c) The results for the three sectors with the largest growth rate in job availability run parallel.

<i>Sectoral approach</i>	<i>Sectoral growth pattern</i>
1 Chemicals	Metals (in the widest sense)
2 Metal processing	Building
3 Building	Chemicals

3. Tertiary sector

The largest growth in job availability will occur in the tertiary sector. Over the period 1970-80 the increased number of jobs is estimated at 120000 or about 14%. In view of the method used a certain caution is necessary in the sub-division into provinces and sub-sectors. In general however it may be anticipated that more jobs will be available in all provinces and all sub-sectors. In respect of regional distribution Antwerp is very much in the lead (+42000). The other sub-areas show increases varying between 17000 and 24000 vacancies. Sectorally, the services attract the lion's share with two-thirds of the total increase in the tertiary sector.

The high proportion of female workers is an outstanding characteristic of the growth of employment opportunity in the tertiary sector. At least half the additional jobs available will be taken by women.

In closing this subject one very important remark remains to be made. The inadequacy of the basic statistical material made it impossible for us to determine the relation between the growth of employment opportunity in industry, including the propulsive tertiary activities, on the one hand and the consequential tertiary activities on the other. Yet this link is of the greatest interest in providing a better insight into the growth potential of the consequential tertiary sector per region. The distinction between propulsive tertiary and

consequential tertiary activities has been deliverably drawn. Certain tertiary activities such as a university, a major research institute or the head office of a bank are not regionally bound and may exert the same propulsive force as an industry in a given region. The case history of the tourist sector on the coast is a particularly relevant example.

4. Employment opportunity as a whole

With all necessary caution in respect of the uneven coverage of the survey area per main sector and the minor inaccuracies due to the small sub-sectors omitted, it may be stated that the opportunities for employment in Flanders will increase during the period 1970-75 from 1 767 000 to 1 834 000 jobs. This represents an additional 67 000 persons employed. The growth drops to 39 000 for the period 1975-80. This means an overall growth of 106 000 persons in ten years, or a 5.4% growth rate. This may be regarded as a restricted figure in the light of the anticipated development of the demand for labour discussed in the preceding paragraph. The actual comparison lies however in the balance of labour. To assess this the figures of Tables 9 and 10 have been corrected for the above-mentioned inaccuracies. The corrections were applied by reference to the figures of the 1971-75 plan.

In accordance with the foregoing considerations employment per province will show a very erratic development during the seventies: Antwerp (+ 67 000 jobs), Limburg (+ 24 000), East Flanders (+ 8 000) and West Flanders (+ 19 000).

B. The development of the added value

1. Agriculture

The agricultural sector has systematically declined over the past two decades; the area under cultivation dropped from 881 000 ha. to 707 000 ha. An average of 8 500 ha. per year were withdrawn from Flemish farming. The sharpest decrease occurred in the provinces of Antwerp and Limburg. In these two provinces the cultivated area decreased by more than a quarter in twenty years. In West Flanders the shrinkage was less severe.

A further decline in the area under cultivation is to be expected. The forecast for Flanders is as follows:

1950	881 000 ha
1960	786 000 ha
1970	707 000 ha
1975	667 000 ha
1980	634 000 ha

A third element which exerts a marked influence on the added value in agriculture, in addition to job availability and area under cultivation, is undoubtedly that of the structure of cultivation.

The proportion of the various branches of agriculture in the total volume of production will alter drastically in the coming decade:

	1970	1980
Field crops	11.7%	7.8%
Market gardening	21.4%	19.8%
Cattle farming	26.0%	20.4%
Pig farming	25.1%	37.8%
Chicken farming	13.5%	12.8%
Other stock farming	3.3%	1.4%
	100.0%	100.0%

The sharp decline in employment opportunities and in the area under cultivation does not however necessarily exclude a rise in gross added value. The added value in Flemish farming will increase from B. fr. 26.4 million in 1970 to B. fr. 29.0 million in 1980, which is a rise of 10%.⁽¹⁾ Though this growth is small it is none the less greater than the anticipated figure for Belgium as a whole.

The low increase in gross added value in Flemish agriculture is the result of uneven regional trends. The extremes are Flemish Brabant with a decline and West Flanders with a considerable expansion. In the latter province one quarter of the gross added value for Belgium in general will be achieved by 1980.

2. Industry

In contrast to the trend in employment opportunity a sharp rise in added value may be expected in the secondary sector. In the coming decade a total increase of 85% or 6.4% per annum is expected. During the last five years the growth rate will however be lower (6.1%) than during the period 1970-75 (6.7%). Note that the growth of added value in the industrial sector, without the associated stimuli, will be lower than during the past decade. To maintain the level a more dynamic and intensive investment policy will be needed.

⁽¹⁾ Gross added value must not be confused with the value of the agricultural products. This was B. fr. 63.3 million in 1970 and will rise to B. fr. 82.2 million in 1980, or an increase of 30%.

The growth of the added value is manifest in all the sectors studied. The rate of growth is however unevenly distributed over the various sectors, as the following figures show :

1. Chemicals	11.1%
2. Timber	8.7%
3. Metal processing	7.4%
4. Power & water	7.0%
5. Paper, printing	6.6%
6. Basic metal industry	6.4%
7. Building materials	5.7%
8. Building	5.3%
9. Textiles	3.7%
10. Food, drink, tobacco	3.2%
11. Clothing & leather	1.5%

The figures for sectoral growth are in many respects well matched with the anticipated growth of the corresponding branches of industry in the Netherlands and France. Owing to differences in industrial structure, however, any sectoral differences may result in comparatively wide divergencies in the growth of the total industrial product per country.

Analogous to the development of employment opportunity, an unequal distribution of growth per province may also be expected. The added value of industrial production will more than double in the province of Antwerp (+ 104%) while East Flanders will probably not achieve more than 72%. Limburg and West Flanders show an overall growth of 81% and 78% respectively.

Table 11 : The development of gross added value per sector 1970-80 (in million B.fr.) (1)

Sector	1970	1975	1980	1980 (1970 = 100)
<i>A. Agriculture</i> (2)	26.4	28.4	29.0	110
<i>B. Industry</i> (3) (4)	203.6	279.9	376.6	185
1 Food, drink, tobacco	29.9	34.8	40.6	136
2 Textiles	18.3	22.8	26.4	144
3 Clothing, leather	7.2	7.9	8.3	115
4 Timber	11.2	16.9	25.8	230
5 Paper, printing	6.6	9.6	12.5	189
6 Chemical	16.6	28.9	47.2	284
7 Building materials	7.5	9.9	13.1	175
8 Raw metal industry	7.9	10.3	14.7	186
9 Metal processing	42.5	62.8	87.3	205
10 Building	32.9	42.8	55.4	168
11 Power/water	23.0	33.2	45.3	197
<i>C. Tertiary sector</i> (3) (5)	216.3	263.7	322.9	149
1 Services	109.4	129.3	152.8	140
2 Trades	50.9	60.4	71.8	141
3 Transport & traffic	44.0	55.3	69.6	158
4 Financial services	12.1	18.7	28.7	237
<i>D. Total (A + B + C)</i> (6)	446.3	572.0	728.5	163

(1) Against factor costs in prices of 1968.

(2) Survey definition of Flanders.

(3) The four Flemish provinces plus Louvain district.

(4) Excluding the group 'Sundries'. The industrial sectors studied represented in 1967 97% of the total added value in Flemish industry.

(5) In contrast to the tables relating to job availability, the added value of the sub-branch 'garages' is not contained in the total for employment.

(6) The total must be interpreted in the light of the comments made in the text.

Table 12 : The development of the gross added value per province and per main sector, 1970-80 (in million B.fr.) (1)

Main Sector	Antwerp	Limburg	East Flanders	West Flanders	Flemish Brabant
<i>A. Agriculture</i>					
1970	4.0	3.2	6.5	8.1	4.6
1975	4.3	3.5	6.8	9.5	4.4
1980	4.2	3.5	6.6	11.0	3.7
<i>B. Industry</i>					
1970	75.8	24.6	51.1	40.6	na
1975	110.7	33.2	67.2	54.5	na
1980	154.8	44.6	87.8	72.4	na
<i>C. Tertiary sector</i>					
1970	87.7	20.3	47.3	45.9	15.2
1975	107.1	25.4	56.7	54.9	19.5
1980	131.3	32.4	68.3	66.4	24.5
<i>D. Total</i>					
1970	167.5	48.1	104.9	94.6	na
1975	222.1	62.1	130.7	118.9	na
1980	290.3	80.5	162.7	149.8	na

(1) The same notes as for Table 11.

In respect of the development of the added value it is interesting to note the expectations of commercial and industrial circles concerning the trend of industrial production in their sector on the one hand and in their own firm on the other. These expectations were derived from the industrial inquiry. The following points are worthy of note :

- (a) About two-thirds of the industrial firms believe that actual production will increase by 4% or more over the period 1971-75. They are slightly less optimistic for the period 1975-80. This confirms the results obtained in respect of the evolution of added value per sector.
- (b) Expectations for the 1971-75 period are highest in the chemical industry and lowest in the leather sector. These sectoral figures again concur well with the results obtained in respect of added value.

(c) Per province, fairly similar forecasts were made in the areas Antwerp, West Flanders and East Flanders. Limburg is optimistic. 75% of the firms there believe that production in their sector will increase by 4% or more over the 1971-75 period; in Flemish Brabant only 56% anticipated a similar figure.

(d) The expectations of the firms concerning the development of production in their own businesses are generally more optimistic than those concerning their sector of industry as a whole, but no startling discrepancies were found.

The comparison of the previously mentioned growth figures with the results of the sectoral growth pattern deserves further attention. The difficulties encountered in the comparison of the job availability figures are again met within respect of the gross added value. The following growth rates apply to the annual increase of added value over the period 1970-80.

	Sectoral approximation	Sectoral growth average
Food, drink, tobacco	+ 3.2%	+ 2.0%
Textiles and clothing	—	- 1.4%
Textiles	+ 3.7%	—
Clothing and leather	+ 1.4%	—
Timber and paper	—	+ 4.6%
Timber	+ 8.7%	—
Paper, printing	+ 6.6%	—
Chemical	+ 11.1%	+ 6.5%
Building materials	+ 5.7%	+ 4.0%
Metal	—	+ 5.9%
Metal processing	+ 7.4%	—
Basic metal industry	+ 6.4%	—
Building	+ 5.3%	+ 2.1%
Power	—	+ 8.3%
Power and water	+ 7.0%	—
Total	+ 6.4%	+ 4.4%

The sectoral growth pattern shows firstly a slower growth rate of the added value for industry (4.4%) than the sectoral approximation (6.4%). In respect of job availability the opposite was the case. This is not a contradiction, however. The explanation probably lies in the working hypotheses concerning the development of productivity. A second important point is the parallel trend of the two approximations, the growth pattern still lagging behind the sectoral approximation. An exception is the textile and clothing sector. Here the trend is reversed.

It is further noteworthy that the three fastest growing sectors are the same in both approximations:

Sectoral approximation	Sectoral growth pattern
1. Chemicals	1. Chemicals
2. Timber	2. Metal (in the widest sense)
3. Metal industry	3. Timber

3. The tertiary sector

The growth of added value in the tertiary sector remains below that of the industrial sector. In terms of job availability the order is reversed. Annual growth is estimated at 4.1%. This is derived from four partial growth figures: services (3.4%), trades (3.5%), transport and traffic (6.7%) and financial services (9.1%).

The growth figures per province vary between 4.8% for Limburg and 3.8% for East and West Flanders. Antwerp is near the average for Flanders as a whole.

4. Total added value

During the period 1970-80 a growth of 63% of the total added value is expected, or on average 5% per year. For the industrial sectors this prediction is based on the sectoral approximation. The sectoral growth pattern gives a lower rate of growth. There is no great difference between the figures per area. They vary from 5.7% to 4.5%: Antwerp (5.7%), Limburg (5.3%), West Flanders (4.7%) and East Flanders (4.5%).

§4. The balance of labour

A rational and efficient regional policy is virtually impossible without an objective basic diagnosis of the future evolutionary trend of the opportunity of employment. A knowledge of the anticipated demand for labour and the anticipated supply available must be seen as a minimum initial requirement for regional planning.

With the acquired knowledge of the development of the labour supply and the evolution of employment opportunity per sector, we can now proceed to compile a labour balance for Flanders and its component region. A few adjustments must first be made for the minor sub-sectors not included in the survey for the territorial definition of Flemish Brabant. In both cases the data supplied by the Planning Bureau were used to obtain an overall picture.

In this section we make a distinction between the labour balance proper and the labour balance of graduate students. Both balances reflect the spontaneous trend of job availability; corrective measures applied by the government must obviously be left out of account.

A. Comparison between the supply and demand of labour

In the compilation of the labour balance a distinction was made between two working hypotheses. In the first hypothesis the term 'labour supply' covers the whole of the effectively active population, including the unemployed. It includes, in other words, all persons of the active age groups who are either already employed or capable of 'immediate' employment. In the second hypothesis, on a wider base, the potential reserve of female labour was added to the labour supply as defined above.

1. The labour balance in 1970, 1975 and 1980

The labour balance for 1970, 1975 and 1980 are given in appendixes 5 to 7 inclusive. In these the two hypotheses in regard to labour supply have been taken into account.

The greatest caution must be exercised in interpreting the results of the labour balance. It is for instance incorrect to assume that the number of jobs to be created coincides with the sum of the negative balance. In the first place, not all the unemployed can be seen as reserve labour in drawing up the balances; part of the unemployment total must be regarded as a friction phenomenon. This part is estimated at a maximum 1% of the labour supply. In the second place the commuting balance can also not be calculated fully as a reserve, as part of it (in some districts the greater part) is completely justified from the social-economic standpoint.

Taking these factors into account, the balance total is seen more as a gross factor. Despite its less refined character, the balance forms a good basis for the classification of the districts in order of shortage of employment opportunity.

If the situation continues to develop spontaneously, the overall negative labour balance in Flanders will be about 243 000 units by 1975, on an economically active population of 2 156 000; by 1980 this balance will have risen to about 316 000 units on a working population of 2 265 000 persons. In these figures the potential reserve of female labour has not been taken into account. If this factor is added, the labour balances will be about 295 100 for 1975 and 343 100 for 1980; at the end of the seventies the working population will be roughly 2 292 000 persons. The Planning Bureau gave a balance for Flanders of 347 000 persons in 1975 (labour market in the wider sense).

Table 13 : The labour balance in Flanders in 1970, 1975 and 1980 (× 1 000)

Narrow hypothesis of supply of labour				Broad hypothesis of supply of labour		
Year	Demand	Supply	Balance	Demand	Supply	Balance
1970	1.841 (a)	2.066	- 225	1.841	2.139	- 298
1975	1.913	2.156	- 243	1.913	2.208	- 295
1980	1.949	2.265	- 315	1.949	2.292	- 343

(a) Taking the adjustments into account this figure is higher than the equivalent figure in Table 9.

It follows from this that the employment opportunity coefficient in the case of the first hypothesis will drop from 89.1 in 1970 to 86 in 1980. ⁽¹⁾

⁽¹⁾ $Employment\ opportunity\ coefficient = \frac{D}{S} \times 100.$

At provincial level the drop in the employment opportunity coefficient is generally applicable except in the case of a single province, Antwerp. For this province alone the supply and demand of labour are generally speaking balanced out. The

Table 14 : Evolution of the employment opportunity coefficient per province, 1970, 1975 and 1980. ⁽¹⁾

Province	Narrow hypothesis of supply of labour			Broad hypothesis of supply of labour		
	1970	1975	1980	1970	1975	1980
Antwerp	99.8	101.8	101.3	96.0	99.2	100.0
Limburg	81.4	78.9	73.8	74.8	74.6	71.7
E. Flanders	86.1	86.2	83.5	85.3	85.6	83.2
W. Flanders	94.6	95.0	92.4	91.8	93.1	91.6
Flemish Brabant	73.8	70.0	66.3	71.1	68.3	65.6
Flanders	89.1	88.7	86.0	86.1	86.6	85.2

regional labour market for the remaining provinces shows a distinct imbalance in the sense of a surplus of labour.

2. The shortage in employment opportunity in 1970, 1975 and 1980

It has already been pointed out that the labour balance does not fully reflect the actual problem of the positive and negative tensions in the labour market. As stated above, the target number of jobs to be created does not coincide with the volume of the labour surplus. A prediction of the shortage in employment opportunity is obtained by adding the results of the uneven development of labour supply and labour demand to the labour reserve. On the narrow hypothesis of labour supply the shortage of jobs in 1975 is determined by the following factors:

- (i) reserve of unemployment 1970;
- (ii) commuter reserve 1970;
- (iii) the evolution of the labour supply in the narrower sense 1970-1975 less the evolution of labour demand 1970-1975.

The shortage of employment opportunity in Flanders in 1970 was 57000 units, or 2.7% of the labour supply. Because of the strictness of the criteria applied in respect of functional unemployment and commuting these figures must be regarded as the basic minimum.

On the broad hypothesis of labour supply the work schedule is longer:

- (i) reserve of unemployment 1970;
- (ii) commuter reserve 1970;
- (iii) potential reserve of female labour 1970;
- (iv) the evolution of the labour supply in the wider sense 1970-1975, less the evolution of labour demand 1970-1975.

On the second hypothesis the shortage of employment opportunity in Flanders offers a still more serious aspect. The negative balance amounts to 130000 unemployed in 1970, or 6.1% of the labour supply. This figure drops a little in 1975 to 127000 but later rises again to 175000 or 7.6% of the working population in 1980.

The Flanders region is however very heterogeneously composed in respect of the lack of employment opportunity. Table 15 demonstrates this clearly. We will have occasion to come back to this point later in the report. ⁽¹⁾

⁽¹⁾ The forecasting techniques applied to the tertiary sector may give a false picture in certain districts. This is certainly the case for the coastal areas, where the forecast for the most important branch of the tertiary sector, namely tourism, contains an obvious over-estimate of the labour demand. This means that the shortage of employment opportunity in the districts Bruges, Ostend and Veurne will in fact be greater than indicated in table 15.

The calculated shortage of jobs undoubtedly constitutes one of the major points of friction for the economy of Flanders. It is the result of a still continuing demand for absorption coupled with an unfavourable economic structure as previously underlined. The expected increase in the shortage of employment opportunity is also directly linked to the unfavourable economic structure, especially in the industrial sector. ⁽²⁾ This increase becomes still more significant when considered in the light of the geographical situation of Flanders in north-western Europe and the expansion which this region experienced during the sixties.

B. Labour balance of graduate students

So far we have discussed only the overall balance of labour, though regionally sub-divided. The volume of labour is however not a homogeneous entity. The grade of education of the worker as production factor is highly unequal.

Within the framework of the survey it proved impossible to compile labour balances on the basis of professional qualifications. An attempt was however made to assemble data concerning supply and demand in the case of graduate students. This was given the form of a partial labour balance ⁽³⁾ which is shown in appendix 8. The particular attention given to this group was prompted by the explosive development of higher education in Flanders and the part played by higher professional qualifications in the economic growth.

The results of this analysis are significant. A considerable surplus in the supply of graduate students is found. This surplus is estimated at 7400 for the period 1971-75 and 15300 for the period 1976-80. For technical engineers the situation is precisely the reverse. There is a shortage estimated at 2,700 for the first period and 5,800 for the second.

The imbalance in the case of graduate students dates back to before 1970. It is due in particular to the exceptionally explosive expansion in the faculties of medicine and the arts, with the exception of literature and philosophy. In the science faculties, the applied sciences and agriculture the expected evolution of supply and demand is better balanced.

When considering the above findings certain very important marginal effects must be taken into

⁽²⁾ Application of the results of the prediction of employment opportunity for the industrial sectors based on the sectoral growth pattern instead of that based on sectoral approximation would not essentially alter the general conclusions drawn.

⁽³⁾ Technical education was largely restricted to technical engineers.

Table 15 : Estimated shortage of employment opportunity per district, 1970, 1975 and 1980 (× 1000)

Area	Narrow hypothesis labour supply						Broad hypothesis labour supply					
	Shortage of employment opportunity			Shortage of employment opportunity in % labour supply			Shortage of employment opportunity			Shortage of employment opportunity in % labour supply		
	1970	1975	1980	1970	1975	1980	1970	1975	1980	1970	1975	1980
Antwerp	-5.0	-21.4	-27.6	-1.4	-5.9	-7.4	8.3	-12.2	-22.7	2.3	-3.3	-6.0
Mechalen	2.1	1.7	3.5	1.9	1.5	3.0	5.6	4.1	4.8	5.0	3.6	4.0
Turnhout	8.1	12.7	19.8	6.6	9.6	13.8	14.5	17.3	22.3	11.2	12.6	15.3
Antwerp	5.2	-7.0	-4.3	0.9	-1.2	-0.7	28.4	9.2	4.4	4.7	1.5	0.7
Hasselt	3.0	5.6	12.7	2.7	4.5	9.0	13.2	13.0	16.7	10.8	9.8	11.6
Maaseik	4.2	9.2	16.6	7.6	14.6	23.2	9.1	12.8	18.6	15.1	19.2	25.2
Tongeren	5.5	9.2	15.8	9.0	13.8	21.7	10.7	12.9	17.8	16.1	18.4	23.8
Limburg	12.7	24.0	45.1	5.6	9.4	15.8	33.0	38.7	53.1	13.3	14.4	18.1
Aalst	10.8	13.4	19.1	10.5	12.8	17.7	11.4	13.8	19.3	11.1	13.2	17.9
Dendermonde	3.7	6.2	9.8	5.3	8.7	13.5	4.7	6.8	10.2	6.7	9.5	14.0
Eeklo	0.5	2.2	3.4	1.6	6.4	9.8	1.6	3.0	3.8	4.7	8.6	10.9
Ghent	3.2	-1.9	-0.6	1.7	-1.0	-0.3	4.7	-0.9	0.1	2.5	-0.5	-0.1
Oudenaarde	2.0	3.4	6.3	4.4	7.6	14.3	2.1	3.5	6.3	4.6	7.8	14.3
Sint-Niklaas	2.8	-0.2	0.1	3.5	-0.2	0.1	3.3	0.1	0.3	4.1	0.1	0.4
East Flanders	23.0	23.1	38.1	4.5	4.5	7.3	27.8	26.3	39.8	5.4	5.1	7.6
Bruges	0.2	0.5	2.3	0.2	0.5	2.3	4.4	3.4	3.7	4.7	3.5	3.7
Diksmuide	1.9	2.0	2.8	10.6	10.9	14.4	2.9	2.7	3.1	15.3	14.1	15.7
Ypres	4.0	4.2	5.5	10.0	10.2	12.9	5.2	5.0	5.9	12.6	12.0	13.8
Courtrai	0.2	-0.4	3.8	0.2	-0.4	3.5	1.5	0.4	4.0	1.4	0.4	3.7
Ostend	0.7	-0.7	1.4	1.5	-1.4	-2.7	3.2	1.0	-0.6	6.3	1.9	-1.1
Roeselare	-0.3	0.3	2.9	-0.5	0.5	4.9	0.5	0.8	3.1	0.9	1.4	5.2
Tielt	0.5	0.5	1.9	1.7	1.7	6.1	1.4	1.1	2.2	4.6	3.6	6.9
Veurne	0.9	0.9	1.5	5.1	4.9	7.8	1.5	1.3	1.7	9.2	6.9	8.8
West Flanders	8.1	7.3	19.3	2.0	1.8	4.5	20.6	15.7	23.1	5.0	3.7	5.3
Halle-Vilvoorde	0.6	13.3	26.6	0.3	6.5	12.0	6.0	17.3	28.7	3.1	8.2	12.8
Louvain	7.1	14.6	23.1	4.8	9.4	13.9	14.3	19.7	25.8	9.3	12.2	15.3
Flemish Brabant	7.7	27.9	49.7	2.3	7.7	12.8	20.3	37.0	54.5	5.8	10.0	13.9
Flanders	56.7	75.2	147.9	2.7	3.5	6.5	130.1	126.9	174.9	6.1	5.7	7.6

account. In the first place the survey of the demand is incomplete, and this for two reasons. Firstly, some of the requirements of the tertiary sector were not taken into calculation. Secondly, this labour balance applies exclusively to Flanders, i.e. only the demand in Flanders has been studied. The situation of Brussels outside the area of the survey thus has important consequences. It is clear that these two elements go a long way towards explaining the lack of demand for graduates (amongst others in the economic sciences). This does not however solve the problem of the growing disparity between supply and demand.

A second marginal consideration concerns the uncertainties implicit in a pre-calculation of the supply and even more of the demand, no matter how thorough and detailed the survey. In respect of the supply it may be claimed that the point of departure was solidly based, so that errors cannot occur before the years 1975-77, according to the nature of the faculty. (1) It must however be admitted that the forecast of the demand is less reliable. In this connection we would stress the following points:

- (a) the basic material was not extensive enough;
- (b) demand is also slightly influenced by the numerical supply;
- (c) extending the comparison to other countries, we find that in certain sectors an explosion of demand may suddenly occur. The medical density in Sweden may give an indication for the faculty of medicine;
- (d) the changes which take place in society in respect of technology, education, information, spare time occupations. These changes may be felt, but they evade pre-calculation.

This does not alter the fact that the sudden expansion of the supply, even if only temporary, will lead to imbalances and difficulties in certain academic branches, especially in the theoretical sciences.

§5. Aspects concerning the location of industry

In respect of the attempt to achieve a wider distribution of the new dynamic elements, especially in industry, over the various areas, it is useful to

give some thought to the results of the survey on certain sub-aspects such as settlement tendencies and the active localization factors, the opportunities for settlement in respect of the growth sectors, the impact of the EEC on the pattern of settlement, the technical polarization of Flanders and lastly the need for industrial estates. These elements constitute at the same an important approach to the options of policy.

A. Settlement pattern of the new industries

During the period 1961-70 741 new industrial firms with 20 or more employees were established in Flanders. (2) They comprise a total of 126000 employees or an average of 170 workers per industrial unit. Together they have invested B.fr. 122 milliard. A fairly wide dispersal over the Flemish countryside can be observed: 185 units in the province of Antwerp, 175 each in Limburg and East Flanders, 134 in West Flanders and lastly 72 in Flemish Brabant. The new firms in Antwerp (220 employees per unit) and Limburg (197) were on average larger than those in the other Flemish provinces: East Flanders (141), West Flanders (136) and lastly Flemish Brabant (110). The preponderance of the province of Antwerp only comes clearly to the fore when the investment is analysed: it represents 40% of the invested capital, East Flanders comes second with 34%, West Flanders and Flemish Brabant account for only 8% between them. The more important figures are summarized in appendix 9.

The trend towards dispersal is characteristic of all the industrial sectors included in the survey. A few tendencies towards concentration are however to be noted. The province of Antwerp attracted a relatively high proportion of firms in the food, paper/printing and chemical sectors. Limburg was characterized by the number of firms in the sectors textiles/clothing and building materials. East Flanders attracted a proportionally large share of firms in the textile/clothing sector. West Flanders stood out in the timber sector.

A second characteristic of the new establishments is their orientation towards the industrial zones. Over the period under consideration 61% of the new firms settled in an existing industrial zone; they represent 79% of the newly created jobs and 92% of the invested capital. The larger the firms the greater their share in the industrial zones.

(1) For medicine, for example, up to and including 1977 the number of new graduates is taken as equivalent to the present number of students.

(2) Only those firms which are still active at the present time are considered here.

Size of firm	Number of new establishments	Number concentrated in industrial zones
20-49 workers	295	172
50-99 workers	182	104
100-199 workers	141	90
200-499 workers	86	54
500-999 workers	24	21
1 000 and over	13	13

The share of foreign concerns in the new settlements was relatively large: of 741 new businesses 265 or 36% were of foreign origin. Dutch (121) and American (93) firms hold the first two places. The number of foreign firms per province varies: Antwerp 45%, Limburg 59%, East Flanders 23%, West Flanders 10% and Flemish Brabant 33%. Limburg's large share comes mainly from the Netherlands. In the other provinces the Americans predominate.

It is noteworthy that the foreign concerns are on average larger than the home firms in terms of the number of jobs offered:

Size of firm	Inland firms	Foreign firms
20-49	229	66
50-99	124	58
100-199	68	73
200-499	42	44
500-999	8	16
1 000 and over	5	8
Total	476	265

This trend is still more pronounced in respect of investment per sector and per worker:

	Belgian firms	Foreign firms
Food	B.fr. 520,000	B.fr. 430,000
Textiles/clothing	B.fr. 320,000	B.fr. 230,000
Timber	B.fr. 390,000	B.fr. 600,000
Paper/printing	B.fr. 530,000	B.fr. 1,000,000
Chemical	B.fr. 2,150,000	B.fr. 3,540,000
Building materials	B.fr. 720,000	B.fr. 1,140,000
Metals	B.fr. 1,510,000 ⁽¹⁾	B.fr. 720,000
Other industries	B.fr. 350,000	B.fr. 700,000
Total	B.fr. 910,000	B.fr. 1,010,000

⁽¹⁾ Influence of the 'Sidmar' establishment.

B. Opinion of commerce and industry on the location factors

The potentially decisive location factors are very varyingly evaluated by commercial and industrial circles. This appears very clearly from the total marks awarded to the various inducement factors listed in the industrial questionnaire. ⁽¹⁾ They vary from 255 points for good road connections to 30 for the possibility of connection to a pipeline. Appendix 10 gives the evaluation results for 44 location factors. The differences should of course be recognised as perfectly logical.

It is none the less difficult to escape the conclusion that the production factor labour plays the most important part in the choice of locality. No less than 5 of the 8 labour factors listed were given a total of 200 or more:

- (i) loyalty of the workers to the firm 253 points
- (ii) good labour relations in the region 250 points
- (iii) availability of enough untrained experienced male workers 220 points
- (iv) availability of enough skilled male workers 210 points
- (v) wage level of the region 199 points

Besides the availability of skilled and unskilled labour the availability of administrative staff should also be mentioned (176 points).

In respect of the infrastructure two factors are prominent, the availability of good road connections (255 points) and the price per m² of industrial sites with services (195 points). Proximity to a motorway may be mentioned marginally.

The inquiry also shows that commerce and industry pay more attention to output factors than to input factors. In respect of the first of these groups of factors a sales outlet in Belgium is of importance, less so a sales outlet in the firm's own region. In respect of input factors only the factor: 'cost of transport of raw materials and finished products' is given much importance (198 points). In fact the general average of the output factors is 138 points, as against 108 for the input factors.

In only a few cases are the economic, social and/or cultural facilities considered to be decisive in the

⁽¹⁾ In the questionnaire commercial and industrial firms were asked to assess 44 location factors on the assumption of a removal of the firm in its present form and size. For this 5 classes of priority were defined (decisive, very important, important, some importance, no importance) denoted by a scale of points from 4 to 0. For each factor a total for each priority grade was determined beforehand. This meant that a location factor could obtain a maximum of 400 points in the event of all the firms considering it to be decisive. The minimum points total was of course zero; this would be the case if all the firms regarded a certain factor as of no importance.

choice of locality. The general average for these elements is however by no means low (133 points). The factor: 'ease of contact in person or by phone with suppliers and/or customers' far surpasses this average (255 points).

Finally attention should be drawn to the subsidies provided under the regional development legislation. No less than 18% of the firms consider this of decisive importance. This explains its relatively high number of points (215).

The scale of evaluation differs however per sector and size category. The larger and/or more heavily capitalized the firm, the more importance is attached to the location factors listed. With these big concerns the infrastructure in particular gains considerably in importance (rail and waterway connections, motorways, sea ports, dry industrial sites with services, industrial estates with services on a waterway, with supplies of cooling water, industrial water and drainage of waste water). In

this category of firms the *central position* of Flanders in respect of the Euromarket is also of the greatest importance.

C. Chances of new settlement in respect of the growth sectors

In respect of the two most important growth sectors, chemicals and the metal industry, both comprising a number of heterogeneous subgroups, the prospects of the Flemish provinces in respect of new enterprise would appear to be generally good. The active settlement factors are however very unequal for these two sectors, as proved by the settlement factors given the highest assessment (200 points and over) in the industrial inquiry. The chemical industry makes much higher demands than the metal industry, especially in regard to the infrastructure and the input factors. In the metal industry sector the quantitative and qualitative characteristics of the labour factor are given the greatest importance.

	Metal Industry	Chemical Industry
(a) Availability of sufficient unskilled and experienced workers	230	216
(b) Availability of skilled labour	289	216
(c) Availability of staff employees	200	196
(d) Wage level	192	(¹)
(e) Loyalty of the workers to the firm	242	232
(f) Good labour relations	241	256
(g) Good waterways	(¹)	193
(h) Good rail connections	(¹)	186
(i) Good road connections	236	310
(j) Proximity of a sea port	(¹)	180
(k) Availability of dry, well serviced industrial land	(¹)	249
(l) Cost of industrial sites	193	206
(m) Transport costs	(¹)	244
(n) Cooling water	(¹)	210
(o) Industrial water	(¹)	214
(p) Drainage of waste water	(¹)	246
(q) Sales outlet in Belgium	200	199
(r) Central position in Europe	177	244
(s) Availability of adequate housing	(¹)	200
(t) Ease of contact with suppliers and/or customers	217	225
(u) Regional subsidies.	200	263

(¹) Low evaluation or assessment by the industry.

Most of the regions of Flanders pose no particular problems for the metal industry. The labour market is however tight in the province of Antwerp. The settlement possibilities for the chemical sector are rather more restricted. Further concentration near the sea ports is likely. In these areas the present

labour supply is certainly insufficient to meet the requirements for the period 1970-80. The predicted new establishments, which will be discussed further below, pose a problem which demands a prompt solution.

D. *The impact of the EEC on the settlement pattern*

Flemish industry in general regards its situation in Europe as an important location factor. The situation of Flanders after the Treaty of Rome has greatly increased the geo-economic potential of the region. Part of Flanders, together with the southern part of the Netherlands and the Ruhr district, constitutes the zone of highest potential. The entry of Britain into the EEC brings Flanders as a whole still closer to the zone of highest potential, the border area of the Netherlands, Flanders and West Germany. This fact is of the highest importance, because the level of economic potential contains an indication for the relative attractiveness of a region for industrial investment.

The improvement of the geo-economic potential of Flanders thanks to the economic integration of Europe comes clearly to the fore in the export figures. It can however be further stimulated by an improvement in the sectoral structure. In the second section of this report the relation between the economic potential of a region and its sectoral structure will be demonstrated still more clearly.

E. *The importance of technical polarization*

During the past ten years much attention has been paid to the polarization phenomenon, a sharp distinction being made between functional and geographical polarization.

Geographical polarization can be determined without difficulty. Functional polarization leads a great deal more argument. O. Vanneste was the first writer to subject functional polarization in the form of technical polarization to an actual test.⁽¹⁾ Applied to West Flanders, the investigation showed a decidedly limited technical polarization in this area. It may be argued that the structure of West Flemish economy by its very nature tends towards a low technical polarization. For this reason, in view of the possible impact of the findings in respect of technical polarization on the regional economic policy of Flanders in general, the investigation was extended to the industrial economy of Flanders as a whole.

The results of the investigation failed to reveal any higher degree of technical polarization in the Flemish region. On the buying side, 18.6% of raw and processed materials were acquired within a 30 km radius. Of the sales the local area (30 km radius)

absorbed 14.1% of the total turnover. It follows that there is only a modest degree of technical polarization. A better representation of the chemical industry of the province of Antwerp in the inquiry could only have very slightly increased the coefficients of technical approximation.

Only two sectors show a high technical polarization in the purchase of basic materials and the marketing of finished products, namely foods and building materials. The following figures show the share of the local area with a radius of 30 km in the purchase of materials and the sale of finished products:

	Purchases	Sales
Extractive industries	21.3%	3.7%
Foodstuffs	40.0%	32.8%
Chemicals & rubber	10.0%	6.9%
Timber & cork	18.8%	13.3%
Paper & printing	8.2%	23.2%
Leather	8.1%	27.6%
Textiles	18.1%	9.8%
Clothing	18.7%	16.7%
Building materials	27.8%	24.4%
Metal industry	12.1%	3.1%
Machine construction	5.0%	7.3%
Other industries	8.0%	8.9%
Total	18.6%	14.1%

It is true that a clear relation is seen between the intensity of the regional bond and the size of the firm. In both the purchase of raw materials and the sale of finished products the bond with the local area decreases as the firm becomes larger.

A special aspect of the technical bond concerns supplies and deliveries. In the Flemish region as a whole these are only on a modest scale. The supply in the purchase of raw materials amounts to 6.3% of the total; the delivery in sales of finished products is not more than 2.7%. These supply and delivery phenomena are concentrated largely in the machine construction sector (35% of the total supply of raw materials and 45% of the total delivery of finished products in Flanders). In this connection it is particularly noteworthy that the geographical structure of supplies and deliveries closely approaches the structure of the technical polarisation of purchases and sales in general.

A form of technical polarization not contained in the analysis shows a much closer bond. This concerns the impact of the raw material supply and the sale of finished products on the transport firms. In monetary terms the supply of raw materials is

⁽¹⁾ O. VANNESTE: 'Het groepconcept en de regionaal-economische politiek', (The growth pole concept and regional economic policy), Antwerp, 1967.

effected for 22.1% by local transport firms and 19% by the firm's own vehicles. Of the deliveries of finished products 29.0% are effected by local transport firms and 34.7% by the firm's own lorries.

This low technical polarization in Flanders decidedly weakens the frequently heard argument that regional policy should be orientated towards the economically strongest areas. This argument is understandable only when it is based on the idea that technical polarization forms the cornerstone of the growth-pole theory and thus leads to maximum economic efficiency. It also explicitly contains a number of other assumptions such as:

- (i) economic growth is largely based on the polarization principle;
- (ii) the neglect of other settlement factors;
- (iii) the absolute mobility of the production factors;
- (iv) the neglect of the social motivations of regional policy;
- (v) the neglect of the disadvantages of large agglomerations, such as lower marginal net income, inflation pressures and the pollution of the environment.

The functional concept of the growth pole can none the less be integrated into regional policy. Instead of seeing in the growth pole cores a reason for further concentration, the possibility must be recognized of achieving, through the multiplicative effect of the drive element, a wider distribution of wealth. In this lies the general applicability of the growth pole concept and its usefulness for regional policy. By shifting the emphasis towards the drive element the growth pole theory becomes a positive asset for the promotion of regional development and this to an equal degree for the promotion of regional development and this to an equal degree for the structurally strong and the structurally weak areas. ⁽¹⁾ Polarization must however not be effected via the technical bond. The number of drive elements of which technical polarization may be expected is fairly small. In port areas technical polarization is obvious. Income polarization and psychological polarization must however not be neglected. Especially in respect of the latter the active intervention of the Provincial Economic Councils is important. Their efforts must be directed towards maximum efficiency of the polarization effects. Technical polarization appears more prevalent if the wider sense of the 'unite motrice' (drive unit) is taken as point of departure. This brings us to investment polarization based on a port, airport, industrial estate, etc. It is clear that the leap from investment polarization to technical polarization via the drive element is no longer

⁽¹⁾ O. VANNESTE, *op cit*, page 84.

difficult. However, infrastructural backing and the presence of external economies are essential in order to set the multiplicative effect of the industrial drive element in motion.

F. *The need for industrial estates*

The industrial estate first made its appearance in Flanders during the fifties. At that time few people foresaw the vital part which the industrial estate was to play in the location pattern of industry. In certain cases a completely new location factor is created. In others, the industrial estate determines localization within a predetermined area. In other words, the industrial estate has become a vital instrument of industrialization policy.

We have already referred in this section to the large share of the industrial estates in the new settlements. This tendency will become even more marked in the future. It was therefore felt necessary to calculate the demand for industrial estates over the period 1970-80. The acquired knowledge of the number of jobs to be created and the sectoral growth pattern, together with an inventory of the existing sites of 20 ha. and more, formed a good basis for the calculation of future requirements.

In mid 1971, there were 134 industrial estates in Flanders, with a total gross area of 21925 ha. Of these 19357 ha. may be considered as net area. At the time of the inventory 11045 ha. were still available for industrial occupation. These industrial estates offer the firms occupying them an employment capacity of 131 500 persons.

An important factor in estimating the requirement is the site coefficient. ⁽²⁾ A distinction was made here between dry sites, sites along inland waterways and sites on deep waterways. The site coefficient of the existing estates was taken as the point of departure. ⁽³⁾ The dry sites in Flanders have a gross site coefficient of 29, the sites on inland waterways 22 and the maritime sites 10.

Another important factor in the calculation of the industrial requirement was the postulate that the employment opportunity must be stimulated in proportion to the labour supply. Regarded in this light the expansion of industrial estates may be regarded as a corrective measure to be taken by the

⁽²⁾ This is the number of employees per ha industrial land. It can be determined as a net or a gross factor. In the survey the gross coefficient was applied, i.e. the area available for expansion of a business and the infrastructure and supplies provided outside a firm's own premises were taken into account.

⁽³⁾ This may give the impression that development trends were disregarded. However, factors tending towards higher or lower site coefficients were in fact taken into account.

authorities in order to achieve a balance between the supply and demand of labour.

In this, as before, two aspects of the labour supply were envisaged: the labour supply in the narrow sense (minimum work opportunity aspect) and labour supply in the wider sense (maximum work opportunity aspect). ⁽¹⁾⁽²⁾ As three sub-hypotheses are involved in each of these aspects in respect of the distribution of the jobs to be created over the secondary and tertiary sectors, the most effective hypothesis for each province was determined. ⁽³⁾

⁽¹⁾ On the basis of the reserves available from unemployment and commuting, the growth of the working population and the transfer from regressive sectors, 352300 new jobs must be created (minimum hypothesis). If the potential labour reserve in female workers is taken into account this figure increases to 398700 (maximum hypothesis). These figures should not be confused with the results of the labour balances or the calculation of the shortage of employment opportunity.

⁽²⁾ In each province either one of the two options or an average between them was adopted.

⁽³⁾ The hypotheses applied for each province were:

	<u>1971-75</u>	<u>1976-80</u>
Antwerp	Hyp. 1	Hyp. 1
Limburg	Hyp. 3	Hyp. 3
East Flanders	Hyp. 3	Hyp. 3
West Flanders	Hyp. 1	Hyp. 1
Flemish-Brabant	Hyp. 3	Hyp. 3

The three hypotheses are:

- (1) The balance between the spontaneous demand of industry, building, commerce and services and the available supply of labour is absorbed integrally by industry;
- (2) The balance between the spontaneous demand of industry, building commerce and services and the available supply of labour is proportionally distributed over the three sub-sectors;
- (3) An average between hypotheses 1 and 2.

Other factors in the analysis were the growth of the number of jobs in existing firms, re-siting, siting of commercial and service businesses and government offices on industrial estates, additional factors for distribution, time lag, reserves and infrastructure. ⁽⁴⁾

From the compilation of the provincial options and the comparison between available reserves and requirements in industrial space, the result for Flanders is that 2398 ha of industrial estates must be planned for the period 1971-75 and 4827 ha for the period 1976-80. Or a total of 7225 ha. The figures broken down per province and type of estate are given in Table 16.

⁽⁴⁾ In a number of medium sized towns, in addition to the provision of industrial estates smaller sites for government offices should be allocated in accordance with a special building plan.

Table 16 : The requirement for industrial estates in Flanders, in ha per province and per type of estate, 1971-80.

Period	Deep water	Inland water	Dry
<i>Period 1971-75</i>			
Province of Antwerp	—	104	450
Province of Limburg	—	—	—
Province of East Flanders	—	—	100
Province of West Flanders	850	—	—
Flemish Brabant	—	582	312
Sub-total Flanders	850	686	862
<i>Period 1976-80</i>			
Province of Antwerp	—	175	825
Province of Limburg	—	—	422
Province of East Flanders	—	—	660
Province of West Flanders	1.550	—	450
Flemish Brabant	—	323	422
Sub-total Flanders	1.550	498	2.779
Total Flanders 1971-80	2.400	1.184	3.641

Two remarks are called for here. For the provinces of Limburg, East Flanders and West Flanders a hypothetical requirement in so-called 'switch

sites' must also be taken into account. Secondly, this calculation does not take any account of the equipment of the still available reserves.

G. The maritime industries

Mention has already been made in the previous section of the demand for maritime industrial estates. Because Flanders has three ports accessible to the larger sea-going vessels (in the medium-term future those of 60000 to 125000 tons) and because of the impact of maritime industrialization on employment opportunity and regional income, it is advisable to examine rather more closely the demand for maritime industrial sites.

Before doing so, a few of the macro-economic aspects of maritime industries should be emphasized. In the first place, most of the seaport industries are counted among the growth sectors. This is in itself a vital factor in respect of which Flanders

must make the most of its chances. In the second place, the maritime industries offer employment to a relatively high number of qualified technicians and graduates. In the third place, the impact on employment opportunity and income is very significant. In this connection we should like to draw attention to a recent survey of the Central Planning Bureau of the Netherlands: 'The national-economic significance of the establishment of industry in seaport areas'. This report shows that a shift within a total investment of 1 milliard guilders towards integrated industrial projects in the field of metallurgy or oil refining and petro-chemicals led to the following results. ⁽¹⁾

⁽¹⁾ Results of projected and secondary activities in the rest of the economy.

	Metallurgy	Oil & chemicals
Gross National product	+ 290 mill. fl. or +2%	+ 370 mill. fl. or + 0.25%
National income	+ 460 mill. fl. or +0.32%	+ 540 mill. fl. or + 0.36%
Employment opportunity	+ 4000 persons or + 0.08%	+ 3600 persons or + 0.07%

The available gross maritime industrial site area in Flanders can be estimated for 1971 at about 5300 ha (Antwerp 2600 ha, Ghent 2500 ha and Zeebrugge 200 ha). As a result of the existing operational plans this area should increase to 10800 ha in 1980, of which 5320 to be regarded as net area and distributed as follows:

Antwerp	3200 ha
Ghent	1400 ha ⁽¹⁾
Zeebrugge	800 ha ⁽²⁾

This means that under the present development plans the main effort during the present decade is directed towards the systematic expansion of Antwerp-left bank and Zeebrugge.

The demand on the part of the iron and steel industry, oil refineries, chemical industry, car industry, electric power stations and ship's repair yards are estimated at 1900 to 2300 ha for 1980. ⁽³⁾ Taking into account the necessary additions for distribution, time lag and infrastructure, this requirement will total 3,500 to 4,100 ha net. This means that if the planned expansion projects are realized the future development of the maritime industries will not be

frustrated by the lack of that vital settlement factor, the availability of maritime industrial sites.

§6. Summary

1. During the past decade Flanders has had a relatively low population growth (8.4%). On the basis of the hypotheses concerning external migration the growth rate of the population will decrease still further during the next fifteen years. The forecast shows a growth rate of 0.47‰ over the period 1970-85.
2. The income level and growth rate of income in Flanders is equivalent to the average for the EEC. The maintenance of this income level in relation to the EEC is favoured by the slow growth of the population.
3. The economic structure reveals many weak points, not only in sectoral structure but also in the size of the industrial units. The Flanders region was able during the past decade to compensate for this weak economic structure by a high growth effort.
4. Despite the low population growth, the economically active population will increase during the period 1970-85 by 31300 persons or 15.1%. The increasing number of women seeking

⁽¹⁾ Not including the 2 to 3000 ha which would become available if the new 125000-tonner canal is realised.

⁽²⁾ Not including the approximately 900 ha of the expansion zone.

⁽³⁾ Certain harbour-bound industries can also be classed under other categories.

employment and a shifting in the age group structure largely account for this increase.

5. The present labour reserve is mainly constituted by recoverable commuting (Brussels, Louvain and the neighbouring countries) and the potential reserve of female labour.
6. The mobility of labour in Flanders is characterized by (a) a relatively high employment opportunity outside the region, (b) a limited recruiting radius for the industrial firms in Flanders, (c) low inter-sectoral mobility and (d) an intensive re- or further training program within the firms themselves.
7. The autonomous development of the employment opportunity during the period 1970-80 will be marked by a very unequal evolution per sector. In agriculture the number of jobs will decrease sharply. Industry promises an increase of no more than 38000 jobs or + 5%, while in the trades and services sector a growth of 120000 jobs or + 14% may be expected. The total growth of employment opportunity, according to the working hypotheses adopted, is likely to remain restricted to a further 106000 jobs, or 6% more than at present.
8. The prospects in respect of gross added value are brighter. During the seventies the gross added value will increase in every main sector; 10% in agriculture, 85% in industry and 49% in the trades and services sector. This constitutes a general average of 63%, or 5% per year. It is however weaker than the growth trend during the past ten years.
9. Comparison between the supply of and demand for labour shows (a) a negative employment balance for Flanders at the present time and (b) a clear tendency towards deterioration during the seventies. Given spontaneous development, on the basis of the narrow hypothesis of labour supply the negative employment balance will increase from 225000 unemployed in 1970 to 316000 in 1980. This development is surprising in face of the growth achieved during the past decade and the favourable geo-economic position of Flanders within the greater EEC.
10. The shortage of employment opportunity is however less than the balance of the labour account indicates. According to the narrow hypothesis of labour supply the shortage of jobs will increase from 57000 in 1970 to 148000 in 1980, or 2.7% and 6.5% of the labour supply respectively. According to the broader hypothesis of labour supply the shortage is still more acute. It will increase from 130000 persons in 1970, or 6.1% of the labour supply, to 175000 persons in 1980, or 7.6% of the labour supply.
11. The deterioration of the labour balance will affect not only the general working population but also the graduate student group.
12. The location trend of industry in Flanders over the past decade has been characterized by a marked geographical dispersion over the region, (b) a distinct orientation towards industrial estates and (c) the important part played by the labour factor as an inducement in the choice of locality.
13. In the total of new firms moving into the region foreign concerns had a share of over one third; in terms of number of jobs and invested capital the share of these foreign firms was even greater.
14. The economic integration of Europe has put Flanders in a more favourable geo-economic position. The expansion of the EEC brings Flanders, together with the southern part of the Netherlands and the Ruhr district, into the zone of highest potential. The improved geo-economic potential of Flanders through European economic integration is clearly reflected in the export results.
15. The extensive inquiry conducted among commercial and industrial firms shows no marked local technical polarization (30 km radius) either in buying or in selling. There is however greater technical polarization in the transport business. This low technical polarization weakens the theory that technical polarization is a reason for orientating regional policy towards the stronger areas.
16. During the coming ten years Flanders will need 7225 ha of new industrial land. This requirement breaks down into 3641 ha dry sites, 1184 ha on inland waterways and 2400 ha maritime sites. The further equipment of some of the existing estates must also be borne in mind.

PART II: THE OPTIONS OF POLICY

In the synthesis section of this report a few important results of the survey were given particular emphasis. These did not however include all the possible conclusions to be drawn. This was partly due to our deliberate intention to discuss the options of policy in a separate chapter. The sub-reports not referred to in the first part of the report were those which were more specifically directed towards economic policy than those which were included. It would however be wrong to conclude from this that the first part of the report does not include any options of policy. These are in fact incorporated in it, either explicitly or implicitly. The predicted requirement of industrial estates per region and per situation contains a very important guide line for regional policy. Implicit options are also contained in the working hypotheses and the systematic structure of the survey. Examples are the options of migration dealt with in the population forecast, the working hypotheses for the determination of the labour supply, the compiled labour balance and the calculation of the shortage of employment opportunity, the effort to achieve equilibrium in the labour balance within each area by 1980, including a socially acceptable degree of commuting. Yet another implicit option of policy is the continued striving towards closer European economic integration within a greater Europe.

In this part of the report the emphasis will be placed throughout on the aspects of policy. In line with the method adopted in the first part, these aspects are divided into a number of sub-aspects. Attention is mainly concentrated on (a) optimalization of growth, (b) the industrial structure, (c) structural improvements in agriculture, (d) infrastructure requirements, (e) frontier problems, (f) the underprivileged areas and core development, and (g) the regional policy in the European perspective.

Before coming to grips with the options of policy two points must be made. Firstly, this section contains a great number of factors connected with the optimalization of growth. Secondly, it is none the less restricted to those points which are directly or indirectly the outcome of the survey.

This chapter, based on the compiled survey reports, however extensive these may be, cannot contain a general economic policy for Flanders.

§1. Optimalization of growth

That the economic growth of Flanders lags behind that of the West European countries as a whole over the period 1955-70 is due to a bad growth structure. This is caused by too low a contribution of the productivity factor. To increase this contribution and thus improve both the growth and the growth structure we must keep particularly in mind the influences contained in the residual factor of the Denison analysis.

Let us however first consider labour input and capital input. The study of the labour supply shows that the contribution to the growth made by the production factor labour can be expected to decrease quantitatively. This does not mean that the contribution of the labour input is negligible. Furthermore the employment shortage in 1980, because of the autonomous development of the demand, will be at least 148000 persons or 6.5% of the labour supply. On the broad hypothesis of labour supply this shortage amounts to 175000 or 7.6% of the labour supply. A large part of this shortage is already evident; it is partly also concealed in the commuting situation and in the low sectorial mobility.

The utilisation of the potential reserve of female workers can perhaps be stimulated by adaptations of the 'part-time formulae',

In addition to this, working hours will be further reduced. This will however be partly compensated by a higher productivity of labour.

In respect of the qualitative aspect of the labour supply, higher productivity may be expected owing in the first place to the shift in the age structure. It was shown in the first part of this report that through this factor alone the volume of production would increase during the period 1970-80 by 2.2% for male and 3% for female workers.

Of still more importance than the shift in age structure is the improved education of the working population both during the school years and through post-school further education in all its forms.

This leads us to the importance of the role of the technical colleges. A constant and flexible adaptation of technical training to the ever-changing

labour demand is an essential requirement. It is obvious that the extension of the legal school-leaving age creates at the same time a possibility of adjusting the general level of education of the working population to a higher technical level and thus ensuring a supply of competent technicians.

It would however be wrong to equate the quality of work with degree of education. In addition to certain subjective and personal factors such as aptitude, keenness, etc. there are also objective elements which influence the productive effort of the workers. Consider only the general social climate in the workshop, the community spirit among the workers, the relations between employer and employee, the number of working hours, personal motivation, the degree of friction between the various production stages: these are all elements which are of vital importance in determining productive capacity. It is doubtful whether all these factors are really given the attention they deserve by either employers or workers, and whether the studies devoted to this subject have evoked enough response or been adequately taken into account in the making of policy.

Owing to changes in the economic structure, sectoral and occupational mobility will not only increase but must be encouraged in both cases. The distinction between the two is however not always clear. More centres for retraining and further education, linked with the internal re- and further training programs provided by the firms themselves, are therefore essential. This is particularly necessary in the areas with an unfavourable employment structure such as East Flanders, Limburg and West Flanders.

In view of on the one hand the important contribution made by occupational mobility to the potential growth of Flanders and on the other the generally prevalent demand for on-the-job training, cooperation between the official retraining centres and the firms must be stimulated, not only in the sectorally weak areas but also in the cores of attraction.

Attention has already been drawn in the synthesis to the smaller percentage of the contribution to growth made by capital input in Flanders and Wallonia in comparison with the West European countries. This weak influence of capital as a growth factor partly explains the lower growth rate of Flanders and Wallonia, and Belgium as a whole, compared to the rest of the West European countries. In order to improve this situation investments must be increased and the capital stock rejuvenated.

Rejuvenation of the capital structure already includes a prime productivity factor of the Denison

analysis. Other Denison productivity factors to be kept in mind include a better allocation of the production factors, scale effects, better know-how and the adjustment of the industrial structure.

It is certainly a mistaken idea to expect a better allocation of the production factor labour through an intake from agriculture and non-agricultural independent workers. The transfer of active agricultural workers from farming to other sectors is coming to an end. The intake from the trades sector may be a little more important, but it must not be forgotten that a secondary activity is often contained in the disappearance of small businesses so that there is actually only a limited release of labour.

More influence on a better allocation of the production factor labour is likely to be exerted by a further removal of trade restrictions and especially by a further extension of the EEC. It is remarkable in this respect how greatly Flemish commerce and industry have neglected the British market during the post-war period.

In the next ten years much attention will have to be paid to the scale effects in the agricultural sector (see below), the industrial sector, and also the trades and services sector. In each of these the problem of small dimensions and the lag behind the surrounding regions of the EEC figure largely.

A third productivity factor in the Denison terminology is that of knowledge. In a wider context we may speak, in the light of neo-classical economic theory, of the factors of research, innovation, investment and the dynamic reaction of the economic agents, i.e. consumers, employers, workers and authorities. In this respect the following proposals may be made for the improvement of the economic growth of the Flemish region:

- (a) The importance of research in respect of economic growth is generally admitted and needs little further elucidation. Technological research forms a *conditio sine qua non* in respect of economic growth. 'Industrial research forms the basis of rejuvenation, not only of processes and finished products, but also of raw materials, and is therefore an essential instrument of a structurally rejuvenated economic policy' (1)

We would draw attention here to two points: Firstly, it is desirable for the furtherance of

(1) T. LEFEVRE: 'Wetenschap Vandaag voor de Maatschappij van Morgen', p. 75-76. ('The Science of Today for the Company of Tomorrow')

development research that research centres should be set up in cooperation with industry and the universities. These centres should have a double function: (a) to create the possibility of infra-structural development research in respect of the progressive pioneering sectors and (b) to distribute the results of new technological research among small and medium-sized firms and to give them guidance in their application.

Secondly, we would stress the importance of applied scientific research in the service of the functional aims of business in relation to society. In this context we refer to Fieren's report ⁽¹⁾:

'Where originally attention was paid only to short-term development or at the utmost to medium-term applied research, applied fundamental research has now gradually found its way into the industrial sphere of interest. The motive for this was not only the growing importance attached by industrial concerns to long-term functional objectives but also the realization that it was necessary to have available within their own organizations the knowledge and skills enabling them to share in the results of fundamental research carried out by scientists all over the world'. ⁽²⁾ There is indeed no doubt that scientific research in industry represents the most typical form of applied scientific research. We may further point to the possibilities of scientific research carried out in government institutes. 'In more and more fields the community will have to assume the functions of management: national defence, welfare, infrastructure of the economy, protection of the environment, future orientation of economic activity, etc. All these are matters for applied scientific research, undertaken on the orders of the government, which plays the part of management'. ⁽²⁾ On the subject of applied scientific research a few concrete proposals may be made :

- (i) Research connected with the science of materials is of such universal importance that it should be given preferential treatment in the grant of selective subsidies.
- (ii) Research into the bases of information should also be specially subsidized because of its enormous practical importance.
- (iii) To improve the organization and efficiency of scientific research in the agricultural sector it would be advisable to create an organization which would play the part of client. This would

make possible a selective choice of the projects put forward and improve coordination.

- (iv) A program of scientific research on the prevention of pollution of the environment is urgently necessary.
- (b) Research in itself is no guarantee of expansion. Technological research and applied scientific research must go hand in hand with innovation, productive investment and commercial expansion. Innovation—industrial rejuvenation—must be stimulated by trade and industry.
- (c) An intensive investment policy on the part of both commerce and industry and the government can foster such innovation.
- (d) Flemish commerce and industry are generally understaffed in the key positions. Improvement of this situation is very necessary.
- (e) In line with the previous point, improvements will also have to be made in the business management of the smaller and medium-sized firms.
- (f) A progressive outlook of the government and the trades unions is vitally necessary in respect of industries in difficulties, especially those of the regressive or stagnating sectors.
- (g) Great attention should be paid to the orientation of young people towards those branches of technical and higher education which are in line with the growth sectors, keeping a watchful eye on the balance between supply and demand.

§2. Improvement of the industrial structure

As a logical sequence to the last sub-section and in the light of the residual factor of the Denison method, attention must be given to the necessity of improving the industrial structure and the economic structure in general. Flemish economy has so far remained too strongly oriented towards regressive and stagnant sectors. The structural growth potentials of Flemish economy are still 5% below the EEC level. Commerce and industry have however realised considerable investments since 1968. These will only begin to bear fruit in the seventies. Their impact on the structure will be only marginal. The recent investments and the good results achieved by Flemish economy, in contrast to Wallonia, within the given structure must not however be made an excuse for a policy directed solely towards the growth sectors such as the chemical industry

⁽¹⁾ J. FIERENS: 'Rapport wetenschappelijk onderzoek van de centrale werkgroep van de E.R.V. — commissie', 1970.
(Report on the scientific research of the ERV Committee's central work group).

⁽²⁾ J. FIERENS: op. cit., p. 3.

and the modern steel and non-ferrous metals sector, and above all metal construction.⁽¹⁾⁽²⁾ A policy directed not so much towards the growth sectors as towards maximum efficiency of the sectoral structure in the wider sense, in other words a policy which corresponds to the largest real macro-economic growth rate, is now more than ever necessary in the light of (a) the steady deterioration of the labour balance in Flanders, (b) further de-restriction of world trade and (c) the better international distribution of labour, to which the developing countries lay claim⁽³⁾⁽⁴⁾. We may note that the expression 'maximum efficiency of the sectoral structure' must of course include the inter-sectoral links which are found in every economy (sectoral multiplicants and sectoral capacities).⁽⁵⁾

In this connection I think it of interest to mention the world-wide concept of B. Herman and J. Tinbergen concerning the optimum division of labour and on a smaller scale the sub-sectors which are to be regarded as the optimum for Western Europe, taking into account the available human, physical and general capital resources. What is applicable to Western Europe may be taken as characteristic for Flanders.

According to these two authors, optimalization indicates that Western Europe, provided that specialization is achieved in the sectors listed below, will make the most efficient use of its available means by satisfying its own requirements in the following sub-branches:

- refrigerating plants
- metal furniture and safes
- various machines
- accumulators and batteries
- installations for gas, water, heating and electricity
- steel wire
- machinery for the chemical industry
- machinery for the textile industry
- electric light bulbs
- tractors, locomotives, trams
- internal combustion engines

- pumps and lifts
- electric cables
- radio equipment
- electric fires and washing machines
- cars
- water and steam turbines
- various sub-sectors of the basic metal industry
- telecommunication installations
- plastics
- various sub-sectors of the food industry.

This list indicates clearly that the export possibilities of Western Europe are centred mainly on the metal construction industry. A number of sub-sectors of the basic metal industry, foodstuffs and chemicals also come to the fore, especially when only the physical capital is taken into account.

If we analyse the exports effected by some of the listed sectors in Belgian economy, we find in the ascertained growth some confirmation of the calculations of B. Herman and J. Tinbergen. Certain of the sectors mentioned have indeed succeeded in considerably increasing their export quota between 1966 and 1971. If we put the export figure for 1966 at 100, we find for the value of the exports in 1971:

hardware	183
machinery	189
electric machines	204
transport material	207

For the remaining exports in 1971 the index is only 174.

We have already shown in the first part of the report that without additional stimuli the growth rate of the industrial sector will slow down. A more dynamic and intensive investment policy will therefore be essential. From this follows the great importance of the sectoral allocation of government subsidies.

The application of the sectoral growth pattern, of which the results were discussed in the first section, furnishes some important indications in respect of the sectoral allocation of investment. It is found that the best results, from the point of view of employment as well as income, are obtained by the alternative injection of B.fr. 500 million additional investment capital per year into the sectors metals, chemicals and building. In respect of both employment capacity and income structure the metal sector reacts most favourably to the additional investment stimulus. In the sectoral growth pattern the metal sector covers both the branches, basic metals and metal construction, which are dealt with separately in the sectoral analysis. We may how-

⁽¹⁾ The steel and non-ferrous metal industries create important diffusion effects. The sectoral multiplicant in the chemical industry and metal construction is also relatively large.

⁽²⁾ Each sector is of course heterogeneous in composition, a further investigation is therefore required into the sub-sectors with the largest growth potential.

⁽³⁾ See B. Herman and J. Tinbergen: 'The international division of labour', Rotterdam 1969.

⁽⁴⁾ The expression 'largest real macro-economic growth rate' contains a discount of social cost elements due to the environment-disturbing factors.

⁽⁵⁾ To avoid any misunderstanding: the regressive sectors from the point of view of employment opportunity may yet show a favourable growth rate in terms of added value through marked increase in productivity. This is for instance the case with agriculture and textiles. However, new jobs must be found in other sectors to absorb the labour laid off.

ever assume that the metal construction industry is the more important component in this respect. This result is in line with the conclusions of B. Herman and J. Tinbergen. (1)

Besides the metal sector, the chemical sector also demands attention. We must however be careful to avoid over-investment in the latter case. It proves necessary to adjust investment and production as closely as possible to supply and demand.

Finally, so far as the building sector is concerned caution is also advisable. We have already shown that the attractive force of the building trade on the workers is at present rather weak. The expected increase in employment can therefore only be realized with the backing of an appropriate campaign for the promotion of the trade of building worker.

§3. Structural improvements in agriculture

Next to the long-term development of prices—mainly a matter for the marketing and pricing policies of the EEC—it is the structural development of the agricultural industry (including the commercial aspects) which remains the most important factor for determining the extent of production and the level of income in this sector. Within the structure itself a distinction may be made between the agrarian structure, which serves the industry as a whole (roads, power supplies, training, information, cultivation-technical works), and the internal structure based on the individual farm (size of holding, type of farming, owner/tenant ratio, use of the land, investment in farm buildings, and above all the commercial side). The structural reshaping of agriculture demands a communal effort, in which the government has a vital part to play. The re-shaping is partly the job of the farmer himself; it is the cumulative result of the improvement of the composing elements. The government's task is advisory. All this must however be seen against the background of a single hard fact: the recent increase in the added value of the agricultural sector has been achieved only by increasing capital investment. The relatively low growth of the added value during the next ten years will also remain dependent on considerable further investment.

In respect of the agrarian structure the definitive determination of the agricultural zones must be

regarded as a basic condition of improvement. In the re-distribution of land the exchange of plots can be a source of long-term yield. The exchange of land must however be directed more than in the past towards the structural improvement of the farm (dimensionally), with more efficient field size, road building and a better water economy as the secondary aim. This does not mean that the latter elements are under-estimated. In respect of cultivation-technical works, for example, the highest results will be obtained from an improvement of the ground water conditions. The financing of drainage schemes using rivers and unnavigable waterways should however be given more thought by the various local authorities.

A further vital element in the improvement of the agrarian structure is an intensified further training program at all levels of education and the furtherance of scientific research. A better flow of information from research centre to farm is also necessary. It would therefore be advisable to extend the channels of information in line with the importance of the various sectors.

In respect of farm structure, the size of holding is the first element to demand attention. Government initiatives and personal decisions can both contribute towards a larger size of farm in the future. Efficient management of the Agricultural Improvements Fund is essential in this connection. The main object of the Fund should be to ensure the availability of more farmland for farms wishing to expand. The restrictions imposed in respect of age of farmer and size of farm (income) often lead to the Improvement Fund falling short of its intentions.

In the attempt to achieve larger farmholdings it must never be forgotten that the Flemish farmer likes to be his own master. And no proof has so far been produced that the private farm does not present the most efficient unit of farming. The present policy of an enlargement in scale does however present certain problems in the financing of basic and working capital. For arable and mixed farming an appropriate institution will have to be set up to handle the financing of basic capital. Its first object must be to prevent the disintegration of farms which already have a sound structure, the second aim being to promote the creation of economically viable holdings.

For the same reasons it is necessary to ensure that tenant farming as an institution is properly managed. This demands a rent policy based on the normal price development of the land, in particular as a function of the productivity of the soil.

(1) See also *National Council for Scientific Policy: 'Wetenschappelijk onderzoek en economische groei II'*, pp. 82-85.
(*Scientific research and economic growth II*)

We have already pointed out that Flemish farms (specifically market gardening) will require in future a heavy investment per person employed. It is therefore even more necessary than before to find suitable financing formulas to help the skillful but less prosperous farmers. The provision of credit is subject to inherent risks. We must avoid the possibility that through too easy an access to the credits of the agricultural sector the yield suffers. The land-independent animal products, in particular, are characterized by a high elasticity of the supply. In certain cases the grant of subsidies to semi-agricultural, semi-industrial farms must be made dependent on the market situation.⁽¹⁾ It is also desirable that in the case of land-independent animal products sufficient own capital is available, and a sound repayment scheme implemented, so that a margin is left for the very considerable price risks inherent in this branch. In respect of these risks, combined with the increase in capital investment, it is worth suggesting that a general insurance scheme could be set up to cover epidemics and stock deaths in cattle farming and heavy risks in agriculture and market gardening.

A second aspect of farm structure concerns the form of business. While individual private enterprise is still the dominant form in Flanders, other possibilities will have to be considered in the light of future development. These include, for example: horizontal cooperation between farms, vertical cooperation with suppliers and processing or distribution firms, and contract farming or semi-integration.⁽²⁾ This brings us to the commercial aspect, which exerts a great influence on agricultural income. In the future the downward commercial aspects will have as much importance as the upward technical and commercial aspects and the infrastructure.

We will come back to this point when dealing below with the market structure. All the suggested forms of business structure contribute to the attempt to find a solution for the finance problem, the buffering of the technical and price risks and/or the essentials of income level, security of income and regulation of working hours.

In the seventies the market structure of agricultural produce, and the marketing policy adopted as a consequence, will form a very important, perhaps even the most important, part of the farm structure.

⁽¹⁾ G. BODDEZ, A. VILLERS & J. M. VAN HAEPEREN: "Hoofdprincipes voor staatshulp aan investeringen op het terrein van de landbouwstructuur". LEI Memos No 21, Brussels 1970 p. 9 (Main principles of state subsidies for investments in the context of agricultural structure).

⁽²⁾ Another form is the integrated farm with a number of members.

The future expectations in respect of consumer demand for foodstuffs will determine the sale possibilities of agricultural and market gardening products, which are being increasingly supplied as a 'raw material' for commercial processing.

Increased prosperity means higher consumer demands in respect of quality, packing and service. In order to obtain a larger share in the market for certain products Flemish agriculture will have to adapt its commercial structure to a wider European market. In this European market important developments are taking place on the demand side (larger scale, concentration of the processing and distribution organizations).

Agricultural producers must respond to this trend with a suitable production and marketing structure. The previously mentioned forms of cooperation: horizontal for the auctioning of produce, vertical cooperation, contract farming and the multi-member integrated farm will gain in significance in the future. The farmers and/or farmers' union can make their choice of any of these forms.

For a number of products preference may be given to an expansion of the existing horizontal sales structure (auctions), cooperatives on a regional, national or even possibly EEC scale, in order to strengthen the sales position of the members in respect of the central distributing and processing firms. In this way reliable and prompt information can be obtained for the whole EEC market and directives can be issued to the members concerning supply and demand.

Next to this, the vertical cooperation between farms and supply and distribution firms is certainly worth considering. It is however advisable for the producers to act in concert opposite these powerful business groups.

Contract farming on the basis of agreements with suppliers, processing or distributing firms, still has to prove its advantages over other commercial marketing methods. Experience has however shown that the aim should be towards type contracts if a satisfactory fulfillment of the liabilities on both sides is to be ensured. Private enterprise will certainly play an active part in this development. It is essential that nothing should be done to slow down or hinder such activity. Cooperation with the horizontal sales organizations of the producers will still remain a possibility, probably to an increasing extent.

This emphasizes the vitally urgent character of the new European expansion of the producers' unions for the marketing of a number of important agricultural and market garden products.

A complementary measure, to a certain extent an alternative, to the above-mentioned policy of structural improvement, is to organize, more than has so far been the case, the shift of production towards sectors of large potential sales capacity. In this respect we must pay special attention to those sectors in which Flemish agriculture and market gardening has a head start in the matter of locality, production techniques, quality and 'know-how', and/or for which a potentially expanding market exists in Europe or even overseas. This applies specifically to Flemish market garden produce such as chicory, strawberries and ornamental plants, also pig farming.

Structural policy is therefore concerned with both reorganization and development. The more clearly a product-aligned integrally directed policy (general solution of the production and marketing problems) takes shape, the less acute the problems of improvement will appear. In the general sense the direction referred to constitutes a shift towards the intensification of management, skilled labour and capital.

§4. Infrastructural aspects

One of the most important incentives for economic expansion is provided by the infrastructure, or the economic foundations in the form of the basic infrastructure; roads, waterways, railways, ports, industrial estates, water supplies, tourist infrastructure, etc. We summarize below the essential requirements for the next ten years.

It was originally intended to give not only the infrastructural requirements as such but also an estimate of the financial repercussions of their provision. However, the difficulties involved proved greater than anticipated. In this synthesis we therefore confine ourselves to the financial aspects of a single infrastructure element, the industrial estate.

A. Industrial estates

Industrial estates have been extensively dealt with in the first part of this report. They constitute an important tool for the industrial development of the Flemish countryside. We need not repeat our findings here, but will point only to the financial problems involved. The dry and inland waterway estates to be created over the period 1971-80 will require an investment of 4.3 milliard B.fr (the maritime estates are not included in this). Besides the provision of new industrial estates attention

must also be paid to the further equipment of those already in existence. Certain zones which are now described as industrial estates are in fact not yet, or only very inadequately, provided with the essential infrastructure. The cost of this work is estimated at 3.2 milliard B.fr. for the period 1971-80. This brings the total financial requirement to 7.7 milliard B.fr.

Are the financial means set aside for this purpose adequate? The "Outline for the Plan 1970-75" allows 1.5 milliard B.fr. per year for the equipment of the industrial estates or the construction of access roads from the Fund for Economic Expansion. On the assumption that Flanders will receive 60% of the budget, an average amount of 0.9 milliard B.fr. will be available per year. The estimate of the necessary financial means shows that the average requirements will be 0.77 milliard B.fr. per year. This would only leave 0.13 milliard per year for the maritime estates. It may be assumed that this will not be enough. ⁽¹⁾ To ensure the proper development of the new maritime estates an average total of 1.2 milliard B.fr. will be needed for the equipment of the industrial estates as a whole.

B. Transport

Our original intention was to discuss the synthesis of the aspects of transport in the first part of this report. This was finally abandoned because the survey concerned was clearly related to the options of policy. Capacity and efficiency of utilization per medium of transport, now and in the future, must inevitably reveal the present and future points of friction between the transport media, and these points of friction are certainly among the most important indicators of policy in respect of the transport infrastructure.

It follows from the above that the transport sectors must be individually analysed. In so far as the determination of the capacity of the existing infrastructure is concerned this proved, with a few exceptions, to be no great drawback. In the second stage, the forecast of future infrastructure requirements, it was attempted as far as possible to include the expected interchange of load factors between the different transport media.

Capacity cannot however be determined in a uniform manner for all forms of transport. Original methods were adopted in the case of waterways and roads. For inland water transport the maximum utilization of the locks forms the basis for the

⁽¹⁾ There remains the problem of the distribution of the financial burden between the national and local governments. In many cases however this is merely a shifting of the financial problem.

calculation of the capacity of the canal system. Because this is a somewhat hypothetical value, the saturation capacity was also experimentally established for these waterways; this relates the theoretical capacity to the saturation limit. For the natural waterways, capacity was determined by factors such as ship's speed, distance between ships for reasons of safety, etc.

For road transport the daily and hourly capacities were taken as points of departure. These were calculated for 127 main roads or sections of such roads from the experimental data provided by the Highways Research Board. The number of traffic lanes is an essential factor here.

To facilitate a comparison between the expected future capacity of the roads and the expected future demand, it was necessary to predict the traffic flows (traffic development). For rail, roads and inland waterways a coherent method was applied. This is based on a forecast of the total transport requirements per region. As a basis for freight transport the growth coefficients of the industrial and agricultural production were used; for passenger transport the active population and the employment opportunity. For the determination of the future transport flow between regions the Detroit growth factor method was applied (traffic distribution). On the basis of the future transport flow it is possible to apply a modal division. In respect of the distribution per means of transport a shift from rail to road traffic was taken into account. This hypothesis differs markedly from that which assumes a constant share of the modal. The method may arouse considerable argument. It should however be realised that the choice of hypothesis should really be based on the political options of transport policy. It is in fact the government itself which plays an influential part in the competition between the modal through transport-political measures.

However thoroughly certain analyses concerning the transport industry, e.g. waterways and road transport, were carried out, this part of the survey cannot claim to be comprehensive. The interactions between the means of transport are by their nature not open to sufficient study within the framework of the tools at our disposal. For certain subjects too the necessary basic data were not available. The results of the survey must be regarded in this light. The proposals none the less retain their objective and real value.

Before entering upon a discussion of the different transport modal we must put forward certain themes of transport policy. In section 6 of this part of the report four primary Flemish growth centres are distinguished: Antwerp, Ghent and the two bi-

polar centres Bruges-Courtrai and Hasselt-Genk. The expansion of these growth centres must form the backbone of Flemish economy. An attempt must therefore be made to promote the means of communication by road, rail and water between the respective centres and between them and other important growth centres outside Flanders and abroad. This should lead ultimately to the Flemish axis Courtrai - Bruges - Ghent - Antwerp - Hasselt - Genk. The expansion of this axis will simultaneously help to facilitate and speed up the decongestion of industrial, commercial and passenger traffic and the decentralization of administration, both public and private, from Brussels. This de-centralization is essential for social-economic reasons such as external costs and socially unjustifiable commuting, and for environmental reasons. It will however be largely dependent on a sound expansion of the transport sector in Flanders and Wallonia.

Concrete proposals in respect of this policy are:

- The new motorways and express roads must avoid the agglomeration of Brussels for both traffic-technical and economic reasons; in this connection a link between the A2 and the E5 via the crossing of the A1, E10 and A11 is essential;
- the seaports must be connected by a canal taking at least 2000 ton ships; with the medium-term modernization of the Leie and the Albert Canal all the primary growth centres will then be interconnected by waterway;
- an express rail connection Lille-Courtrai-Ghent-Antwerp-Hasselt-Mantzen-Germany; this will simultaneously provide the cheapest connection between England, Calais and Germany both for goods and passengers.

1. Inland shipping

In the whole complex of transport too little attention is often paid to inland shipping. This is however an aspect which Flanders and Belgium in general can ill afford to neglect, given the maritime position of the country and its great dependence on the supply of raw materials through the seaports.

The survey on inland shipping was conducted in three important stages. In the first place a comparison was made for each inland waterway between the present saturation capacity and the actual transport performance. Secondly, the saturation capacity to be achieved after completion of the waterway infrastructure and the various improvements expected by the end of 1975 is compared to the pre-calculated transport performance in 1975.

As, with the exception of a few works which will still be carried on, the concrete improvements to be undertaken after 1975 are not yet known, the third comparison was made between the saturation capacity 1975 and the anticipated transport performance 1980. On the basis of these three comparisons the present bottlenecks and the bottlenecks for 1975 and 1980 can be determined. The results of the calculation for the waterways, of which the saturation capacity in 1970 was taken as 50% are shown in appendix 11. From this we can identify those waterways for which saturation phenomena are to be expected. ⁽¹⁾⁽²⁾

The waterways on which transport performance equals or exceeds the saturation capacity, and for which the saturation capacity cannot be further extended by measures of an administrative or organizational nature (increase of permitted sailing time and longer working times at the locks) are, in 1970: the Albert Canal, the canal from Bocholt to Herentals, the sector Klabbeek-Brussels of the canal from Charleroi to Brussels, the Leie except for the sector between the lock at Komen and the Bossuit-Courtrai canal, the section of the drainage canal of the Leie between Deinze and the Ghent-Bruges canal, and the canal from Roeselare to the Leie.

Although in 1970 the tonnage carried on the Briegden-Neerharen canal, on the section of the Upper Scheldt between the Berchem Kerkhove lock and the ringway at Ghent and on the sector of the Leie between the lock at Komen and the Bossuit-Courtrai canal are slightly above the saturation capacity, the latter could still be increased by administrative and organizational measures.

There are of course also a number of frontier bottlenecks such as the connections between West Flanders and France (Deule canal and Spiere canal) and those between Limburg and the Netherlands (locks at Lozen and second link between the Albert and Juliana canals). These will be discussed separately in a following section.

As to the outlook for 1975, taking into account the infra-structure works now in hand and those promised up to that date, the calculation of the saturation capacity indicates that the bottlenecks now experienced on the Albert canal, on the section of the drainage canal of the Leie between Deinze and the Ghent-Bruges canal and on the canal from Roeselare to the Leie, will be cleared. But on other

waterways other bottlenecks will appear. The waterways on which congestion is likely to be so severe by 1975 as to prevent a smooth flow of the traffic then to be expected are: the Briegden to Neerharen canal, the Ternaaien to Maastricht canal, the Bocholt to Herentals canal (section from Beverlo to Herentals), the section Klabbeek-Brussels of the canal from Charleroi to Brussels, the upper Scheldt, the section of the Leie between the French border and the Bossuit to Courtrai canal, and the Dender from Geraardsbergen to Dendermonde.

The determination of the bottlenecks for 1980 posed greater problems. Transport performance is already more difficult to forecast and the infra-structure works for the period 1975-80 are not known. With the exception of the Leie and the Nete canal the development of the waterways after 1975 could not be taken into account. The expected transport performance of 1980 was therefore compared with the saturation capacity for 1975.

Indications for the 1980 bottlenecks can also be derived from appendix 11: the Albert canal, the Briegden to Neerharen canal, the canal from Bocholt to Herentals (section Beverlo to Herentals), the Klabbeek-Brussels section of the canal from Charleroi to Brussels, the upper Scheldt, the Dender, the canal from Ternaaien to Maastricht, the Zuid-Willemsvaart, the Nete canal (if the proposed construction of a push-drive lock at Viersel is not completed by 1980), and the canal from Dessel to Schoten.

On the Albert canal reconstruction works are now in progress because of the necessity of making this waterway navigable for large push-driven convoys of 9000 tons. The canal is expected to be fully completed about 1975. By the large scale use of push-driven convoys and the construction of the by-pass canal Oelegem-Zandvliet, which is to be adapted for push-driven convoys by about 1977, it is almost certain that the saturation capacity of the Albert canal will be considerably higher, so that it is possible that in 1980 there will be no bottlenecks here.

A few final important notes on the subject of the calculated bottlenecks:

In the first place, these bottlenecks are the outcome of a clash between transport performance and saturation level. A waterway may however be in need of modernization for reasons of social-economic and/or operational-economic reasons even when the point of saturation is not reached (e.g. the canal from Bossuit to Courtrai). The adaptation of many waterways to the European standard must be seen in this light.

⁽¹⁾ The calculations were made for all waterways.

⁽²⁾ The saturation capacity used takes into account the proportion laden/empty vessels and the loading coefficient of the laden vessels.

In the second place it was assumed in the calculations that the proportion of laden vessels to empty vessels together with the loading coefficient of the laden vessels as determined in 1968 will also be valid for 1975-80. In view of the continual evolution of all transport techniques it is obvious that in inland shipping too there will be a constant striving towards rationalization of the operational techniques and maximum efficiency of the transport performance. It is therefore not impossible that in the years from 1975 onwards an increase as compared with 1968 will be experienced both in the proportion of laden vessels to total number of vessels using a given waterway and in the loading coefficient of the laden vessels, in the permitted sailing times and in the working hours of the locks. The saturation capacity in the years 1975 and 1980 will in practice be higher than the value calculated.

2. The railways

Many railway networks in Western Europe have a reserve capacity. The Belgian railways are no exception to this rule. Saturation is however already reached in the peak-hour passenger services in the Brussels region and on the Antwerp-Boom-Mechelen line. Antwerp Central too is a bottleneck. The railway connection between the two banks of the Scheldt will bring still more traffic into Antwerp Central from Sint-Niklaas and beyond. It is essential in these circumstances that an investigation should be made as soon as possible into the desirability of converting Antwerp Central into a through-station. Apart from that it is becoming increasingly urgent to modernize and electrify the Mechelen-Boom-Antwerp-Kiel line in the near future to provide a rapid connection between Antwerp South and these towns with their urban hinterland, so as to reduce at least to some degree the volume of traffic at Antwerp Central. In the light of an expansion of the Flemish axis and the de-concentration of Brussels it is questionable whether there is much point in a further expansion of the Brussels rail 'star', though certain work has already been started here.

In view of the present general traffic load in goods and passengers and the modern standards of speed, the following lines are now ripe for electrification (or increase of speed) and a continuation of the present modernization of the network :

- Antwerp-Aarschot-Hasselt-Montzen
- Lier-Herentals
- Aarschot-Louvain
- Hasselt-Genk
- Antwerp-Sint Niklaas-Ghent-Courtrai-Lille
- Brussels-Dendermonde-Schellebelle
- Bruges-Courtrai.

Despite the stagnation and in certain years the decrease of rail freight traffic, the corrected forecast points to a considerable growth potentiality during the period 1968-80. For all the Belgian transport sectors studied (inter-zonal, import and export by sea, import and export by land) a growth of 62% is found for the period 1968-80. The forecast is open to criticism. It has however the advantage of providing a clear scientifically-based picture of the potential transport volume in 1980.

The predictions for passenger traffic show an increase of 11% for the period 1968-80. This average growth is however complicated by very marked positive and negative differences per transport sector. The positive differences are however mainly concentrated in the Flemish region; the negative are more confined to southern Belgium. In general in any case the growth will be less than for goods transport.

Within the framework of the 'Outline for the Plan 1970-75' provision is made for the following works :

- final completion of electrification Antwerp-Sint Niklaas and modernization and electrification Sint-Niklaas-Ghent ;
- completion of the tunnel and fortification line at Antwerp ;
- electrification of the Hasselt-Genk line ;
- electrification of the Antwerp-Boom-Mechelen line ;
- increased speed on certain main lines ;
- improvement of the railway equipment in the larger urban areas.

These modernization works only partially meet the demands of the bottlenecks referred to above. Taking into account the ten-year plan of the NMBS (Belgian State Railways) and the anticipated transport performance, the following additional railway infrastructure works are suggested. ⁽¹⁾

⁽¹⁾ The NMBS's ten-year plan 1970-79, in addition to the works already mentioned in the 'Outline of the Plan 1971-95', provides for the electrification of the lines :

- Antwerp-Aarschot-Louvain-Hasselt-Tongeren-Visé-Montzen
- Ghent-Courtrai-Lille.

The ten year plan also provides for the improvement of track and profiles to enable an increase of speed on the existing main lines; this should gradually lead to the following standards :

Brussels-Antwerp	160 km/h
Antwerp-Essen-Netherlands	160 km/h
Brussels-Ostend	160 km/h
Brussels-Louvain-Liège	160 km/h
Antwerp-Hasselt-Visé	120 km/h
Antwerp-Ghent	140 km/h
Ghent-Courtrai	160 km/h
Courtrai-Lille	120 km/h

- increased speed between Lille and Courtrai in order to guarantee a continuity on the line Lille-Antwerp; ⁽¹⁾
- electrification and/or increased speed on the lines Bruges-Courtrai, Lier-Herentals, Aarschot-Louvain, Brussels-Dendermonde-Schellebelle;
- expansion of the infrastructure between Zeebrugge and Ghent;
- with reference to the considerations previously advanced, a thorough technical-economic study of a railway link Antwerp-Ruhr.

In connection with the future infrastructure three important points should be made. To counter the difficulties already now experienced with peak-hour traffic in the services to the larger towns, the NMBS provide in their ten-year plan for extensive infrastructure works in and around Brussels, Antwerp and Ghent. The work now in progress and that planned ahead for the Brussels area is in fact partly in contradiction to the presupposition of decentralization.

The second point concerns the construction of the completely new line Lille-Brussels for ultra-rapid trains (300 km/h) which would provide a connection with the lines Paris-Lille and Calais-Lille (with connection to the railway tunnel). The line Lille-Brussels would include sideline sectors to ensure good local services. By 1980 the ultra-rapid lines will have drastically altered the look of the networks of a number of West European railways. This development will also have significant consequences on the geo-economic situation of certain regions.

In Belgium two routes are now being studied for the new line Lille-Brussels line, i.e. Lille-Doornik-Brussels and Lille-Ghent-Brussels.

The last alternative should be preferred for three reasons:

- (a) it serves an additional important urban area;
- (b) between ultra-rapid trains, the existing Ghent-Brussels line will be relieved, and
- (c) modernization of the present Ghent-Brussels line becomes unnecessary. ⁽²⁾

It is further essential that a further stage the new line should be extended to Cologne via Louvain in order to provide connections with the north-south axis of the ultra-rapid lines in Western Germany.

Rapid connections should also be provided between Brussels and Antwerp with extension to the Netherlands, and between Antwerp and Ghent.

The last remark to be made is of quite a different nature. Up to the present time the public transport links by road (bus services of the NMBS and NMVB) have been insufficiently adapted to the shift of a number of factories from the town centres to the industrial estates. Some industrial estates are far too isolated in respect of public transport.

3. Roads

The following bottlenecks in road traffic were also found by a comparison between traffic capacity and traffic demand. For this calculation the hourly traffic census figures were compared with standard capacity; it shows the number of hours during which that capacity is exceeded on the roads or sectors involved.

The bottlenecks refer to three periods, 1970, 1975 and 1980. Two remarks should first be made. Firstly, the traffic census did not cover all the major roads so that some bottlenecks—Bruges-Courtrai, for instance—are left out. Secondly, the sum of the bottlenecks cannot constitute a formula for a real road construction program. A bottleneck may for example be removed by the construction of a motorway in the vicinity. In fact the newly planned motorways and those now under construction will eliminate many problems by diverting the traffic. There is also a second reason why the sum of the bottlenecks cannot constitute a road construction program. In certain cases a new road may also act as a contributory element for the development of a region. This must not be regarded as contradictory to the often repeated, perhaps rather over-simplified remark that infrastructure does not create traffic. New roads may be made necessary by non-adaptation of the conditions on one side of a frontier post to those on the other—this may in fact create traffic.

These introductory remarks do not in the least diminish the importance of the bottlenecks revealed by the road traffic analysis.

As a result of 127 statistical observations made in the Flemish region it was found that in 1970 there were 53 roads or road sectors where there was at least 1 hour during which standard capacity was exceeded. ⁽³⁾ ⁽⁴⁾ This is in itself already an indication of an infrastructure requirement. The degree of

⁽¹⁾ See also the remark in connection with the ultra-rapid line Lille-Brussels.

⁽²⁾ A service track along the ultra-rapid track can ensure the normal local services.

⁽³⁾ The census covered 112 hours.

⁽⁴⁾ Works carried out 1970-72 are not taken into account.

overload assessed in number of hours is very unequal. Three roads had more than 50 hours of overload in the specified period: Brussels-Tervuren, Antwerp-Sint Niklaas, Brussels-Louvain. ⁽¹⁾

It was found that the Tervuren-Louvain road, sectors of road no. 14 (Turnhout-Antwerp-Sint Niklaas-Ghent-Courtrai), No 296 (Knokke-Maldegem), No 1 (Brussels-Mechelen-Antwerp-Breda), No 213 (Merksem-Putte), No 3 (Brussels-Louvain-Liège) and No 53 (section Louvain-Aarschot) all count a considerable number of hours during which capacity is exceeded.

A comparison of the road capacities in 1975, after completion of the projected and completed works for the period 1970-75, with the anticipated road

traffic demand for the same year shows 40 roads acting as bottlenecks, of which 7 with more than 10 hours capacity excess (see Table 17). ⁽²⁾ In the same table the analogous results for 1980 are also given. The situation in 1980 was based on the assumption that no new roads or improvements will be realised between 1975 and 1980. ⁽³⁾

From the sequence in order to severity of the 1975 bottlenecks, and after taking into account the infrastructure improvements planned, the primary bottlenecks still remaining will be, in order of importance:

- Knokke-Maldegem
- Merksem-Putte

⁽²⁾ The census covered 112 hours.

⁽³⁾ The infrastructure works for 1975-80 were not taken into account.

⁽¹⁾ The infrastructure works for 1975-80 were not taken into account.

Table 17 : Roads arranged in order of importance of number of hours during which standard capacity is exceeded, 1975 and 1980 (on the basis of 1975 infrastructure) ⁽¹⁾

Road or road sector	1975						1980					
	1-2	3-4	5-9	10-19	20-29	30 & +	1-2	3-4	5-9	10-19	20-29	30 & +
– Knokke-Maldegem						+						+
– Merksem-Putte						+						+
– Antwerp-Stekene				+							+	
– Louvain-Mechelen				+								+
A Bruges-Aalter				+					+			
A Aalter-Bruges			+						+			
– Berchem-Waregem				+						+		
– Aalst-Dendermonde				+						+		
– Lier-Herentals			+						+			
– Heist o.d.B.-Mechelen			+							+		
– Oudenaarde-Courtrai			+						+			
– Geel-Mol			+						+			
– De Panne-Veurne			+						+			
– Asse-Dendermonde			+						+			
– Wetteren-Ghent			+						+			
– Lier-Aarschot			+						+			
– Lier-Viersel			+					+				
– Nonove-Aalst			+						+			
A Wolvertem-Boom		+							+			
A Antwerp-Herentals		+							+			
A Herentals-Antwerp	+							+				
– Menen-Ypres		+						+				
– Ghent-Eeklo		+							+			
– Dendermonde-Hamme		+							+			
– Veurne-Ypres		+						+				
– Ostend-Nieuwpoort		+							+			
– Brussels-Tervuren		+								+		
– Knokke-Blankenberge		+										

⁽¹⁾ In some cases the number of hours in which capacity is exceeded may be lower in 1980 than in 1975, even when not accompanied by ancillary infrastructure work. This is a result of the shift of economic activity towards the motorways.

Table 17 : Roads arranged in order of importance of number of hours during which standard capacity is exceeded, 1975 and 1980 (on the basis of 1975 infrastructure) ⁽¹⁾ (continued)

Road or road sector	1975						1980					
	1-2	3-4	5-9	10-19	20-29	30 & +	1-2	3-4	5-9	10-19	20-29	30 & +
- Aalst-Wetteren	+							+				
- Mol-Hamont	+								+			
- Tongeren-Liege	+							+				
- Brussels-Louvain	+								+			
A Herentals-Geel	+									+		
A Geel-Herentals								+				
- Turnhout-Geel	+							+				
- Hasselt-St. Truiden	+							+				
- Mechelen-Lier	+							+				
- Roeselare-Diksmuide	+							+				
- St. Niklaas-Hulst	+								+			
- Menen-Roeselare	+							+				
- Ninove-Nederbrakel								+				
- Maldegem-Bruges								+				
- As-Bilzen								+				
A Brussels-Wolvertem								+				
A Wolvertem-Brussels								+				
A Tongeren-Liège								+				
A Groot Bijgaarden-Strombeek								+				
- Hasselt-Bilzen								+				
- Asse-Aalst								+				
- Torhout-Ostend								+				

⁽¹⁾ In some cases the number of hours in which capacity is exceeded may be lower in 1980 than in 1975, even when not accompanied by ancillary infrastructure work. This is a result of the shift of economic activity towards the motorways.

- Antwerp-Stekene
- Louvain-Mechelen
- Bruges-Aalter
- Berchem-Waregem
- Aalst-Dendermonde.

In addition to this many roads show overloads of 1 to 8 hours of a maximum total of 112.

It must however be taken into account that Table 17 does not include all the bottlenecks. For some important roads no traffic census figures were available to us.

Certain of these roads (e.g. Bruges-Courtrai) undoubtedly show an overload. Other roads showing an overload will be substantially relieved by an adjacent motorway. As an example we may take the road sector Nieuwpoort-Ostend, as a result of the A 11 (Jabbeke-Veurne) already in the project stage.

Taking into account the existing and expected bottlenecks and also the effects of certain new roads on the expansion of certain districts, the

following motorways and fast roads will need to be constructed during the seventies:

- motorway Zeebrugge-Courtrai-Doornik (A 71);
- motorway Bruges-Zelzate-Lokeren-Dendermonde-Brussels (A 11) (extension of Calais-Veurne-Jabbeke);
- motorway Courtrai-Veurne (A 9);
- extension of fast road Antwerp-Zelzate to Knokke centre;
- fast road Terneuzen-Zelzate-Ghent;
- motorway Brussels-Courtrai (via Ninove-Geraardsbergen-Zottegem-Oudenaarde) (A 8);
- widening of the sector Aalter-Bruges on motorway E 5;
- motorway Brussels-Louvain-Lummen (A 2);
- motorway Eindhoven-Hasselt-Hoei (A 24);
- motorway Tilburg-Turnhout-Geel-Punt-Aarschot, with link to the A 2;
- fast road Perkpolder-Sint Niklaas-Dendermonde-Aalst-Ninove-Mons.

The last three roads would drastically improve the north-south connections, which are in many parts poor.

4. Pipelines

Pipelines as a means of transport are now entirely controlled by the private sector. There was therefore no question in this case of comparing transport performance with capacity. It was however found that pipeline transport is economically the most profitable for quantities of about 5 million tons per year of crude oil, and for about 3 million tons refined products of the petroleum industry.

During the next ten years the demand for oil will steadily increase; for Belgium an annual growth of about 4.5% may be expected. It would therefore be unjustifiable to discriminate against pipelines in favour of other means of transport.

It was also apparent, however, that for Belgium the construction of pipelines for petrochemical products for national consumption alone must be regarded with caution. There are none the less already such pipelines in Belgium. As their capacity and use are at present somewhat restricted it would be advisable for reasons of cost to seek a solution on the basis of international cooperation.

With an eye to the future supply of oil by pipeline, two lines deserve attention, i.e. the existing line Rotterdam-Antwerp with an extension to Brussels and Wallonia, and the line Zeebrugge-Ghent-Antwerp-Hasselt-Louvain-Ruhr. ⁽¹⁾

As to pipelines for products other than oil, it must be stressed that as all these lines are privately owned and there is less possibility of the occurrence of other bottlenecks, the supply/demand ratio will be regulated by free market and maximum efficiency principles.

In a wider context, and taking into consideration the increasing number of products which are capable of being transported by pipeline, considerable attention will have to be given in the near future to the construction of pipeline 'streets'. The following principles must be kept in mind:

- (a) the origin, direction, capacity and end point of a pipeline are not in the first instance determined by the need for such a means of transport;
- (b) the routes must be so traced that the pipelines offer branch facilities not only at the terminal

⁽¹⁾ A split into two sections of the pipeline Rotterdam-Zeebrugge depends on a number of conditions. In the first place proof must still be furnished that this means of supply would be cheaper in the micro- and/or macro-economic sense than the pipeline Zeebrugge-Antwerp, taking into account the fact that from 1976 onwards Zeebrugge will be able to accommodate vessels of 125000 dwt fully laden, and partly laden giant tankers. A second factor concerns the distribution of risks of the supply. Finally it must be pointed out that the IKESK has given only a provisional permit for the existing line Rotterdam-Antwerp.

but also at intermediate points. It is therefore advisable that pipelines should be provided in the design stage with an ample surplus capacity, so that connections made at a later stage will be ensured of a sufficient supply in respect of future requirements.

For the Flemish region two pipeline routes are recommended:

- (a) the line coming from the Netherlands and leading via Antwerp and Brussels to Wallonia;
- (b) the line Zeebrugge-Ghent-Antwerp-Central Limburg-Louvain and on into Germany.

The expansion of these two pipeline routes has the advantage of inter-connecting the various ports of supply, so that the supply of the industries linked to a pipeline is always ensured even when supplies can be drawn from one port only.

5. The seaports

In the first part of this report mention has already been made of the part played by the national seaports in Flemish economy (see also subsection 5 of this part). The three seaports Antwerp, Zeebrugge and Ghent are a trump card of Flemish economy. Each of these three large ports is however hampered by limited access facilities. During the seventies the expansion of the ports of Antwerp and Zeebrugge must be given priority. The essential works for both ports are contained in the "Outline for the Plan 1970-75", and they will have to be continued in the fourth plan. In both cases the macro-economic yield will be ensured. The expansion of Antwerp depends in particular on normalization work in the Wester-Scheldt (e.g. the Bath bend), the completion of the Wester-Scheldt radar installation and the Baalhoek canal with ancillary works. In Zeebrugge precedence will be given to a 125000 tons lock, access to this lock from the sea between piers for ships of 125000 tons, a connection from the lock to the industrial area via a special canal dock, and the widening of the Boudewijn canal. Concurrently with these works a study must be made of the future expansion possibilities of this port for the accommodation of ships of very large draught.

With an eye to the more distant future we must already now consider the ways in which the port of Ghent can be made most efficiently accessible to ships of 125000 tons.

6. The airports

The basic survey reports failed to provide a clear picture of the future requirements of the Flemish

region in respect of airports. Moreover, the central government is now preparing to take certain decisions which may have a great influence on the airport infrastructure requirements of Flanders. We would however put forward a plea for three or four regional airports in addition to the national airport at Zaventem-Brussels. We are thinking here of Ostend, Ghent, Antwerp and Zutendaal. It is not within the competence of this survey to decide on the siting of an airport at Antwerp or Ghent. We would only suggest that a second national airport should be provided within the triangle Ghent-Antwerp-Brussels. This would throw a different light on the extension of the regional airports at Ghent and Antwerp.

C. Water supply

In order to determine the requirements for water, the water balances were studied. These were compiled for each province and calculated on the basis of the sources of supply. The latter are divided into two groups:

- (a) the supplies distributed by the Water Boards (mainly ground water), and
- (b) the surface water (mainly used by industry, agriculture and inland shipping).

In general the Flemish region can be divided into two parts in respect of the water problem. The provinces Antwerp, Limburg and Brabant can be regarded as having no problems at all. (The problem of water purification was not taken into consideration here). The 'no problem' situation of these provinces depends however on a number of conditions. For example, the requirements of Antwerp will be met on condition that the modernized Albert Canal is adequately fed by the Meuse. The province of Brabant depends on the realization of the plans for additional sources of supply made by the Brussels Inter-communal Water Board.

The situation is very different in East and West Flanders. The possible supply of 48 million m³ water for distribution in West Flanders by 1980 is dependent on extra supplies from three different sources (local water boards, the Brussels Inter-communal Water Board and the Blankaarts reservoir). On the maximum hypothesis this still leaves a deficit of 12 million m³. The situation demands an intensification of the seawater de-salination works. Attention should also be given to the storage and purification of the useable surface water. In respect of surface water itself the requirements of West Flanders are met, but the quality is fit only for limited purposes (cooling water). Purification is a necessary complement.

The domestic water requirements of East Flanders can be met by the water board supplies. This presupposes that the TMVW can expand its total supply in the province of East Flanders to 46 million m³ water. In order to avoid possible risks the capacity of the Kluizen reservoir must be considerably expanded. In contrast to West Flanders, the water problem in East Flanders is mainly connected with surface water. On the basis of the predictions requirements will no longer be met by 1980. To provide for this the following measures may be considered: the purification of the Leie water for feeding the Ghent-Bruges canal, the construction of a reservoir in the Nimy-Péronnes canal for feed to the Scheldt, the setting up of temporary reserves in connection with the hydraulic works on the Scheldt and Leie.

Taking into consideration both certain technical and political unknown factors and the technical development of the water supplies, it would be as well to subject the water storage and water distribution requirements to a periodical thorough investigation.

Table 18 : The water balance per province in 1980 (in million m³)

Province	Public supplies		Surface water	
	Requirement (domestic + industry)	Supply capacity	Requirement (industry + agriculture + shipping)	Quantity available
Antwerp	187	216	85	288
Limburg	45	52	14	136
East Flanders	75	76	153	117
West Flanders	60	48	22	74
Brabant	160	193	18	85

D. Tourism infrastructure

Tourism forms an important part of the dynamic activities in the tertiary sector. The repercussions on the evolution of population, employment opportunity, income and occupational structure are considerable. In recent years tourist activities in Flanders have tended to stagnate, especially in the coastal areas. There are various reasons for this. One of them is the lack of a positive reaction to the growing competition of the south. Such a counterweight can be found only in a distinct market segmentation, in which the creation of a typically differentiated tourist product, in particular for the coast, the coastal towns and the Kempen area, is all-important. An appropriate tourist infrastructure must of course run parallel to these efforts.

In respect of the coastal area there is also the necessity of a rejuvenation of the scene as regards the seaside resorts and the form of accommodation offered, as a man-made recreative infrastructure, by the provision of holiday pleasure grounds, swimming pools, yacht harbours, indoor sports facilities etc. During the post-war years these aspects have been too much neglected. This renewal fits in perfectly with the new motto 'Health and Sport for the Whole Family', with all its implications for the coastal resorts. By following these lines the tourist areas in Flanders will be able to make the most of their central position in north-western Europe.

§5. Removal of the frontier friction points ⁽¹⁾

In the context of regional economic policy within the Community a sometimes exaggerated importance is attached to the areas on either side of a frontier. The problem itself cannot be denied. Its removal would indeed tend to smooth and accelerate the integration of the regions on either side of the border. But the solution of the frontier problem, as will be explained later, is in the main either the concern of the national governments or of the policy of the EEC. Integration of the border areas is ultimately dependent on European integration in all its aspects. To highlight the border problems along the internal frontiers of the EEC as a regional problem is thus often a false representation.

In this respect we will attempt to make clear to what extent the national frontiers in fact still constitute barriers which as such have a retarding influence on the integration of neighbouring regions.

⁽¹⁾ *It was not possible to include all the aspects within the framework of this synthesis.*

The frontier problems in Flanders arise from its borders with France and the Netherlands and the immediate vicinity of Western Germany. All the areas except Flemish Brabant are involved in this.

The policies suggested for the removal of the points of friction constituted by the presence of a national frontier are mostly based on the aspects of labour market, roads, railways, waterways, public transport and environmental hygiene.

A. Frontier labour

The frontier labour flow to and from Flanders is fairly one-sided. The incoming flux is limited to about 2600 Dutch workers with jobs in Flanders.

The outgoing flow is a great deal larger: 2400 Flemish citizens working in the Netherlands, 6200 in France and about 1000 in Western Germany.

This frontier labour flow poses a number of social-economic problems: rate of exchange risks, differences in actual wage, differences in social legislation, labour stability and opportunities for promotion.

Nobody would deny that the harmonization of the labour market in the border areas is ultimately dependent on the demands made on the European monetary, social and regional integrated policies. The settlement of the rate of exchange risks affecting border labour is best pursued within the framework of the European Economic Community, by means of a communal, unified policy. The same applies to social legislation. A progressive alignment of the existing national laws is essential. Pending this it may be suggested that uniform regulations should be enforced for all firms employing border workers (note, for example, the differences in sickness insurance).

Theoretically border workers enjoy the same stability of labour as those working in their own country; in practice this is not always ensured. This problem will remain so long as there is no change in the attitude of the employers, despite the already existing regulations at EEC level. Next to the stability of labour comes the problem of opportunity of promotion, particularly in the case of office workers commuting to France.

There is no doubt that the move towards integration, supported by mutually agreed initiatives and better and closer cooperation between the regional labour exchanges, employers and trades unions on both sides of the border, will lead to an expansion of the regional labour market.

B. Roads⁽¹⁾

In the communications between Flanders and France a solution must be found for two points of friction. As regards the by-pass of the E 3 at Lille to connect with the Lille-Paris motorway, the westerly route should be given preference.

Taking into account the progress in the plans for the construction of the channel tunnel, further stress must be laid on the extension on French territory of the planned motorway Brussels-Zelzate-Bruges-Veurne and on to Calais. Parts of this motorway are already under construction or will be so shortly.

For the connections between Flanders and the Netherlands, infrastructure improvements which would provide better integration include a fixed road bridge over the Wester Scheldt, which has long been urged from the Dutch side. From the Flemish point of view a fixed road link between Perkpolder and Hansweert is also regarded as necessary.

In the more easterly part of Flanders we would point to the lack of (a) a good north-south connection Tilburg-Turnhout-Geel-Louvain to Wallonia and (b) a vertical axis Eindhoven-Hasselt-Hoei. In the wider European perspective the latter would link the international node Eindhoven (crossing of E 9 and E 3) with the E 5 in Wallonia and the 'Route de Wallonie' (see heading 'roads' of the last subsection).

The bottlenecks of the Meuse crossings between Belgian Limburg and Dutch Limburg should be abolished by the construction of an additional fixed shore-to-shore link. It would be advisable to site this near Stokkem to replace the existing ferry.

C. Railways

The infrastructural aspect of the trans-frontier rail traffic can be briefly summed up as 'almost total lack of frontier rail facilities, especially for passengers'. A number of concrete proposals may be made:

- (a) adaptation of the line Ghent-Courtrai-Lille in connection with the works now in progress or planned at short term between Antwerp and Ghent (see however under the heading 'railways' of the previous subsection);

- (b) expansion of the passenger and goods service Antwerp-Aarschot-Louvain-Hasselt-Tongeren-Montzen, which would link Limburg to the international network;

- (c) finally, a thorough economic investigation into the profitability of the following lines is suggested:

- Antwerp-Turnhout-Eindhoven;
- modernization of the goods traffic facilities on the line linking the growth centres Hasselt-Genk and Eindhoven;
- modernization of the goods traffic facilities on the line Hasselt-Genk to Maastricht;
- the expansion of the line Antwerp-Hamont-Roermond-München-Gladbach.

D. Waterways

The frontier problem has also proved an important factor during this century in the construction and modernization of waterways in the border areas. Consultation and cooperation between the national governments has been conspicuously lacking.

On none of the waterways connecting Flanders and France can the situation be described as satisfactory. The Leie and the Upper Scheldt, of considerable importance in the Flemish region, are only navigable for ships of up to 300 tons in the border area West Flanders-Département du Nord, which is totally inadequate as a link between the Flemish and French canal networks. These waterways also constitute a hindrance to modern shipping by reason of the large number of bends and locks. A definite economic requirement is the enlargement of the capacity of the Leie to 1350 tons over its whole length, including the Deune canal in France, which provides the link with the canal Dunkirk-Valenciennes.

In addition to the enlargement of capacity, the locks at Menen (300 tons) and Komen (300 tons) on the French/Wallon border and at Deulemont (600 tons) and Wambrechies (300 tons) in the Département du Nord must be widened and adapted for 1350 tons. The Deule canal between Lille and Marquette is being made navigable for vessels of up to 3000 tons. These works will be completed in 1975. Yet nothing has been decided about the section Marquette-Menen (Leie). A more accommodating attitude on the part of France would be welcomed.

The Scheldt in Flanders, Wallonia and Northern France must be brought up to the European standard capacity of 1350 tons so as to provide at Valenciennes a direct connection with the Northern

⁽¹⁾ Only motorways and state and provincial roads of the primary network are considered here.

France waterway network, i.e. the already mentioned Valenciennes-Dunkirk canal and the canals leading towards Paris and the Seine.

A shorter connecting route between the Scheldt and the Valenciennes-Dunkirk canal would also be of advantage. For this purpose the widening of the existing but very restrictedly navigable Spiere canal is suggested.

In the north the link between Limburg and the Netherlands could be greatly improved by the abolition of the 'Stop' at Lozen and the construction of the Caberg link between the Albert canal and the Juliana canal. The abolition of the so-called 'Stop' at Lozen on the Zuid-Willems canal on the border between Belgian and Dutch Limburg is essential for the full incorporation of Belgian Limburg in the European 1350-ton waterway network. It would also provide a shorter connection for vessels of up to 1350 tons between the Meuse-Rhine link and Antwerp-Albert canal.

The construction of the Caberg canal, now being studied in the Netherlands, is regarded as essential from the Flemish side. This is a 4 km stretch between the Albert and Juliana canals. Its importance lies not perhaps so much in the provision of a shorter route for vessels over 1350 tons from Antwerp and the Albert canal to the Meuse-Rhine link as in the prevention of a new bottleneck at the Ternaaien locks which now serve this connection. It is feared that the widening of the Albert canal will lead to a congestion point here because the installation of the Ternaaien locks cannot for technical reasons be adapted to the increased capacity of the canal.

Full attention must also be given to a number of waterway or hydraulic works of direct or indirect importance for the three big Belgian seaports. Four distinct problems must be solved:

- (a) As a result of the efforts made to development of the left bank at Antwerp and to give better access to the port of Antwerp in general, a firm agreement between the Belgian and Netherlands governments is urgently awaited on three points: (1) the shore radar system in the Wester-Scheldt, (2) normalization works in the Wester-Scheldt, of which the straightening of the Bath Bend is the most important and (3) the digging of the Baalhoek canal.
- (b) In order to improve access to the port of Ghent a reduction of the safety margin of the locks at Terneuzen from 20% to 10% is suggested.

- (c) The canal through South Beveland and the province of Zeeland which assures the link between the port of Ghent and the Rhine must be widened to make push-drive traffic possible.
- (d) The provision of a second and larger connection between Ghent and the North Sea is considered essential. A thorough study in which all possible vertical and horizontal connections are taken into consideration would constitute a serious beginning.

E. Public transport

It may be concluded from the lack of trans-frontier rail transport facilities referred to above that even the best management will be incapable of satisfactorily promoting the integration of the border regions. The restricted expansion of the trans-frontier bus services is also inadequate to meet this shortage.

Trans-frontier public transport in the border areas could be substantially improved by closer consultation between the transport companies concerned. One task of such cooperation would be the establishment of a timetable which ensures rapid connections between the respective countries' bus and rail services. Other points concern line frequency, new lines, tariff adjustments across the border etc. In respect of the already proposed economic study of the possibilities of improvement of public transport between the southern Netherlands and northern Belgium the secondary local services may plan an important part.

F. Other aspects

It has not been possible here to cover all the possible political objectives for the border regions. Under the main headings only the more important of these have been discussed, while other fields have not been touched upon. In this subsection we will deal briefly with two of these. In the first place, the lack of inter-governmental consultation comes clearly to light in the construction of big industrial estates in the border regions. An improvement of the infrastructure will make proper coordination all the more necessary.

In the second place mutual consultation across the border is essential for a number of aspects concerning the care of the environment, such as air and water pollution. The number of points of friction ascertained can now already be stated to be considerable. We quote as examples the air pollution of the West Flemish border towns by industries in Northern France, unequal distribution of the

number of recording stations for the control of air pollution in Belgium and the Netherlands, pollution of the Scheldt and Leie from Northern France, water pollution in the Wester-Scheldt.

The problems of environment policy and environment protection as encountered in the border regions are often part of a national problem which can only be satisfactorily and definitively solved by international legislation internationally enforced. Cooperation between the Belgian and foreign border areas is therefore largely dependent on international initiatives.

In many cases a solution can however be found in consultation between the regions. This is a problem for the respective provincial or regional instances for the protection of the environment.

In concluding this subsection it may certainly be stated that an inventory of the border friction points gives striking proof of the influence of political frontiers on the social-economic life and infra-structural expansion of border regions.

§6. The problem areas and core development

The problem of optimization is found not only at national and international level but also at regional level. A long-term optimization of regional income, the effective countering of the costs of inflation and congestion and increased social prosperity can only

be achieved by ensuring that all regions have a share in the general economic growth. This directly indicates the necessity for an efficient regional policy.

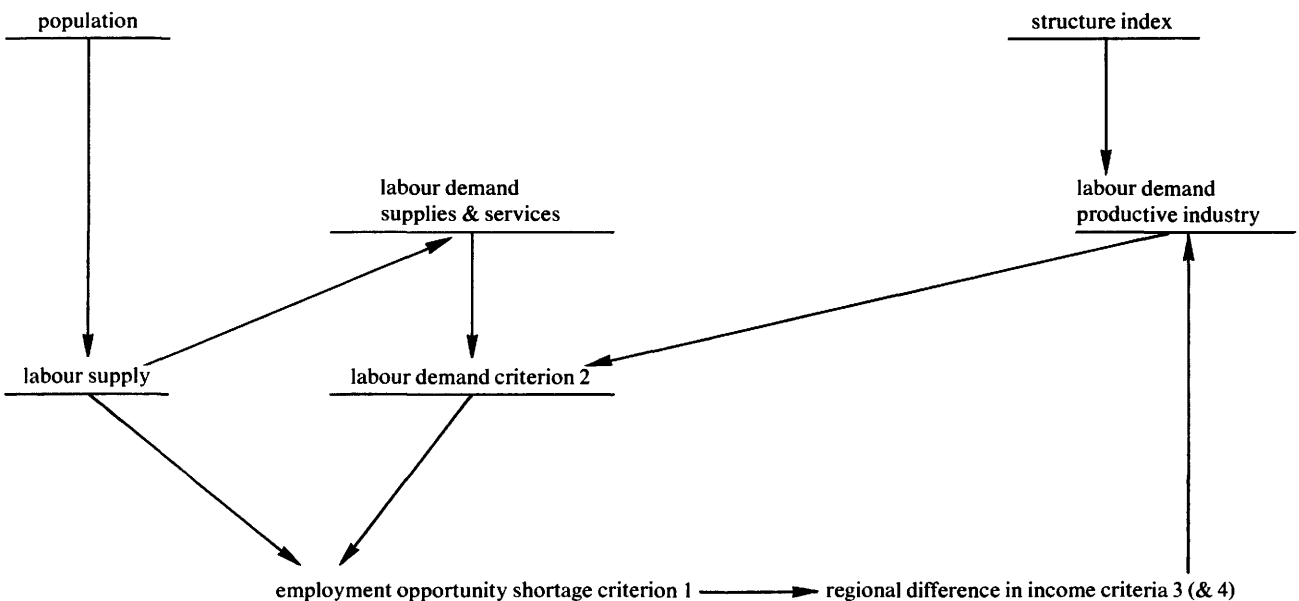
A. The problem areas

In order to formulate an efficient regional policy it is necessary to dispose beforehand over a number of objective criteria which permit the measurement of the severity of the economic problems of a given region. As is generally known, the new Development Act of 30th December 1970 set up the following criteria: (a) present and anticipated structural shortage of employment opportunity, (b) effective or actual decay of important economic activities, (c) abnormally low standard of living, and (d) slow economic growth.

For the determination of the most effective regional policy these criteria must however be seen not as independent factors but as having obvious mutual repercussions. In the appended diagram it is shown how the various regional economic indicators – and at the same time also the four criteria of the Development Act – influence one another.

The population determines the natural supply of labour through the combined effects of fertility, mortality and proportion of active age group. The demand for labour is made up of two components, the demand of the manufacturing industries and that of the supplies and services of the region. The labour demand of the manufacturing industries is

Diagram 1 : Causal interconnections between the regional economic indicators



largely determined by an averaged potential growth index in which the relative degree in which the various industrial sectors are present in the region and the national growth rate both play a part. An important active corrective mechanism must however be taken into account, that of the regional income disparities. Thus in areas of low wage level the labour-intensive sectors which are strongly wage-sensitive will grow faster or move in faster than in other possible locations where this situation does not apply. The mechanism of the structure index must therefore be complemented by the effects of the regional disparity in income.

A second component is almost entirely determined by the number of consumer units in the region for which the labour supply (or population) may be regarded as sufficiently representative. Once the urban and productive labour demands have been determined, then – by definition – the whole labour demand is known.

From a comparison of the already calculated labour supply with the now ascertained labour demand the employment opportunity shortage (or excess) is found, and this, as an indicator of the tension in the labour market, affects the regional disparity in income. This in turn, as already shown, affects the productive labour demand, so that a casual circulatory motion results.

In the description of this diagram the mutual connection between the four criteria of the Development Act also comes to light. We should note here that with the first and second criteria a certain overlap in definition occurs. The net decay of important economic activities (second criterion) will always be associated with the shortage of employment (first criterion) at the end of a period. Logically the second criterion may be regarded as superfluous. A similar overlap occurs between criterion 3 (regional disparity in income) and criterion 4 (slowness of economic growth). It is of course clear that when during a certain period the growth of the gross regional product per head is relatively low in respect of other regions this will be reflected in the reduction of the positive, or increase of the negative, regional income disparity at the end of the period. In this way the correct weight is given to the growth index. It is obviously a very different matter whether a high or low economic growth relates to a high or low level of economic activity. By calculating this in the regional income disparity, the growth index is reduced to its correct proportions.

A final causal connection occurs between the employment opportunity shortage (criterion 1) and the regional income disparity (criterion 3). This

however is not, as in the previous cases, a relation in definition but a functional relation, so that we cannot speak of a true overlap.

In the end we thus retain of the original criteria only the employment opportunity shortage and the regional income disparity. For practical reasons the migration movements must also be taken into account. In accordance with the classical concept the assumption that the habitual migration pattern of the past will continue in the future was made when compiling the labour balance. If differences do occur, we have already accepted beforehand that a certain number of active persons will leave the region, so no jobs need to be created for them. For regions with a considerable migration balance this means calculating the future on the problems of the past without applying any correction. To remedy this the migration balance is now added as a third criterion.

Taking this into account, the severity of the economic problems of a region can be assessed by arranging the following series of averages in order of importance:

- the average figures of the narrow-hypothesis employment opportunity shortages for 1970 and 1975 expressed in % of the labour supply; (1)
- average income per head;
- the migration balance in % of the population.

The results of this approach are given in Table 19. On the basis of the assumed criteria a hierarchic arrangement of the Flemish districts was tabulated in descending order of severity of the economic problem. The resulting sequence can be interpreted as a scale of graduation with the most underdeveloped areas at one end and the strongest growth cores at the other. The districts which together constitute about one quarter of the total labour supply of Flanders and at the same time come bottom in the classification are Dixmuide, Ypres and Oudenaarde, Turnhout, Tongeren, Maaseik, Alost, Tielt and Dendermonde. The calculations showed that if the employment opportunity shortage is given twice as much weight as migration and income this has no appreciable effect on the order in which the district averages appear (see Appendix 12).

Two important remarks should be made on the sequence shown in Table 19. Firstly, an analysis per district conceals certain realities. In particular the eastern part of Flemish Brabant and the immediate hinterland of the coastal area are not

(1) The sequence of the employment opportunity shortages for 1975 coincides almost completely with that of 1980, so that the latter need not be explicitly included in the calculation.

Table 19 : Sequence of the Flemish districts in descending order of severity of economic development problems

Order	District	(a)	(b)	(c)	(d)	Total in sequence (e) (f)	Share of district in total labour supply (%)	Accumulation of shares in labour supply	
1.	Diksmuide	-4.98	76.5	+10.6	+10.9	65	0.87	0.87	QUARTER I
2.	Ypres	-3.92	79.5	+10.0	+10.2	60	1.94	2.81	
3.	Oudenaarde	-1.37	86.0	+4.4	+7.6	53	2.20	5.01	
4.	Turnhout	-1.17	88.0	+6.6	+9.6	52	5.96	10.97	
5.	Tongeren	-0.93	88.8	+9.0	+13.8	49	2.96	13.93	
	Maaseik	-0.71	86.5	+7.6	+14.6	49	2.96	16.62	
7.	Aalst	-0.96	90.8	+10.5	+12.8	48	4.96	21.58	
	Tield	-3.68	81.8	+1.7	+1.7	47	1.43	23.01	
8.	Dendermonde	-0.97	89.1	+5.3	+8.7	47	3.35	26.36	
10.	Roeselare	-1.09	89.8	-0.5	+5.2	36	2.69	29.05	QUARTER II
11.	Sint Niklaas	-0.79	92.7	+3.5	-0.2	32	3.87	32.92	
	Veurne	-0.58	97.5	+5.1	+4.9	31	0.86	33.78	
12.	Hasselt	-0.39	94.0	+2.7	+4.5	31	5.42	39.20	
14.	Eeklo	+0.83	89.4	+1.5	+6.4	29	1.60	40.80	
15.	Mechelen	-0.48	96.2	+1.9	+1.5	26	5.29	46.09	
16.	Louvain	+1.39	100.2	+4.8	+9.4	23	7.11	53.20	
17.	Courtrai	-0.11	94.3	+0.2	-0.4	18	4.98	58.16	QUARTER III
18.	Ghent	-0.16	104.8	+1.7	-1.0	16	8.85	67.01	
	Ostend	+1.31	100.1	+1.5	-1.4	13	2.33	69.34	
19.	Halle-Vilvoorde	+6.61	115.2	+0.3	+6.5	13	9.18	78.52	
21.	Bruges	+2.70	100.7	+0.2	+0.5	10	4.37	82.89	QUARTER IV
22.	Antwerp	+0.17	115.4	-1.4	-5.9	8	17.13	100.02	

(a): inland migration balance for 1963-70 in % of the population in 1970.
 (b): average income per tax return, Flanders = 100.
 (c): the narrow-hypothesis employment shortage of 1970 in % of labour supply 1970.
 (d): the narrow-hypothesis employment shortage 1975 in % of labour supply 1975.
 (e): an average figure sequence on the basis of (f)
 (f): the total in the sequence is the arithmetic means of the three separate sequences.

sufficiently revealed as problem areas. In respect of the coastal area it has already been pointed out that the general application of the growth indexes of the tertiary sector to coastal tourism leads to a marked over-estimate of labour demand. In view of the share of tourism in the total labour supply, this mistaken approach has a considerable effect on the assessment of the employment shortage.

In the second place, the application of the above-mentioned three assumed objective criteria and the related method of calculation to all Belgian districts would lead to the designation as areas in need of development of zones other than those indicated by the Committee of the European Communities in its decision of 26 April 1972.

B. Core development

In view of regional optimalization it must further be asked what policy in respect of the spatial dispersion of the productive industries is most suited to the rapid increase of the prosperity level of Flemish economy as a whole and for the individual regions. As a point of departure we may state that Flanders, geographically and demographically, has its own particular spatial structure which must be clearly differentiated from that of other less thriving districts such as Western France or Southern Italy. One of the main features of this structure is the high density of population, which is also relatively evenly distributed over the whole region. A second feature which cannot be entirely divorced from the first is the dense transport infrastructure, of which

the quality and efficiency will increase with time as in any highly developed country, which Flanders quite unmistakably is. In a geographical area of this type capital has a much greater mobility so that industrial and tertiary sector firms will be more willing to move in close to the labour reserves. This facilitates the development of potential growth cores in the backward areas. A simultaneous infra-structural expansion of these cores (transport—industrial estates—social-economic facilities) is obviously necessary. The applicability of the growth-pole theory in its geographical concepts, in which the core is regarded as the dynamic element, becomes clear. The stimulation of industrialization cores, later the 'Zentrale Orte' and 'metropoles d'équilibre' of the current regional policies of certain West European countries, confirms this principle. These policies correspond to the principle of 'decentralization through regional concentration'. The new international terminology indicates unanimity in the approach to the development of backward areas. Instead of attempting to develop the whole area at once, all efforts are concentrated on a few centres. This makes it possible to create in these centres, on a medium-term basis, those advantages which make the existing cities attractive for a wide range of activities.

The objective choice of such poles must be determined by the rule that any town above a certain size tends automatically to attract activity. The growth-pole policy thus demands a choice from a limited number of potential centres, only those being selected which may be expected most readily to respond to the measures taken by the regional authorities. As already stressed earlier, the peculiarities of each district must also be taken into account.

In certain cases a number of secondary centres may prove more effective than a single core.

This greater degree of decentralization in the core pattern of densely populated areas has, according to L. H. Klaassen, not only a positive effect on the income level of a backward area but also the following secondary repercussions on prosperity. (1)

- The average home/work distance becomes shorter for the whole area, thus saving time and money.
- The change in the frequency distribution of the distances travelled, by making a number of longer journeys unnecessary, reduces rush-hour traffic and thus saves road and public transport capacity.

(1) L. H. Klaassen, "De optimale structuur van stedelijke gebieden", Rotterdam, 1971, p. 127. (*The optimal structure of urban areas.*)

- The intensified use of the secondary roads by persons converging on the smaller centres means that they are more efficiently used than when the flow is directed exclusively towards a few heavily built-up centres (up in the morning, down in the evening).
- As a result of the above points, the total volume of traffic is reduced and the efficiency of the existing infrastructure for private and public transport is increased.

All these arguments point towards the stimulation of cores within the problem area itself. The Provincial Economic Councils are in the best position to make the choice, if they have not indeed already done so. In addition to this, for the sake of positive agglomeration effects—which must be interpreted as the global concept of scale—, localization— and urbanization economy (2)—we must also bear in mind the expansion of larger growth centres outside the problem areas.

In this connection it would be advisable to give consideration in the first instance to a vigorous expansion of the Flemish economic axis Courtrai-Bruges-Ghent-Antwerp-Genk-Hasselt. The infrastructure position here is well able to support such growth. A certain diversity in the functions of the obvious centres of polarization on this axis is unmistakable. The cores Antwerp and Ghent, apart from a further expansion of the tertiary sector, are specifically orientated towards seaport-bound, highly capitalized industries, while the growth potential of the primary bi-polar growth centres Hasselt-Genk and Bruges-Courtrai are, with the exception of Zeebrugge, mainly concentrated on inland industries.

We must note that a special effort will be required to bring the two more recent growth cores, Bruges-Courtrai and Hasselt-Genk, up to the level of self-sustained growth.

A focussed decentralization as described above will help to relieve the congestion of Brussels industrially, commercially and administratively. The total of external costs and socially unjustifiable commuting to the Belgian capital would also be kept within reasonable bounds.

A general spatial growth policy such as this may not however be directed solely towards the stimulation of potential cores in the economically backward areas and an intensified expansion of the existing Flemish industrial axis; the vigorous secondary growth cores outside the problem areas must also be given wide possibilities of expansion.

(2) See W. ISARD, "Location and Space-Economy", M.I.T., 1956, p. 172.

Within the general framework of a spatial expansion policy an increased prosperity of the problem areas may be regarded as dependent on the development of the local potential growth cores, which function as the component elements of a hierarchy of cores which also includes the primary and secondary polarization points outside the development areas.

Such possibilities of interconnection between the cores in fact constitute a *sine qua non* for the success of the policy. Only in this way can the radiation of the growth poles of a higher order towards the lower levels be ensured.

§7. Regional assistance in the national and European perspectives

1. *Is regional assistance efficient enough?*

The tools of a regional economic policy can be divided into two main groups. The first comprises the infrastructural tools, the second the financial support given to the prospective investor in a problem area. The first group is destined to improve the basic infrastructure of the development areas. In the long run it is this form of assistance which will yield the most lasting results. Financial assistance is obviously a temporary measure of compensation. In practice these two forms of aid, though intended to benefit the depressed areas, do not always yield the results expected by the authorities, and this for three reasons. In the first place, infrastructural improvement is not in essence discriminatory.⁽¹⁾ In the second place, the difference between general and regional financial aid is not wide enough to have a compensating effect on the problem areas. This insufficient margin between general and regional assistance is caused, but not justified, by two phenomena: (a) Firstly, regional aid in Western Europe is often at cross purposes with sectoral aid (disguised regional assistance). Within the EEC no solution has yet been found for this problem. In the EEC Resolution of 20th October 1971 concerning the general regulation of regionally directed assistance this question was put on the agenda. The member states in collaboration with the Committee will work out a procedure which makes it possible to assess the sectoral effects of regional assistance. Apart from this suggestion, a prohibition is placed on culminative aid, i.e. regional and sectoral assistance may not be given simultaneously for one and the same regional or sectoral problem. (b) Secondly, in Belgium, and obviously also in Flanders, we are

confronted with a combination of a weak economic structure and a low capital input. This has already been clearly revealed by the application of the Denison method to Flanders. National stimuli have already been necessary in the past for this reason.

In the third place, in Belgium the real, factual regional problem has not always been taken into account, at least not in all its facets. In this connection we would again stress the point made in the previous subsection. The application in Belgium of the three objective criteria—employment opportunity shortage, income, migration balance—in the pin-pointing of the problem areas would indicate their presence in other zones than those determined in the EEC Resolution of 26.4.1972. Under the application of these three criteria the Flemish districts of Alost, Dendermonde and Ostend would also come under the zones in which problem areas are to be found. We would point out however that a district as such forms only a very rough spatial unit. Some districts do not justify integral inclusion; in other cases certain sections of a district should be seen as part of a larger problem area, as for example the eastern part of the Louvain district, the coastal hinterland of the district of Bruges, the conversion area Roeselare-Izegem.⁽²⁾ It is suggested that in the revision of the Belgian problem areas to be undertaken before the end of 1973, these zones should be determined on the basis of the objective criteria given in §6 of these options of policy. Another factor is that neither in the past nor at the present time has sufficient attention been paid when determining the problem areas to their actual economic potential. Several zones which are indicated as problem areas are in fact to be reckoned among the stronger from this point of view. This is again proved by the most recent investigation of the EEC. The zones indicated in the north and south of Belgium are difficult to compare with each other because there is no comparison between the economic potential of these zones. In Wallonia, though it certainly has its regional economic problems, zones were defined as potential problem areas which have in essence a strong economic potential. This is for example the case with the Liege and Charleroi areas. But no Flemish potential development area has an economic potential of that sort.

If it becomes possible to make a definite distinction between general and regional aid, backed up by a degree of selectivity and purposeful planning, and provided that the problem areas are determined on the basis of the objective criteria, the chances of development of the backward areas in Flanders

⁽¹⁾ It must however be realised that this would be very difficult to achieve in practice, partly through the attempt to obtain a high growth rate at national level.

⁽²⁾ Cf. pages 55 & 128.

should be sound enough. Two factors will be of help here. Firstly, we call to mind the part played by the availability of labour as a location factor; the shortage of employment opportunity reveals such availability here. Secondly, we would again stress the potential implicit in the geo-economic situation of Flanders in the greater EEC.

2. Regional aid in Flanders and the bordering areas.

Although it is extremely difficult, owing to many hidden effects and not immediately transparent financial measures, to calculate the true financial impact of regional aid on investment, it can be stated that Belgian assistance, and *ipso facto* regional aid in Flanders, in no way discriminates against the bordering areas. The EEC resolution of 20th October 1971 concerning general assistance for regional purposes lays down the main principles on which the EEC assesses such assistance. As a result, the maximum intensity of assistance or the net subsidy equivalent was put at 20%. The intention of the EEC is to specify intensity maxima for the various areas of the member states in order to limit overbidding between countries.

By means of a uniform calculation schedule based transparent and semi-transparent financial aid, the theoretical intensity maxima were calculated by the EEC for the so-called 'central areas'. These are per country:

Germany	18.1%
Belgium	18.8%
France	24.7%
Italy	26.7%
Luxembourg	17.3%
Netherlands	19.8%

As Flanders, like the zones on which it borders, is counted among the central areas it may be deduced that the aid given to Flanders, assuming maximum application, is not in the least discriminative. ⁽¹⁾ Compared with Wallonia, indeed, Flanders is put at a disadvantage as a result of sectoral EEC assistance measures with regional effect.

Consideration must also be given to the principle of regional specificity contained in the resolution of the EEC referred to above. This means in general that a differentiation of the assistance will have to be introduced on the basis of the nature, intensity and urgency of the problems connected with the development of a region. This principle has not as yet been worked out in a concrete form. Taking the objective to be the assurance of full employment opportunity in all areas of Flanders, the employ-

ment opportunity shortages and their progressive growth in the years to come, there can be no doubt whatsoever as to the urgency of the problem.

3. Flanders and the EEC's instruments of regional policy

Although the regional problems of Belgium have not been, and are not, always comparable with those of other EEC countries, it may be stated that so far Flanders has had or could have little recourse to the means of action provided at the present time by the EEC in respect of regional problems. An exception must be made for the interventions made on the basis of Articles 54 and 56 of the Treaty for the establishment of the EGKS.* That better use has not been made of the means of action provided by the EEC must be ascribed in part to the failure of the Flemish regional authorities to pay sufficient attention to what facilities are available to them on the EEC level. A more international outlook on the part of Flanders would appear indicated for the future.

We may mention in particular here the little use made of the European Social Fund (ESF.*), the European Orientation and Guarantee Fund for Agriculture (EOGFA.*) and the European Investment Bank. In future the reorganized European Social Fund will certainly be better equipped to palliate the sometimes negative effects of sectorial changes in certain regions. As the reorganized ESF, now also offers the possibility of preventive intervention, it can be used more freely in certain areas and sectors.

The services of the European Investment Bank have so far been of relatively little importance for Flanders. As a result of the proposed rejuvenation of the sectoral structure of Flemish economy, however, there are certainly a number of sectoral projects which require investment in depth and which meet the qualifying conditions of the EIB.

It may be stated in general that the regional and sectoral credits made available by the EEC for the application of a communal regional policy are by no means negligible, and they are to be even further extended. This will be the case when the 'Regional Development Fund', to be constituted before the end of 1973, starts to operate. In the past the application of the available EEC assistance was not always a matter of great importance for Flanders and there was no comparison with the intensity with which these means were applied in certain other districts and regions. It may however be

⁽¹⁾ Sectoral aid is not taken into account here.

* No exact English equivalent traceable.

anticipated that in the future certain of these facilities will also play a major part in Flemish activities. We think here in particular of the influence which might be exerted by the reorganized ESF.* and the EOGFA.* Orientation Department.

As clearly appeared from the sub-report on Flemish agriculture, the structural changes to be made are so extensive that it seems astonishing that the intervention of the EOGFA.* has been so erratic and relatively so unimportant. Special attention must be paid in future to the activities of the EOGFA.* to ensure that the changes in Flemish agricultural economy are effected as rapidly as possible. The share of Flanders in the interventions of the EOGFA.* would then increase dramatically.

§8. Summary

A few policy options were already formulated in the first part of this report. The second part, on the other hand, is devoted almost entirely to an economic policy for the benefit of Flanders during the coming decade. In this we may distinguish seven main themes: (a) optimization of growth, (b) the industrial structure, (c) the structural improvement of agriculture, (d) the infrastructure requirements, (e) the frontier problems, (f) the problem areas and core development and (g) the regional policy in the European perspective. No attempt can of course be made to sum up each of these subjects in a few lines. We will endeavour however to make clear the main ideas.

1. During the seventies Flanders will have to make a great effort to improve the growth structure. Determining factors here are increased investment, rejuvenation of capital stock, better allocation of the production factors, scale effects, greater knowledge, improvement of the industrial structure and a dynamic reaction of the economic agents. With respect to greater knowledge we are thinking specifically of research in the sense of technological investigations and applied scientific research. To be economically justified the results of such research must of course lead to innovations.
2. The improvement of the industrial structure and the economic structure in general deserves special attention. A policy directed towards the growth sectors is more than ever necessary in view of the less favourable prospects for the development of the labour balance in Flanders,

further de-restriction of world trade and international labour distribution. The assertion that the growth sectors metal industry, chemicals and building, in respect of employment opportunity as well as of income, are those which will react most favourably to additional investment is important in this context. This applies especially to the metal sector and specifically to the metal construction branch.

3. In addition to the evolution of prices, the determining factor for agricultural income in the coming decade will be to a large extent the development of the structure of this sector. We concentrate on the improvement of three aspects: agrarian structure, farm structure and commercial structure. Structural policy in agriculture is concerned with reorganization as well as development.
4. The policy options concerning the infrastructure are extremely different in kind. They are derived from a comparison between present and future supply and present and future demand. A general policy option concerns the interconnection of the four primary growth centres by road, rail and water. This must ultimately result in the expansion of the Flemish axis Courtrai-Bruges-Ghent-Antwerp-Hasselt-Genk. The creation of this axis provides a possibility of promoting the industrial, commercial and traffic decongestion of Brussels and its administrative decentralization, in both the public and the private sectors. Concrete proposals in line with this policy are the construction of motorways and express roads by-passing the Brussels agglomeration, the linking of the seaports by canal, and a rapid inter-city rail connection between the four primary growth centres.

Four other infrastructure policy options of importance are:

- (a) An increase from B.fr. 0.77 milliard to B.fr. 1.2 milliard of the annual financial requirement for the equipment of industrial estates.
- (b) Each of the three large seaports is hampered by limited access. In the coming decade the expansion of the ports of Antwerp and Zeebrugge must be given priority.
- (c) The water problem in Flanders will be concentrated in the immediate future in the provinces of East and West Flanders. In West Flanders this is mainly a matter of water board supplies; East Flanders is suffering increasingly from a shortage of surface water.

* No exact English equivalent traceable.

- (d) Intensified effort is needed in respect of the tourist infrastructure to give the holiday areas a shot in the arm.
5. In many respects the national frontiers still form barriers which hold back the integration of certain adjoining border districts. The fields in which these problems are most severely felt are: frontier labour, roads, railways, waterways, public transport, the construction of industrial estates and environment management. The integration of the frontier regions must depend in the main on European cooperation in all its aspects.
 6. A scientifically based determination of the problem areas may be effected by applying the following three criteria: (a) shortage of employment opportunity, (b) regional income disparity and (c) migration balance. On the basis of these criteria the districts Diksmuide, Ypres, Oudenaarde, Turnhout, Tongeren, Maaseik, Alost, Tielt and Dendermonde are seen as the areas with the most intense economic problem. It is however true that analysis by district conceals certain realities. The coastal areas are an example of this.
 7. Bearing in mind the characteristic structural nature of Flanders, we must aim, in the spatial distribution of the dynamic activities, at the development of cores. A distinction is to be made here between the development cores in the problem areas on the one hand, and the primary and secondary cores in the stronger regions on the other. Antwerp, Ghent and the two bi-polar centres Bruges-Courtrai and Hasselt-Genk are primary cores and form the supporting points of the Flemish axis.
 8. Regional assistance given to the problem areas in Flanders is less efficacious than it could be because there is not enough difference between general and regional aid.
 9. On the hypothesis of a maximum application of regional financial aid, the assistance given to Flanders has no discriminative effect on the adjoining regions in Northwestern Europe.
 10. Although the regional problems in Flanders are not always comparable to analogous difficulties in other member states of the EEC., we still believe that this region has made too modest an appeal to the means provided by the Community for regional assistance. This applies in particular to the European Social Fund,* the European Orientation and Guarantee Fund for Agriculture* and the European Investment Bank.* In view of the anticipated structural changes in Flemish agriculture the orientation department of the EOGFA.* could play an important part during the seventies.

* No exact English equivalent traceable.

GENERAL CONCLUSION

Flanders as a part of North-Western Europe maintains intense economic relations with the adjoining (or neighbouring) regions of France, the Netherlands and Germany. Its interactions with the other regions of Belgium are naturally even more intense. Within the zone of the regions bordering upon its Flanders shows four social-economic situation characteristics :

- (a) a relatively slow population growth with a marked trend towards further decline during the coming decade ;
- (b) a level of income practically equal to that of the EEC. Flanders is furthermore situated in a relatively homogeneous income zone: the lag in respect of the most prosperous adjoining region is 16% and the advantage over the poorest adjoining region 9% ;
- (c) a growth rate per head at the same level as the EEC ; this is partly also due to the slow population growth ;
- (d) in respect of the growth potential the economic structure may be regarded as weak both in respect of the sectoral structure and in the size of the concerns. So far however Flanders has been able to compensate this weak structure by a high growth performance.

Within the zone of North-Western Europe and in the light of a progressive process of economic integration, due among other causes to the removal of frontier friction points, the harmonization of the policies of a number of countries and the entry of Great Britain into the EEC., the external growth possibilities of Flanders may be described as favourable. This is apparent from the sale possibilities in the adjoining areas, which thanks to the EEC are still increasing, the relatively low supply and communication costs and the distance factor. The relatively low supply and communications costs are further fostered by the indirect presence of raw material sources via the three seaports. This presence promotes the industrial location possibilities to a considerable degree.

The favourable growth potential resulting from the geographical position of Flanders in North-Western Europe may prove an important asset in countering the problem of a progressively deteriorating labour balance. This latter is the result on the one hand of a slow autonomous growth of the employment opportunity owing to the present weak economic

structure and on the other of a by no means negligible increase of the economically active population through the growth of the working age group, and an increase in the degree of activity. On the narrow hypothesis of labour supply the negative balance of employment in Flanders will rise from 225000 in 1970 to 316000 in 1980 ; on the wider hypothesis of labour supply the corresponding figures are 298000 and 343000. The actual shortage of employment opportunity on the narrow hypothesis of labour supply will develop from 57000 in 1970 to 148000 in 1980, or 2.7% and 6.5% of the labour supply respectively. Because of the strictness of the working hypotheses these must be considered as minimum values. On the wider hypothesis of labour supply the employment opportunity shortage may be estimated at 130000 in 1970 and 175000 in 1980, i.e. 6.1% and 7.6% of the working population.

A deterioration of the labour balance is found not only at the general level but also at that of graduate students. In certain faculties supply will probably greatly exceed demand.

The evolution of the employment opportunity will not however prevent a real annual increase of 5% in the added value during the next ten years. Assessed on the sectoral growth pattern however the growth of the added value would be slightly lower.

The deterioration of the labour balance in Flanders and the anticipated increase in the shortage of employment opportunity throw a somewhat different light on the third assumption of the survey, in which it was stated: 'As a further assumption the growth rate of income per head was taken as the most important variable for the long-term prosperity of a region'.

It is true that from the outset this assumption was not regarded as contradictory to the need for short- and long-term efforts towards the achievement of full employment in certain depressed areas of the Flemish region. It does none the less show that at the beginning of the survey the expectations in respect of full employment opportunity were viewed more optimistically than the results of the survey can justify. These clearly indicate that the goal of full employment opportunity in Flanders will not be attained without difficulty.

The above remarks may perhaps give the impression that full employment opportunity and growth of

income per head are contradictory. Theoretically this is indeed possible; it is however not confirmed by the expectations in regard to Flemish economy. It may be regarded as a fortunate circumstance that with additional capital investment the largest employment effect and the largest income effect will be realized in exactly the same three growth sectors: metals, chemicals and building. In addition to this Flanders can make a positive response to the location demands of these three sectors.

The bridging of the employment opportunity gap will require a dynamic social economic policy based on five main pillars:

(1) Optimization of growth at national level by:

- (a) improvement of the qualitative aspect of the labour factor;
- (b) rejuvenation of capital stock;
- (c) creation of scale effects;
- (d) stimulation of technological research and applied scientific research followed by suitable procedures for the promotion of innovations;
- (e) a progressive attitude of commerce and industry, the trades unions and the government in respect of technological, economic and social development;
- (f) a more growth-directed economic structure, especially in industry.

(2) Optimization of growth at the international level by:

- (a) the removal of frontier friction points;
- (b) the utilization of expansion possibilities, in particular on the British market;
- (c) an appropriately positive attitude towards the progressive trend towards de-restriction of world trade and the better international distribution of labour demanded by the developing countries.

(3) Optimization of growth at regional level by:

- (a) discriminative regional aid for the benefit of the problem areas determined on the basis of the three objective criteria;
- (b) expansion of the Flemish economic axis Courtrai - Bruges - Ghent - Antwerp - Hasselt - Genk. The two more recent growth cores Bruges-Courtrai and Hasselt-Genk must be brought to the level of self-sustained growth.

(4) In the agricultural sector efforts should be specifically directed towards improvement of the agrarian structure, the farm structure and the commercial structure.

(5) In order to keep on a sound basis the development possibilities of the secondary and tertiary sectors in an area of theoretically great economic potential, an appropriate infrastructural development is indicated, to be achieved by:

- (a) construction and equipment of maritime and dry industrial estates;
- (b) the expansion of the development axis Courtrai - Bruges - Ghent - Antwerp - Hasselt - Genk, from which good communications must be provided to the secondary cores in the problem areas and elsewhere, for public and private transport alike;
- (c) interconnection of the seaports by canal, rail and road;
- (d) removal of traffic bottlenecks,
- (e) expansion of the ports of Antwerp and Zeebrugge for vessels up to 125 000 tons;
- (f) solving the problem of domestic and industrial water shortages in certain areas, for a community with an increasing water consumption;
- (g) the development of demand in the tourist sector depends to a large degree on a rejuvenation and expansion of the tourist infrastructure with the aim of creating a competitively differentiated tourist product.

These guidelines of policy can alleviate the present and anticipated progressive increase in the shortage of employment opportunity within the framework of a generally favourable economic outlook for world trade and bring about an optimum balanced growth. Unless a dynamic effort is made this can only lead to a further spread of the Brussels agglomeration. A growing effective shortage of employment opportunity will most probably naturally tend to seek a way out towards Brussels and the strong external poles in adjoining regions. If a dynamic effort really is made, however, in combination with the expansion of the Flemish axis Courtrai-Bruges-Ghent-Antwerp-Hasselt-Genk (with the necessary communication facilities to growth cores outside Flanders and abroad) there will be a genuine opportunity of easing and accelerating the relief of industrial, commercial and transport congestion and the decentralization of the capital city. Such decentralization is not however an object in itself, but the result of social-economic factors such as external costs, socially unjustified commuting and considerations of environmental management.

Appendix 1: The sub-reports of the survey 'The Development of Flemish Economy in the International Perspective .

- (1) BOES W. and DE SMET M., '*The demographic development of Flanders in the European perspective*', 50 pp. (Study and Advisory Service of the Economic Council for Flanders).
- (2) BORCSOK M., BUSTER A., DE COREL L., ROELS O. and THEEUWS J., under the supervision of TAVENIER K. and VAN ROMPUY P., '*The position of Flemish economy in the European perspective*', 160 pp. (Centre for Economic Studies, Catholic University, Louvain).
- (3) VAN BALLAER R., '*Population forecast*', 50 pp. (Joint Report of the Provincial Economic Councils).
- (4) BRANSON R., '*Forecast of the labour supply*', 106 pp. (Joint Report by the Provincial Economic Councils).
- (5) ROELS O. and THEEUWS J., under the supervision of VAN ROMPUY P., '*Geographical, sectoral and occupational mobility*', 77 pp. (Centre for Economic Studies, Catholic University, Louvain).
- (6) VAN DE VIJVERE J., '*Supply and demand of graduates of higher education*', 80 pp. (Department of Applied Economy at the State University of Ghent).
- (7) BODDEZ G., DEVISCH N., VERKINDEREN A. and VIAENE J., '*Flemish agriculture in the framework of the EEC*', 88 pp. (Department of Agricultural and Market Gardening Market Research, and Centre for Agricultural Economic Research).
- (8) PUYLAERT L. under supervision of DE FEYTER R., '*Future trends in the major industrial sectors*', 440 pp. (C.V. Venex).
- (9) DE SLOOVERE J. and STEEL K., '*The development of the tertiary sector, 1970-1980*', 151 pp. (Department of Applied Economics of the State University of Ghent).
- (10) DE SLOOVERE J., '*The driving and supporting characteristics of the tertiary activities*', 30 pp. (Department of Applied Economics of the State University of Ghent).
- (11) BRANSON R., '*The tourist sector as drive element*', 55 pp. (The West Flemish Bureau of Economic Studies).
- (12) BRANSON R., '*The labour balance 1970-80*', 69 pp. (Joint report of the Provincial Economic Councils).
- (13) VAN BUYNDER E., '*The requirement for industrial estates in Flanders*', 68 pp and maps. (Joint report of the Provincial Economic Councils).
- (14) SCHUYTEN R. R. and VAN BROEKHOVEN E., with the collaboration of BLAUWENS G., CORSTJENS M., CUYT G., GIELEN J., NONNEMAN W., THEUNISSE H., VAN BERENDONCKS L., VAN DEN BRILL J., VANDEVELDE F., VAN KAMPEN J., and WINKELMANS W., '*Transport*', 412 pp. (The Antwerp Study Centre for Economic promotion, State University, Antwerp and Study Centre for Economic and Social Research, St. Ignatius University Faculties).
- (15) VOORDECKERS A., '*Frontier friction points and program of essential coordination with bordering countries*', 73 pp. (Joint report of the Provincial Economic Councils).
- (16) JACOBS E., '*Water requirements of industry*', 104 pp. (C.V. Venex).
- (17) DONCKELS R., KENNES W., and DE COREL L. under the supervision of TAVENIER K. and VAN ROMPUY P., '*Optimum structure*', 140 pp. (Centre for Economic Studies, Catholic University, Louvain).
- (18) VANNESTE O. and BRAECKE V., '*Investigation into technical polarization in Flanders*', 98 pp. (West Bureau for Economic Studies).
- (19) PUYLAERT L., '*Location of industry*', 225 pp. (C.V. Venex).
- (20) PUYLAERT L., '*Seaports as a catalyst of industrial development*', 86 pp. (C.V. Venex).
- (21) BRANSON R., '*Problem areas in Flanders*', 86 pp. (In consultation with the Provincial Economic Councils of the Flemish region).
- (22) LOCCUFIER S. J., '*Financial aspects*', 115 pp. (Centre for Financial Economy, VUB.)*

* No exact English equivalent traceable.

Appendix 2: The fertility figures per district over the period 1961-69 ⁽¹⁾

District	1961	1962	1968	1969
Antwerp	73.7	72.7	61.8	60.9
Mechelen	61.6	61.9	59.3	61.3
Turnhout	75.9	77.6	74.0	74.6
Hasselt	106.0	99.0	75.3	74.6
Maaseik	119.7	120.4	81.7	78.0
Tongeren	96.9	93.0	74.9	73.2
Aalst	82.4	79.0	64.7	63.0
Dendermonde	79.8	81.5	65.4	63.5
Eeklo	76.6	79.0	65.3	66.1
Ghent	73.5	72.6	66.4	64.1
Oudenaarde	71.4	72.2	58.0	54.4
Sint-Niklaas	76.2	76.1	68.0	67.0
Bruges	81.6	82.2	67.5	68.6
Diksmuide	79.7	85.3	65.2	63.9
Ypres	80.2	78.5	60.7	63.4
Courtrai	83.0	81.3	67.4	66.0
Ostend	79.4	78.7	63.1	64.6
Roeselare	81.8	80.7	68.0	64.6
Tielt	79.5	78.4	60.8	59.7
Veurne	79.5	75.8	62.7	64.0
Halle Vilvoorde (b)	72.4	72.6	63.5	63.2
Louvain	77.1	73.8	63.7	62.3

(¹) Refers to the ratio of the number of births to the number of women of childbearing age (15-49 years), expressed in ‰.
(²) Not including district Brussels-Suburban.

Appendix 3: The contribution made to growth by the various growth factors (in percentages)

	Brussels			Wallonia			Flanders			Belgium		
	55-62	62-68	55-68	55-62	62-68	55-68	55-62	62-68	55-68	55-62	62-68	55-68
Average annual growth of national income	3.51	3.83	3.66	1.74	3.44	2.53	3.40	4.63	3.95	2.91	4.09	3.44
Input	1.66	1.67	1.68	0.06	1.12	0.57	1.70	2.16	1.94	1.16	1.75	1.46
Labour	0.70	0.77	0.73	-0.15	0.65	0.23	1.05	1.38	1.21	0.61	1.04	0.81
Employment	0.44	0.05	0.26	-0.53	-0.22	-0.38	0.65	0.41	0.56	0.24	0.15	0.19
Work hours	-0.20	-0.23	-0.21	-0.19	-0.24	-0.22	-0.19	-0.23	-0.21	-0.19	-0.23	-0.21
Age & sex	0.06	0.23	0.14	0.05	0.19	0.11	0.08	0.28	0.17	0.07	0.24	0.15
Education	0.40	0.72	0.54	0.52	0.92	0.72	0.51	0.92	0.69	0.49	0.88	0.68
Capital	0.96	0.90	0.95	0.21	0.47	0.34	0.65	0.78	0.73	0.55	0.71	0.65
Productivity	1.85	2.16	1.98	1.68	2.32	1.96	1.70	2.47	2.01	1.75	2.34	1.88
Better allocation	0.41	0.44	0.43	0.43	0.32	0.38	0.60	0.59	0.60	0.51	0.47	0.50
Agriculture	0.08	0.05	0.07	0.15	0.18	0.17	0.23	0.21	0.22	0.18	0.19	0.19
Independent	0.21	0.27	0.24	0.13	-0.01	0.06	0.19	0.20	0.20	0.17	0.12	0.15
Trade	0.12	0.12	0.12	0.15	0.15	0.15	0.18	0.18	0.18	0.16	0.16	0.16
Scale effects	0.77	0.84	0.80	0.38	0.75	0.55	0.74	1.01	0.87	0.64	0.89	0.75
Know-how	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Residual factors	-0.09	0.12	-0.01	0.11	0.49	0.27	0.40	0.11	-0.22	-0.16	0.22	-0.03

Source: Calculations of the CES.

Appendix 4: The contribution made to growth by the various growth factors (in percentages) in the U.S.A. and seven European countries

1955-62	U.S.A.	Denmark	France	Nether-lands	Norway	U.K.	Italy	Germany	N.W. Europe
Average annual growth of national income	2.61	4.89	5.01	3.93	3.36	2.10	5.76	5.44	4.08
Input	1.64	1.64	1.26	1.72	0.78	0.98	1.53	2.56	1.59
Labour	0.97	0.68	0.44	0.68	-0.03	0.35	0.68	0.94	0.62
Employment	0.73	0.95	0.09	0.76	0.13	0.37	0.20	1.13	0.57
Work hours	-0.20	-0.34	-0.06	-0.29	-0.31	-0.30	1.03	-0.45	-0.26
Age & sex	-0.08	-0.07	0.12	-0.03	-0.10	-0.02	0.05	0.15	0.08
Education	0.52	0.14	0.29	0.24	0.25	0.30	0.40	0.11	0.23
Capital	0.67	0.95	0.82	1.04	0.81	0.63	0.85	1.62	0.97
Productivity	0.97	3.25	3.75	2.21	2.58	1.12	4.23	2.88	2.49
Better allocation									
Agriculture	0.24	0.49	0.69	0.23	0.41	0.05	1.18	0.59	0.42
Independent	0.01	0.19	0.22	0.27	0.23	0.04	0.26	0.07	0.12
Trade	0.00	0.09	0.07	0.16	0.15	0.02	0.16	0.10	0.08
Scale effects	0.30	1.10	1.00	0.81	0.71	0.43	1.40	1.25	0.88
Know-how	0.76	0.76	0.76	0.76	0.75	0.76	0.76	0.76	0.76
Residual factors	-0.34	0.62	1.01	-0.02	0.33	-0.18	0.47	0.11	0.23

Source: E. F. Denison, pp. 298-317.

NB. The figures of the international assets are not included in the growth and its analysis.

Appendix 5: The labour balance in Flanders in 1970 (× 1 000)

District or Province	Narrow labour supply			Broad labour supply		
	Demand	Supply	Balance	Demand	Supply	Balance
distr. Antwerp	399.4	353.8	+ 45.6	399.4	367.1	+ 32.3
distr. Mechelen	91.5	109.2	- 17.7	91.5	112.7	- 21.2
distr. Turnhout	94.1	123.1	- 29.0	94.1	129.5	- 35.4
prov. Antwerp	585.0	586.1	- 1.1	585.0	609.3	- 24.3
distr. Hasselt	111.4	111.9	- 0.5	111.4	122.2	- 10.8
distr. Maaseik	36.4	55.5	- 19.1	36.4	60.4	- 24.0
distr. Tongeren	38.3	61.1	- 22.8	38.3	66.3	- 28.0
prov. Limburg	186.1	228.5	- 42.4	186.1	248.9	- 62.8
distr. Aalst	73.8	102.4	- 28.6	73.8	103.0	- 29.2
distr. Dendermonde	53.0	69.2	- 16.2	53.0	70.2	- 17.2
distr. Eeklo	24.4	33.1	- 8.7	24.4	34.2	- 9.8
distr. Ghent	186.6	182.9	+ 3.7	186.6	184.4	+ 2.2
distr. Oudenaarde	38.7	45.4	- 6.7	38.7	45.5	- 6.8
distr. Sint-Niklaas	65.0	80.0	- 15.0	65.0	80.5	- 15.5
prov. East Flanders	441.5	513.0	- 71.5	441.5	517.8	- 76.3
distr. Bruges	89.8	90.2	- 0.4	89.8	94.4	- 4.6
distr. Diksmuide	13.2	17.9	- 4.7	13.2	18.9	- 5.7
distr. Ypres	31.4	40.1	- 8.7	31.4	41.3	- 9.9
distr. Courtrai	104.5	102.5	+ 2.0	104.5	103.8	+ 0.7
distr. Ostend	47.1	48.1	- 1.0	47.1	50.6	- 3.5
distr. Roeselare	53.0	55.5	- 2.5	53.0	56.3	- 3.3
distr. Tielt	24.9	29.6	- 4.7	24.9	30.5	- 5.6
distr. Veurne	16.3	17.8	- 1.5	16.3	18.4	- 2.1
prov. West Flanders	380.2	401.7	- 21.5	380.2	414.2	- 34.0
distr. Halle-Vilvoorde (a)	140.3	189.7	- 49.4	140.3	195.1	- 54.8
distr. Louvain	108.0	146.9	- 38.9	108.0	154.1	- 46.1
prov. Flemish Brabant	248.3	336.3	- 88.3	248.3	349.2	- 100.9
Flanders	1,841.1	2,065.9	- 224.8	1,841.1	2,139.4	- 298.3

(a) Brussels-Suburban not included.

Appendix 6: The labour balance in Flanders (1975) (× 1 000)

District or Province	Narrow labour supply			Broad labour supply		
	Demand	Supply	Balance	Demand	Supply	Balance
distr. Antwerp	423.9	361.9	+ 62.0	423.9	371.1	+ 52.8
distr. Mechelen	95.7	113.0	- 17.3	95.7	115.4	- 19.7
distr. Turnhout	99.2	132.8	- 33.6	99.2	137.4	- 38.2
prov. Antwerp	618.8	607.7	+ 11.1	618.8	623.9	- 5.1
distr. Hasselt	122.2	125.3	- 3.1	122.2	132.8	- 10.6
distr. Maaseik	38.8	62.9	- 24.1	38.8	66.5	- 27.7
distr. Tongeren	40.0	66.5	- 26.5	40.0	70.2	- 30.2
prov. Limburg	201.0	254.7	- 53.7	201.0	269.5	- 68.5
distr. Aalst	73.2	104.4	- 31.2	73.2	104.8	- 31.6
distr. Dendermonde	52.4	71.1	- 18.7	52.4	71.7	- 19.3
distr. Eeklo	23.8	34.2	- 10.4	23.8	35.0	- 11.2
distr. Ghent	190.9	182.1	+ 8.8	190.9	183.1	+ 7.8
distr. Oudenaarde	36.4	44.5	- 8.1	36.4	44.6	- 8.2
distr. Sint-Niklaas	68.8	80.8	- 12.0	68.8	81.1	- 12.3
prov. East Flanders	445.5	517.1	- 71.6	445.5	520.3	- 74.8
distr. Bruges	94.0	94.7	- 0.7	94.0	97.6	- 3.6
distr. Diksmuide	13.6	18.4	- 4.8	13.6	19.1	- 5.5
distr. Ypres	32.1	41.0	- 8.9	32.1	41.8	- 9.7
distr. Courtrai	107.7	105.1	+ 2.6	107.7	105.9	+ 1.8
distr. Ostend	50.2	49.8	+ 0.4	50.2	51.5	- 1.3
distr. Roeselare	53.8	56.9	- 3.1	53.8	57.4	- 3.6
distr. Tielt	25.4	30.1	- 4.7	25.4	30.7	- 5.3
distr. Veurne	16.9	18.4	- 1.5	16.9	18.8	- 1.9
prov. West Flanders	393.7	414.4	- 20.7	393.7	422.8	- 29.1
distr. Halle-Vilvoorde (a)	144.1	206.2	- 62.1	144.1	210.2	- 66.1
distr. Louvain	109.7	156.1	- 46.4	109.7	161.2	- 51.5
prov. Flemish Brabant	253.8	362.3	- 108.5	253.8	371.4	- 117.6
Flanders	1,912.8	2,156.2	- 243.4	1,912.8	2,207.9	- 295.1

(a) Brussels-Suburban not included.

Appendix 7: The labour balance in Flanders 1980 (× 1 000)

District or Province	Narrow labour supply			Broad labour supply		
	Demand	Supply	Balance	Demand	Supply	Balance
distr. Antwerp	443.0	374.8	+ 68.2	443.0	379.7	+ 63.3
distr. Mechelen	98.7	117.8	- 19.1	98.7	119.1	- 20.4
distr. Turnhout	102.6	143.3	- 40.7	102.6	145.8	- 43.2
prov. Antwerp	644.3	635.9	+ 8.4	644.3	644.6	- 0.3
distr. Hasselt	130.2	140.4	- 10.2	130.2	144.5	- 14.3
distr. Maaseik	40.2	71.7	- 31.5	40.2	73.7	- 33.5
distr. Tongeren	39.8	72.9	- 33.1	39.8	74.9	- 35.1
prov. Limburg	210.2	285.0	- 74.8	210.2	293.1	- 82.9
distr. Aalst	70.9	107.8	- 36.9	70.9	108.0	- 37.1
distr. Dendermonde	50.2	72.5	- 22.3	50.2	72.9	- 22.7
distr. Eeklo	23.0	34.6	- 11.6	23.0	35.0	- 12.0
distr. Ghent	191.8	184.3	+ 7.5	191.8	184.8	+ 7.0
distr. Oudenaarde	33.2	44.2	- 11.0	33.2	44.2	- 11.0
distr. Sint-Niklaas	69.7	82.0	- 12.3	69.7	82.2	- 12.5
prov. East Flanders	438.8	525.4	- 86.6	438.8	527.1	- 88.3
distr. Bruges	96.5	99.0	- 2.5	96.5	100.4	- 3.9
distr. Diksmuide	13.8	19.4	- 5.6	13.8	19.7	- 5.9
distr. Ypres	32.3	42.5	- 10.2	32.3	42.9	- 10.6
distr. Courtrai	107.5	109.1	- 1.6	107.5	109.3	- 1.8
distr. Ostend	53.0	51.9	+ 1.1	53.0	52.7	+ 0.3
distr. Roeselare	53.2	58.9	- 5.7	53.2	59.1	- 5.9
distr. Tielt	25.3	31.4	- 6.1	25.3	31.7	- 6.4
distr. Veurne	17.1	19.2	- 2.1	17.1	19.4	- 2.3
prov. West Flanders	398.7	431.4	- 32.7	398.7	435.2	- 36.5
distr. Halle-Vilvoorde (a)	146.2	221.6	- 75.4	146.1	223.7	- 77.5
distr. Louvain	110.7	165.6	- 54.9	110.7	168.3	- 57.6
prov. Flemish Brabant	256.9	387.2	- 130.3	256.9	292.0	- 135.1
Flanders	1,948.9	2,264.9	- 316.0	1,948.9	2,292.0	- 343.1

(a) Brussels-Suburban not included.

Appendix 8: Comparison of the annual supply (S) and demand (D) of university graduates and qualified higher technical college students (level 14) in the Flemish part of the country over the period 1971-80.

Nature of studies	(a)	1971	1972	1973	1974	1975	Total 1971-1975	1976	1977	1978	1979	1980	Total 1976-1980
<i>University Faculty</i>													
Literature & philosophy	S	437	450	458	517	479	2.341	482	487	491	499	507	2.466
	D	537	536	535	534	533	2.675	532	531	530	529	528	2.650
	Difference	-100	-86	-77	-17	-54	-334	-50	-44	-39	-30	-21	-184
Law	S	433	533	631	810	990	3.397	932	1.016	1.104	1.193	1.293	5.538
	D	261	275	288	300	315	1.439	327	340	353	365	378	1.763
	Difference	+172	+258	+343	+510	+675	+1.958	+605	+676	+751	+828	+915	+3.775
Sciences	S	428	408	439	450	478	2.203	495	512	530	553	576	2.666
	D	346	361	376	389	405	1.877	417	431	444	458	472	2.222
	Difference	+82	+47	+63	+61	+73	+326	+78	+81	+86	+95	+104	+444
Medicine	S	549	737	845	1.031	1.221	4.393	1.358	1.365	1.458	1.574	1.679	7.434
	D	659	658	657	657	656	3.287	654	654	654	652	651	3.265
	Difference	-110	+79	+188	+374	+565	+1.096	+704	+711	+804	+932	+1.028	+4.169
Veterinary medicine	S	38	65	117	145	138	503	166	174	193	212	231	976
	D	39	41	44	45	47	216	47	48	50	51	51	248
	Difference	-1	+24	+73	+100	+91	+287	+119	+126	+143	+161	+179	+728
Applied sciences	S	316	318	356	359	390	1.739	390	403	416	429	446	2.084
	D	400	401	403	404	406	2.014	407	408	410	411	413	2.049
	Difference	-84	-83	-47	-45	-16	-275	-17	-5	+6	+18	+33	+35

(a) Surplus (+) or shortage (-) of supply.

Appendix 8: Comparison of the annual supply (S) and demand (D) of university graduates and qualified higher technical college students (level 14) in the Flemish part of the country over the period 1971-80 (cont'd)

Nature of studies	(a)	1971	1972	1973	1974	1975	Total 1971-1975	1976	1977	1978	1979	1980	Total 1976-1980
Agriculture	S	87	80	81	98	86	432	101	105	112	117	122	557
	D	63	67	72	76	80	358	85	90	95	100	105	475
	Difference	+24	+13	+9	+22	+6	+74	+16	+15	+17	+17	+17	+82
Social & political sciences	S	383	450	583	443	584	2.443	638	694	752	815	880	3.779
	D	77	84	91	99	105	456	113	120	128	135	142	638
	Difference	+306	+366	+492	+344	+479	+1.987	+525	+574	+624	+680	+738	+3.141
Economic sciences	S	656	719	679	860	832	3.746	863	897	931	974	1.018	4.683
	D	521	552	583	614	646	2.916	677	708	739	770	801	3.695
	Difference	+135	+167	+96	+246	+186	+830	+186	+189	+192	+204	+217	+988
Pedagogy & psychology	S	292	306	287	312	378	1.575	405	433	461	493	525	2.317
	D	29	32	34	36	40	171	41	44	46	48	50	229
	Difference	+263	+274	+253	+276	+338	+1.404	+364	+389	+415	+445	+475	+2.088
Total university graduates	S	3.619	4.066	4.476	5.025	5.576	22.762	5.830	6.086	6.448	6.859	7.277	32.500
	D	2.936	3.009	3.082	3.155	3.233	15.415	3.301	3.874	3.447	3.520	3.592	17.234
	Difference	+683	+1.057	+1.394	+1.870	+2.343	+7.357	+2.529	+2.712	+3.001	+3.339	+3.685	+15.266
Technical engineers	S	1.097	1.011	1.226	1.233	1.240	5.807	1.248	1.256	1.263	1.280	1.298	6.345
	D	1.395	1.544	1.693	1.841	1.990	8.463	2.140	2.289	2.438	2.587	2.736	12.190
	Difference	-298	-533	-467	-608	-750	-2.656	-892	-1.033	-1.175	-1.307	-1.438	-5.845

(a) Surplus (+) or shortage (-) of supply.

Appendix 9: General survey of new industrial settlements, with their employment and investment figures 1961-70.

Province	Settlements		Employment					Investments (in B.fr. millions)	
	Number	%	Total	%	Average per settlement	Total	%	Average per settlement	Average per employee
a. Antwerp	185	25	40,750	32	220	48,220	40	261	1,180
b. Limburg	175	24	34,420	27	197	21,470	18	123	0,620
c. East Flanders	175	24	24,750	20	141	41,510	34	237	0,680
d. West Flanders	134	18	18,190	14	110	6,460	5	48	0,360
e. Flemish Brabant	72	10	7,940	6	110	4,220	3	59	0,530
Total Flanders	741	100	126,050	100	170	121,880	100	164	0,970

Appendix 10: General assessment of the various location factors

Location factors	Points
A. Labour	193
1. Availability of sufficient unskilled and skilled male workers.	220
2. Availability of sufficient unskilled and skilled female workers.	140
3. Availability of sufficient educated male workers.	210
4. Availability of sufficient educated female workers	99
5. Availability of sufficient key staff workers	176
6. Wage level in the area	199
7. Loyalty of workers to firm	153
8. Favourable social climate of the area	150
B. Infrastructure	112
1. Availability of good waterway connections	83
2. Availability of good rail connections	85
3. Availability of good road connections	255
4. Site near motorway	163
5. Proximity of seaport	75
6. Proximity of airport	34
7. Connection facilities to a pipeline	30
8. Availability of equipped dry industrial estates	148
9. Availability of equipped industrial estates on a waterway.	53
10. Price per m ² equipped industrial site	195
C. Input	108
1. Availability of processed & raw materials within the area.	123
2. Minimum transport costs for raw materials and finished products	198
3. Availability of cooling water	87
4. Availability of suitable water for production processes	121
5. Drainage facilities for waste water	109
6. Proximity of industries of a similar nature	56
7. Proximity of other industries	69
8. Availability of local suppliers	97

Appendix 10: General assessment of the various location factors (continued)

D. Output	138
1. Presence of consumer firms	116
2. Sales outlet in region	162
3. Sales outlet in Belgium	227
4. Proximity to German sales outlet	115
5. Proximity to Netherlands sales outlet	144
6. Proximity to French sales outlet	130
7. Proximity to British sales outlet	72
8. Central position in the Euro-market	137
E. Environment	133
1. Availability of social and cultural amenities in the area	127
2. Proximity to a large city	122
3. Suitable housing for personnel	156
4. Presence of ancillary industries	139
5. Proximity of financial institutions	145
6. Easy personal or phone contact with suppliers and/or customers.	225
7. Proximity of pleasant recreational area	64
8. Area near headquarters of the firm	96
9. Familiarity with the area as place of residence	126
F. <i>Subsidies</i> available to firms settling in the development areas under the Regional Expansion Acts	215

Appendix 11: Comparison of saturation capacity and transport performance per waterway, 1970, 1975 and 1980 (in million tons).

Waterway	Tonnage transported in 1970	Tonnage to be transported		Saturation capacity in 1970	Estimated saturation capacity	
		in 1975	in 1980		in 1975	in 1980
Albert Canal	22.04	33.83	45.87	20.12	42.08	42.08
Briegden to Neerharen canal	3.19	5.23	7.22	3.10	3.10	3.10
Bocholt to Herentals canal						
– section from Beverlo canal to Mol	3.40	4.87	6.76	2.99	2.99	2.99
– section Mol - Herentals	4.91	7.15	9.91	2.65	2.65	2.65
Charleroi to Brussels canal						
– section Klabbeek - Brussels	4.75	8.19	11.74	3.39	5.02	5.02
The Upper Scheldt						
– section from Nimy-Blaton to Spiere canal	6.84	10.33	14.10	7.46	7.46	7.46
– section from Spiere canal to Bossuit to Courtrai canal.	6.88	10.53	14.36	7.29	7.29	7.29
– section from the Berchem Kerkhove locks to Ghent ringway	7.37	11.18	15.25	7.18	7.29	7.29
The Leie						
– section from French border to locks at Komen	2.60	3.84	5.59	3.40	3.40	7.02
– section Komen to Bossuit-Courtrai canal	2.60	3.84	5.59	2.27	2.27	7.02
– section from Bossuit-Courtrai canal to the canal from Roeselare to the Leie	2.86	4.30	6.26	2.27	7.02	7.02
– section from the canal from Roeselare to the Leie up to Deinze	3.48	5.22	7.60	2.27	11.04	11.04

Appendix 11: Comparison of saturation capacity and transport performance per waterway, 1970, 1975 and 1980 (in million tons) (continued)

Waterway	Tonnage transported in 1970	Tonnage to be transported		Saturation capacity in 1970	Estimated saturation capacity	
		in 1975	in 1980		in 1975	in 1980
The Dender (from Geraardsbergen to Dendermonde)	0.94	1.69	2.34	1.60	1.60	1.60
The drainage canal of the Leie						
– section Deinze to Ghent - Bruges canal	3.61	5.71	7.51	2.13	14.38	14.38
The canal from Roeselare to the Leie	1.42	1.61	2.14	0.81	4.18	4.18
The canal from Ternaaien to Maastricht	12.33	19.12	25.46	17.23	17.23	17.23
The Zui-Willems canal	4.74	6.84	9.30	8.58	8.58	8.58
The canal from Dessel to Schoten						
– section Turnhout-Schoten	1.01	1.43	2.23	1.04	1.56	1.56
The Nete canal	2.56	3.83	2.88	2.88	6.94(a)	2.88(a)

(a) Assuming that the push-drive locks at Viersel are not in operation by 1980.

Appendix 12: Sequence of the Flemish districts in descending order of severity of economic development problems (double assessment of employment opportunity shortage)

Order	District	Order total based on $M \cdot Y_A, WT_A \cdot 70 \text{ \& } WT_A \cdot 75$	Share district in total labour supply	Accumulated shares in labour supply	
1	Diksmuide	85	0.87	0.87	QUARTER I
2	Ypres	79	1.94	2.81	
3	Aalst	70	4.96	7.77	
	Tongeren	66	2.96	10.73	
4	Turnhout	66	5.96	16.69	
6	Maaseik	65	2.69	19.38	
	Oudenaarde	65	2.20	21.58	
8	Dendermonde	62	3.35	24.93	
9	Tielt	57	1.43	26.36	
10	Veurne	46	0.86	27.22	QUARTER II
11	Roeselare	44	2.69	29.91	
12	St. Niklaas	41	3.87	33.78	
13	Eeklo	40	1.60	35.38	
14	Louvain	38	7.11	42.49	
15	Mechelen	37	5.29	47.78	
16	Hasselt	35	5.42	53.20	
17	Courtrai	27	4.96	58.16	QUARTER III
18	Ghent	23	8.85	67.01	
19	Halle-Vilvoorde	21	9.18	76.19	
20	Ostend	20	2.33	78.52	
21	Bruges	15	4.37	82.89	QUARTER IV
22	Antwerp	7	17.13	100.02	

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