Chapter 8

THE GROWTH POLE AT HUELVA

The Economy of Huelva

The economy of Huelva displays many of the classical characteristics of underdevelopment, in particular an over-reliance on mining and agriculture and a poorly developed industrial sector (Table 8:1). Although Huelva is rich in natural resources the province gains little benefit from the processing and manufacture of these raw materials, which for the most part are either sent to other parts of Spain or exported. The basic weakness of the economy is reflected in the ranking of the province in terms of per capita income (Table 8:2). In the period 1955-1967 Huelva's share in the growing national prosperity declined at an alarming rate. From being the 24th richest province in 1955 Huelva had slipped to 42nd place in 1967. Since 1967 there has been an improvement, which almost certainly can be ascribed to the new developments at the growth pole in Huelva city.

i) Agriculture, Forestry and Fishing

In Huelva agriculture faces the same problems as those found in the rest of western Andalusia. There is a preponderance of *latifundios*, usually owned by absentee landlords, together with a large number of very small holdings (Table 8:3). The predominance of *latifundios* with absentee landlords, coupled with the widespread occurrence of poor quality soils, has lead to the emphasis being given to those crops and cultivations which require little attention, especially vines, cereals, livestock and forestry. However, these products provide low yields and low profits. Attempts to improve yields by the introduction of irrigation have been frustrated by the lack of suitable water supplies. The two main rivers of the province, the Odiel and the Tinto, both contain large amounts of toxic minerals. Nevertheless attempts are being made to irrigate some of the coastal areas of the province[1].

TABLE 8:1

Components of Economic Production in 1964: Huelva in Comparison with the Spanish Average.

	Huelva % G.N.P.	Spain % G.N.P.
1) Agriculture and forestry	19.5	18.5
2) Fishing	9.4	1.0
3) Mining	17.3	1.5
4) Manufacturing	17.5	35.2
5) Commerce	10.7	11.0
6) Transport	5.9	6.1
7) Banking	1.8	4.0
8) Public Administration	4.2	5.5
9) Hotels, accommodation, etc.	3.8	5.9
10) Property, rents, etc.	2.8	3.1
11) Other professional services	7.1	8.2
	100.0	100.0

Source: Banco de Bilbao, 1967.

TABLE 8:2

Ranking of Huelva Province in Terms of per capita National Income.

Year		Rank position
1955	-	24
1957	-	29
1960	-	29
1962	-	36
1964	-	39
1967	-	42
1969	-	40
1971	-	35

Source: Banco de Bilbao, 1973.

TABLE 8:3

Size of Farm Holdings in Huelva Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	26.9	0.4
1 - 5 ha.	36.6	3.2
5 - 50 ha.	30.0	15.8
50 - 200 ha.	4.2	14.4
200 - 1,000 ha.	1.9	27.3
More than 1,000 ha.	0.4	38.9
	100.0	100.0

Source: Censo Agrario, 1962.

Forestry is important in Huelva, contributing 13.1% to total agricultural production, compared to a national total of 4.1%. Approximately two-thirds of the total area of the province is covered in forests[2] with the cork oak predominating in the interior, and with pines and eucalyptus in the coastal regions. Although Huelva is one of the leading forestry provinces of Spain, much of the wood is sent elsewhere for further processing.

Huelva, in terms of cash value of production, is the seventh largest fishing province in Spain. Fishing has become important within the last 20 years, especially with the development of new equipment and larger boats able to fish off the African coasts. However, as with forestry, much of the processing of the fish is carried on outside the province. The development of the fishing sector requires an increase in the refrigeration installations in the port of Huelva, a fleet of refrigerated lorries, and a commercial organisation for grading, pricing and marketing the fish[3].

ii) Mining

Table 8:1 shows the important contribution made by the mining sector to the economy of Huelva. The source of this mining wealth is the series of copper and iron pyrites ore bodies in the Sierra Aracena, approximately 60 km. north of the port of Huelva. The first evidence of mineral working in the area goes back to the Bronze Age and the semi-legendary kingdom of Tartessos (Tharsis ?). The people of Tartessos, mentioned by Strabo and other ancient authors, produced large quantities of gold, silver and copper from this area[4]. The Romans mined the pyrites with great vigour and many of their workings can still be seen today. From the end of Roman times until the appearance of British enterprise in the nineteenth century the pyrites were mined in a desultory fashion. During the nineteenth century the need for new sources of copper combined with the growing demand for sulphur from the British alkali industry led to a renewed interest being taken in the mines[5]. In 1866 the Tharsis Sulphur and Copper Company was formed by Sir Charles Tennant, a leading alkali manufacturer of Glasgow.

The early success of the Tharsis company led, in 1873, to another British company taking over the Spanish royal mines at Río Tinto. By the end of the nineteenth century these two companies had made the Río Tinto region "the greatest mining centre in the world"[6].

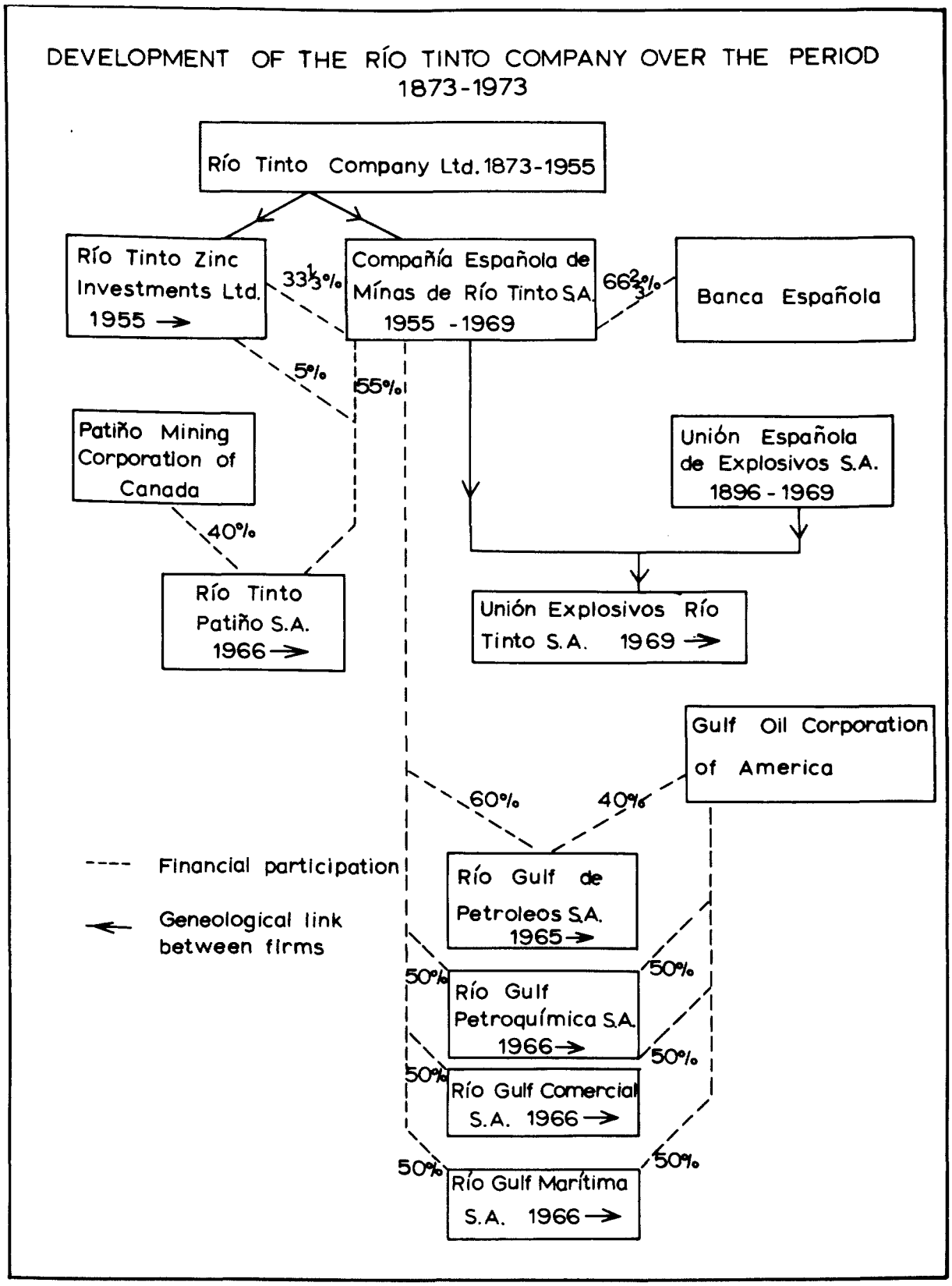
During the twentieth century the fortunes of the two British companies, and the whole mining prosperity of the region, went into a state of decline. The main zones of good cupreous ore became exhausted and the area was unable to complete with American-produced copper. By 1914 it was more profitable for the companies to export pyrites ore to Duisburg in Germany than to undertake any processing in Huelva. In the 1920's and 1930's competition in world markets from cheaper American sulphur caused a further decrease in production. This combination of factors led to a continual decrease in the export of pyrites ore from Huelva throughout the period 1906-1960[7]. Thus during the first half of the twentieth century the pyrites mines made a relatively small contribution to the economy of Huelva.

iii) Industry

Despite the abundance of raw materials, industry in Huelva was in a very backward state in 1964, which accounts for the small contribution made by manufacturing to total provincial production (Table 8:1). Apart from the processing of minerals, fish and agricultural produce, most of Huelva's industries were dependant on local demand for their markets. However, in the 1950's this situation began to change. In 1957 the state enterprise I.N.I. founded a new company, Celulosas de Huelva S.A., to exploit the province's eucalyptus forests. This firm built a factory near to Huelva which came into operation in August 1964, and which can produce up to 36,000 Tm. per year of celulose and paper from the various types of eucalyptus grown in the region[8].

The most important industrial development in Huelva has been the establishment of a huge petrochemical complex based on the Río Tinto Company. In 1955 a group of Spanish banks took a two-thirds share in the Company and renamed it the Compañía Española de Minas de Río Tinto S.A. It has been the policy of the new Spanish company to act as a springboard

FIGURE 8:1


DEVELOPMENT OF THE RÍO TINTO COMPANY OVER THE PERIOD 1873-1973
Río Tinto Company Ltd. 1873-1955
Río Tinto Zinc Investments Ltd. 1955 →
33⅓%
Compañía Española de Mínas de Río Tinto S.A. 1955 -1969
66⅔%
Banca Española
5%
55%
Patiño Mining Corporation of Canada
Unión Española de Explosivos S.A. 1896 - 1969
40%
Río Tinto Patiño S.A. 1966 →
Unión Explosivos Río Tinto S.A. 1969 →
Gulf Oil Corporation of America
60%
40%
Financial participation
Geneological link between firms
Río Gulf de Petroleos S.A. 1965 →
50%
50%
Río Gulf Petroquímica S.A. 1966 →
50%
50%
Río Gulf Comercial S.A. 1966 →
50%
50%
Río Gulf Marítima S.A. 1966 →

for further activities in mineral and chemical manufacture. This policy, which has long been argued by A.Pinedo Vara[9], is strongly supported by the Spanish government and, it is rumoured, by General Franco himself.

Expansion has been achieved largely by co-operative ventures with other companies who have expertise in related fields (Figure 8:1). The first important move was the establishment of a new firm, Río Gulf de Petroleos S.A., with a 40% participation from the Gulf Oil Corporation of America. The government gave this firm permission to build an oil refinery at La Rábida with an initial capacity of 4 million tons.p.a. In 1966 Río Gulf Petroquímica S.A. was formed to manufacture plastics, artificial fibres, detergents, etc., on the La Rábida site. Two other firms were formed at the same time to handle the commercial and maritime requirements of the group. Also in 1966 the Río Tinto Patiño section was formed to look after all the copper production and smelting interests of the group. In 1969 the parent company, Compañía Española de Minas de Río Tinto S.A., merged with the chemical firm Unión Española de Explosivos S.A. to form a new company, Unión Explosivos Río Tinto S.A., thereby adding the production of fertilizers, industrial and military explosives, and other petrochemicals to the Río Tinto group's activities. In 1973 the group agreed to merge interests with Fertiberia S.A. in the production of fertilizers. Agreements have been reached with British Titan Ltd. to produce 100,000 Tm. p.a. of titanium oxide, with I.C.I. to produce methyl, phenyl and other benzene derivatives and with Produits Alimentaires Blanchaud S.A. to produce various foodstuffs. A new joint company has been formed with Hoechst to produce polyethylenes, and in the pharmaceutical field the group has bought control in the old established firms of Federico Bonet S.A. and the Compañía Española de Penicilina S.A.[10] In these various arrangements the group has received strong financial support from the Banco de Bilbao.

In practical terms these agreements have meant the establishment of processing works at Huelva. The most recent agreements will mean many new factories, mainly in Huelva but also in other parts of Spain. By 1971

TABLE 8:4

Products of the Río Tinto Group 1971.

1,600,000 Tm.	Pyrites
1,120,000 Tm.	Sulphuric Acid
4,000,000 Tm.	Refined Oil
100,000 Tm.	Lubricants
400,000 Tm.	Asphalt
124,000 Tm.	Basic Aromatics
55,000 Tm.	Blister Copper
20,000 Tm.	Copper Ore

Source: Cía. Española de Minas de Río Tinto, La Minería de Río Tinto, Madrid (1971).

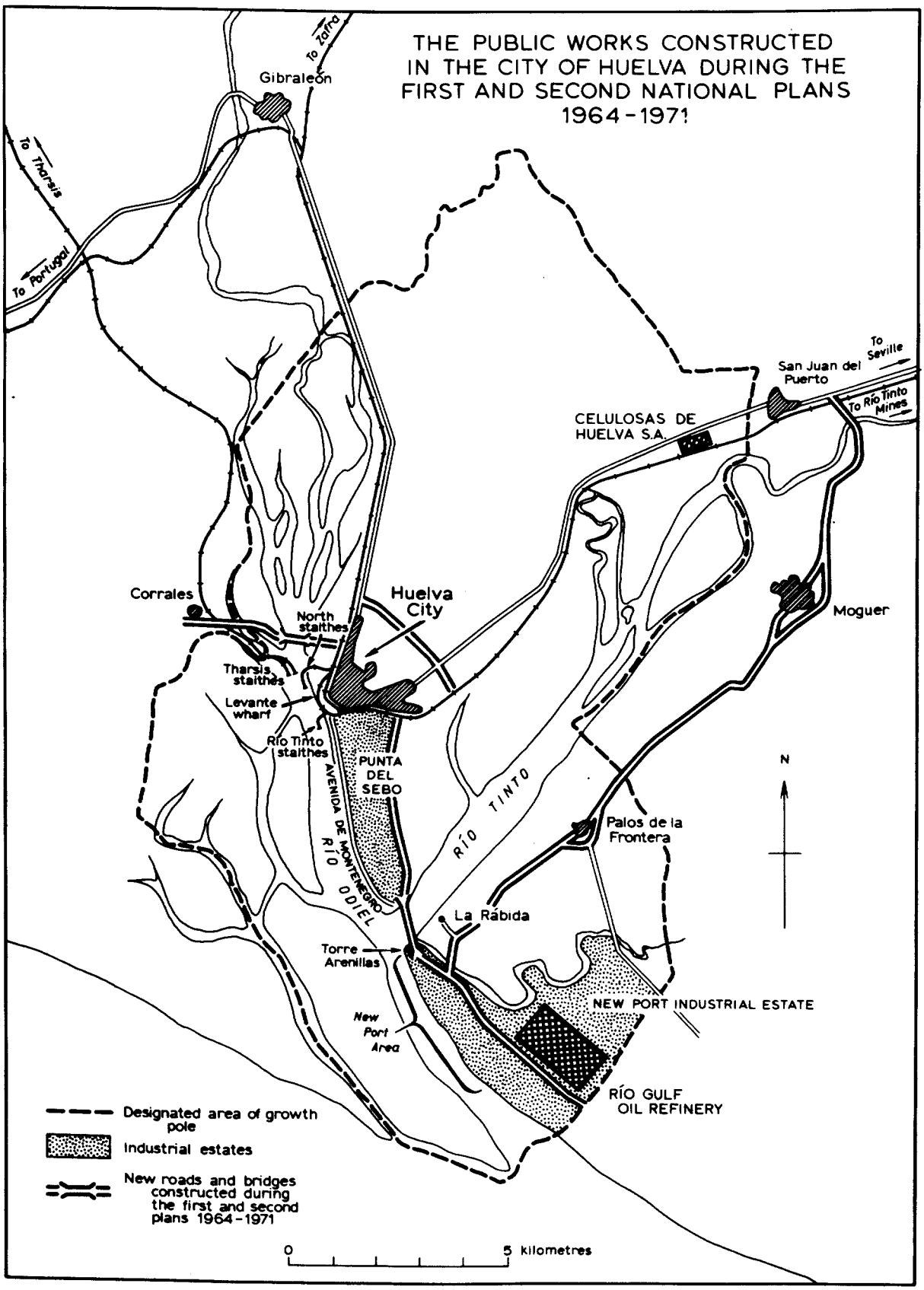
a large sulphuric acid and a copper smelting and refining plant had been established at Punta del Sebo, and the oil refinery and associated petrochemical works at La Rábida (Figure 8:2).

The strong expanionist activities of the Río Tinto group have transformed the city of Huelva from being an overgrown fishing port into the main petro-chemical centre of Spain within the space of ten years. If Huelva develops into a major centre of economic activity then it will be almost entirely due to the dynamism of this one firm[11].

iv) Services

The tertiary sector as a whole remains underdeveloped compared to the rest of Spain. This is probably a by-product of Huelva's lack of industrial and urban development. Small factories and small towns do not generate much business for professional services. The one branch of the tertiary sector capable of making a significant contribution to the provincial economy is tourism. Huelva province has all the basic ingredients for a flourishing tourist industry. The beaches have a gentle gradient and are composed of fine grained sand. The climate is one of the sunniest in Spain, giving rise to the name Costa de la Luz. The Columbian associations at La Rábida and Palos together with historic towns such as Niebla, provide items of cultural interest, whilst the many famous fiestas, especially the pilgrimage to El Rocío, provide further colour and charm. Despite all these attractions Huelva remains one of the least developed tourist provinces in Spain. Much of the reason for this lies in the lack of good communications, particularly an international airport, which could make this coastline a 'second Algarve'[12]. There has also been a lack of infrastructure to support any tourist developments. The government now has a plan to provide the basic services; water supply, drainage, electricity, etc., to certain areas along this coast. However, any major tourist developments are likely to have a serious clash of interests with the large petro-chemical complex developing in Huelva city, and is also likely to encroach on Spain's finest nature reserve, the Coto Doñana[13].

FIGURE 8:2


THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF HUELVA DURING THE FIRST AND SECOND NATIONAL PLANS 1964-1971
To Zafra
Gibraleón
To Tharsis
To Portugal
To Seville
San Juan del Puerto
To Río Tinto Mines
CELULOSAS DE HUELVA S.A.
Corrales
Huelva City
North staithes
Tharsis staithes
Levante wharf
Río Tinto staithes
PUNTA DEL SEBO
AVENIDA DE MONTENEGRO
RÍO TINTO
RÍO ODIEL
Moguer
N
Palos de la Frontera
La Rábida
Torre Arenillas
New Port Area
NEW PORT INDUSTRIAL ESTATE
RÍO GULF OIL REFINERY
Designated area of growth pole
Industrial estates
New roads and bridges constructed during the first and second plans 1964-1971
0
5 kilometres

The City of Huelva

The city of Huelva is situated at the confluence of the Odiel and Tinto rivers. It is built on a series of sand dunes and older argillaceous rocks which gives the city good building land and a dry site above the surrounding marismas or salt marsh. This higher ground forms a V-shaped pattern which dominates the urban morphology of Huelva. The oldest part of the city with its 'Moorish' street pattern and flat-roofed houses is situated at the point of the V, closest to the port area (Figure 8:2). Later urban developments spread out along the arms of the V, especially in the direction of Seville. This includes the Barrio Río Tinto, an area of housing built earlier this century by the Río Tinto Company for its employees working in the town, and forming a very distinctive feature through having been built to an English design. The latest stage, a period of rapid growth since 1955, has included a large amount of infilling within the V. Most of this has been residential development including tower blocks and multi-storey flats.

The main roads and railways follow the same V pattern. The first railway was built in 1875 by the Río Tinto Company to link the company's mines with the port. To avoid the main built-up area and to ensure easy gradients, the railway was built on the flat marshlands at the foot of the higher ground. This fixed the route for subsequent railway construction, including the main line from Seville to Ayamonte and Portugal. This routeway is also used by the main road, the Seville to Portugal highway. Recent industrial developments have tended to be located along this main road, especially on the Seville side of town.

The population of Huelva city has tended to grow at a fairly constant rate throughout the first half of the twentieth century, with a notable increase occurring during the last decade 1960-1970, which can be attributed partly to the activities of the growth pole. This recent increase was achieved despite an overall decrease in population for the province as a whole.

TABLE 8:5

The Population of Huelva City and Province 1900-1970.

	City	Province
1900	21,359	260,880
1910	29,072	309,888
1920	34,437	330,402
1930	44,872	354,963
1940	56,427	366,526
1950	63,648	368,013
1960	74,384	399,934
1970	96,689	397,683

Source: Censo de la Población, 1970.

The Port of Huelva

The old port of Huelva is situated on the upper estuary of the Odiel river adjacent to the town. The main wharf is the Muelle de Levante, (see Figure 8:2) the southern half of which contains the fishing port and warehouses, and the northern half the general merchandise and passenger traffic. There are also a number of special mineral wharfs or staithes, the first of which was built in 1874 by the Río Tinto Co. Ltd., for the export of iron pyrites[14]. The Tharsis Sulphur and Copper Co. Ltd., built two more staithes at Corrales for the export of their products, and a further set of staithes, the Muelle Norte, was built for other mineral traffic.

In July 1963 the Plan de Ordenación General del Puerto de Huelva was approved by the Directorate General of Ports[15]. The basic aim of the plan has been to move all the general traffic down to Torre Arenilla, to abandon the four mineral staithes, and to make over the entire Muelle de Levante to the fish port (Table 8:6). The project and work begun on a new fish port has therefore been abandoned, in accordance with the recommendations of the World Bank Mission[16].

The reason for these changes is that the Odiel river has to be dredged annually of some 280,000 cubic metres of silt in order to maintain a draught of 4 metres at the Muelle de Levante[17]. This means, for example, that even with dredging, the Río Tinto staithes can only take ships with an upper size limit of 10,000 - 12,000 Tm[18]. At Torre Arenilla there is a natural depth of water of 7 metres, which can accommodate ships of 35,000 Tm. However, access to this deep water is restricted by the harbour bar formed by the Arenas Gordas, the dunes which spread along the whole of this coast from Portugal to Cádiz bay. In 1967 only ships under 14,000 Tm. could cross this bar. It is planned that by 1974 suction dredging will increase the draught at the bar to 7 metres, enabling ships of 35,000 Tm. to enter.

Work on the new oil installations is well advanced. A sea buoy and pipeline have been placed 10 kms. offshore for large tankers unloading crude oil, and the new oil wharf at Torre Arenilla received its first tanker in June 1967. Construction work on the general cargo and mineral wharves is

TABLE 8:6

The Port of Huelva: Investment Programme 1964-1971.

I)	Mineral and petroleum wharves	565,000,000 ptas.
II)	General merchandise wharf	250,000,000 ptas.
III)	Fish wharf in Punta Umbría	30,000,000 ptas.
IV)	Survey of the harbour bar	25,000,000 ptas.
V)	Dredging the harbour bar	20,000,000 ptas.
VI)	Installations for the fish port, Levante wharf	36,000,000 ptas.
VII)	Mechanical installations for the mineral wharf	137,000,000 ptas.
VIII)	Small projects	26,000,000 ptas.
	Total	1,089,000,000 ptas.

Note: item I) is financed out of the budget for the growth poles (see Chapter 6). The rest of the items are financed out of the port's own budget, and the Directorate General of Ports of the Ministry of Public Works.

Source: Interview with the Engineer - Port Director, Sr. Don Juan Gonzalo y Vara. 1st June, 1968.

TABLE 8:7

The Port of Huelva: Total Traffic Handled in 1967.

	Tm.	%
1) Oil and petroleum products	2,245,308	50.8
2) Chemicals	42,717	0.9
3) Minerals	2,072,043	46.9
4) General Merchandise	62,426	1.4
	4,422,494	100,0

Source: Ministerio de Obras Publicas, Memoria Anual del Puerto de Huelva, 1967, Huelva (1968) p.30.

TABLE 8:8

Future Trading Developments in the Port of Huelva.

Firm	Imports per annum	Exports per annum
1) Río Gulf de Petróleos, S.A.	2,000,000 Tm. crude oil	1,800,000 Tm. petroleum products
2) Minera de Andévalo		2,000,000 Tm. pelletized iron ore
3) Fertiberia, S.A.	120,000 Tm. phosphoric rocks	50,000 Tm. urea 10,000 Tm. fertilizers
4) Río Tinto Española, S.A.		100,000 Tm. sulphuric acid 400,000 Tm. pyrites ashes
5) Río Tinto Patiño, S.A.	200,000 Tm. copper concentrates	
6) La Unión Española de Explosives	300,000 Tm. phosphoric rock	70,000 Tm. ammonia phosphates
7) Foret, S.A.	90,000 Tm. phosphoric rock	20,000 Tm. phosphate products
8) Odiel Química	5,000 Tm. phosphates	
9) Interquímica, S.A.	300,000 Tm. phosphoric rocks	100,000 Tm. phosphoric acid 65,000 Tm. phosphate products
10) Electroquímica de Flix	100,000 Tm. salt	

Source: Organización Sindical, Consejo Económico Sindical Provincial Huelva, VII Plano - 1967, Huelva (1968) pp 19-21.

less well advanced. Although it was originally intended to have these wharves in operation by 1970, they will probably not be completed until the late 1970's[19].

A number of private wharves have been built out from the Avenida de Montenegro, the most important of which are the Campsa wharf for victualling large ships with fuel oil and the Fertiberia wharf for the loading and unloading of raw materials and fertilizer products. Although most of these private wharves were constructed in the 1960's, it is the port authority's intention that they should be closed down and the trade diverted through the new mineral port[20].

Traditionally the most important trade at Huelva has been the export of pyrites from the privately owned wharves, however by 1967 the trade in oil had become more important in terms of tonnage (see Table 8:7). Future industrial developments indicate a phase of rapid expansion for the new port. The figures in Table 8:8 are for plans already in progress or in construction. In addition Río Gulf have plans for a new phosphoric acid plant at Torre Arenilla which would import 700,000 Tm. to 900,000 Tm. of phosphoric rock from the Sahara each year, and export over 1,000,000 Tm. of products.

In total a massive programme of works is under way based on the future needs of the new industrial complex, and this has already made Huelva Spain's most important port for petroleum and chemical products.

Developments in the Infrastructure of Huelva

The development of new industrial projects in Huelva is dependant on considerable improvements being made to the basic infrastructure of the city. Huelva's shortcomings in terms of facilities were recognised in 1964 and led to the designation of the city as a Polo de Promoción. Four main areas for improvement have been identified: water supply, roads, a new industrial estate and new port facilities[21].

The planning report on regional development published in 1968 stated that the water supply in Huelva was barely adequate for the needs of the population and existing industries, let alone the vast water requirements of the new chemical industries[22]. In fact this report understated the

TABLE 8:9

Public Investment in the Infrastructure of the Huelva Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Huelva	Totals: All growth poles	Totals: %
Preparation of Industrial Land					
Industrial estate at Torre Arenilla	37	300			
Total	37	300	337	1,451	23.2
Water Supply and Drainage					
Surveys	12	0			
Dam on the Río Piedras	146	0			
Distribution canal	151	58			
Pipeline	188	88			
Reservoirs in Huelva	49	5			
Siphon across the Río Odiel	154	110			
Tapping the las Madres lagoon	19	4			
Water distribution to the industrial zone	0	950			
Total	719	1,215	1,934	3,625	53.4

TABLE 8:9 cont.

		1964-1967	1968-1971	Totals: Huelva	Totals: All growth poles	Totals: %
Roads						
Main port road parallel to coast		18	5			
San Juan del Puerto to La Rábida		26	20			
By-pass for Moguer and for Palos		1	33			
Río Tinto bridge to main port road		0	38			
Río Tinto bridge		0	87			
By-pass for Huelva		0	110			
	Total	45	293	338	1,610	20.9
Other Infrastructure Works in the Growth Pole						
Railway line to Torre Arenilla		0	92			
Port railway		0	350			
New mineral and petroleum wharves		222	343			
	Total	222	785	1,007	5,248	19.2
	Totals	1,023	2,593	3,616	11,934	30.3

Note: the item 'Other Infrastructure Works in the Growth Pole' includes work financed not out of the Planning Commission's budget, but by other government agencies, the Ministry of Public Works, Renfe, etc. All figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

problem for in 1967 there was severe water rationing and domestic users were restricted to 3-4 hours supply per day. To overcome this problem a two-phase programme has been put into effect. The first phase, completed by 1970 and supplying 600 litres per second, consists of a dam on the Río Piedras, a pipeline bringing the water to the city, a syphon over the Río Odiel, and a network of distribution canals to the city and new industrial areas (Figure 8:3). The second phase, planned to be completed by 1971, although still not in operation, is to pump 2,500 litres of water per second out of a reservoir at Pomeras on the Río Guadiana and for a canal to take the water on to the new reservoir at Río Piedras. Lastly, the Río Gulf company has tapped the Las Madres lagoon for industrial water to be used in the nearby refinery[23]. It is thought that these measures will satisfy Huelva's water requirements until the 1980's.

The development of land communications in Huelva has been restricted by the Tinto and Odiel rivers, and by the large areas of salt marsh to the south of the city. Traditionally the main road and railway routes have followed the higher and drier ground along the main V-shaped axes of the city. The road building programme for Huelva will overcome many of the natural obstacles of the area, will provide access to the new industrial and port areas of the city, and a by-pass round the congested city centre for through traffic on the main Seville-Portugal road (Figure 8:2).

A bridge over the Río Odiel, completed by 1970, has opened up the area west of Huelva for new urban and industrial developments. This bridge also provides a much shorter route between Huelva and seaside resorts such as Punta Umbría (Figure 8:2). A second bridge, built over the Río Tinto and also completed by 1970, provides direct access between the city of Huelva and the new port area at Torre Arenillas. Two important access roads are being built for the new port area. The road from La Rábida to San Juan del Puerto has been greatly improved and by-passes have been constructed around the villages of Palos and Moguer (Table 8:9). This access road will provide a direct link with the main Seville road. Secondly, a new road is being constructed through the Punta del Sebo industrial estate and will provide a

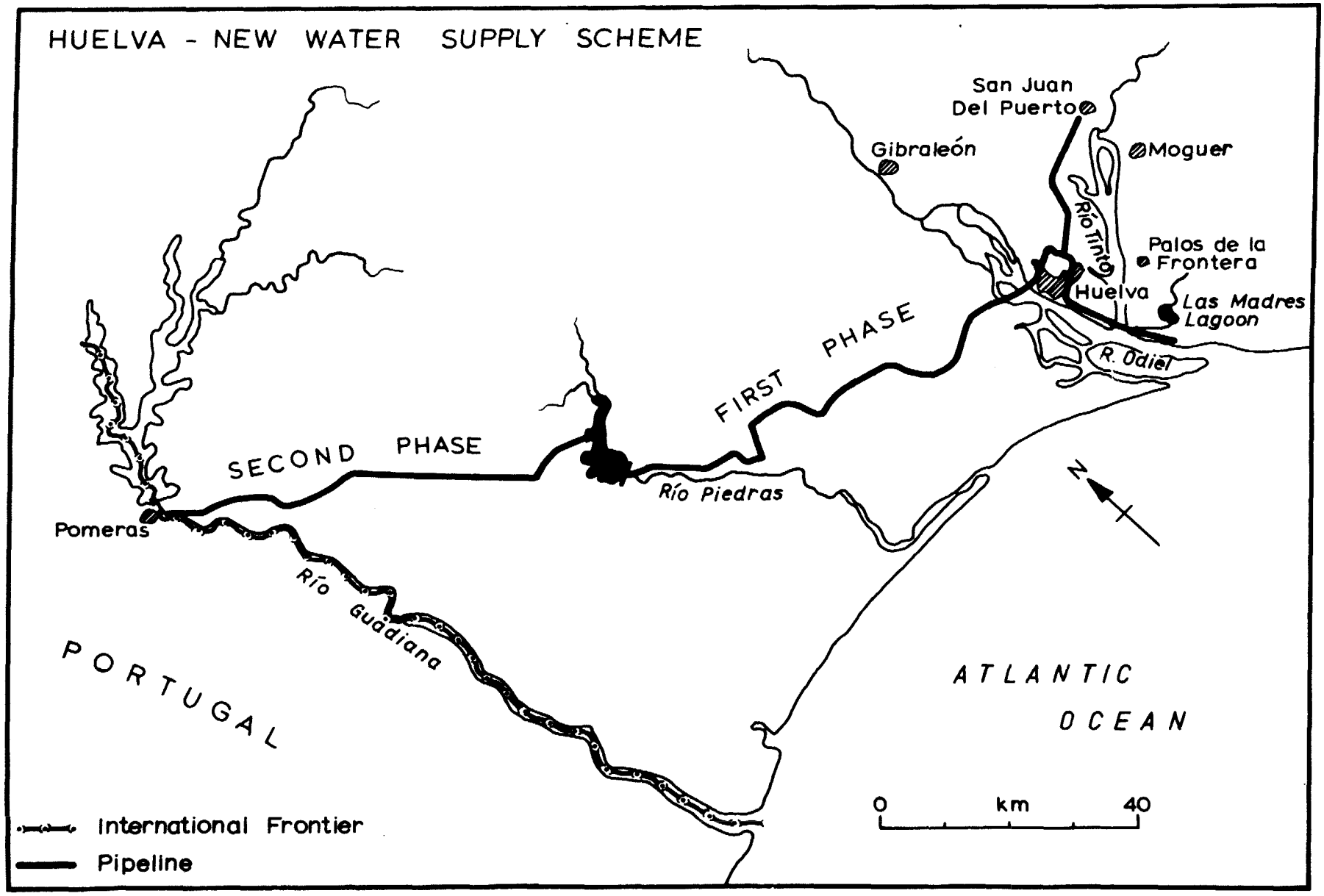

HUELVA - NEW WATER SUPPLY SCHEME
San Juan
Del Puerto
Gibraleón
Moguer
Río Tinto
Palos de la
Frontera
Huelva
Las Madres
Lagoon
R. Odiel
FIRST PHASE
SECOND PHASE
Río Piedras
Pomeras
Río Guadiana
PORTUGAL
ATLANTIC
OCEAN
N
0
km
40
International Frontier
Pipeline

FIGURE 8:3

Plate 8:i Concrete pipes for the new pipeline from the Río Piedras.

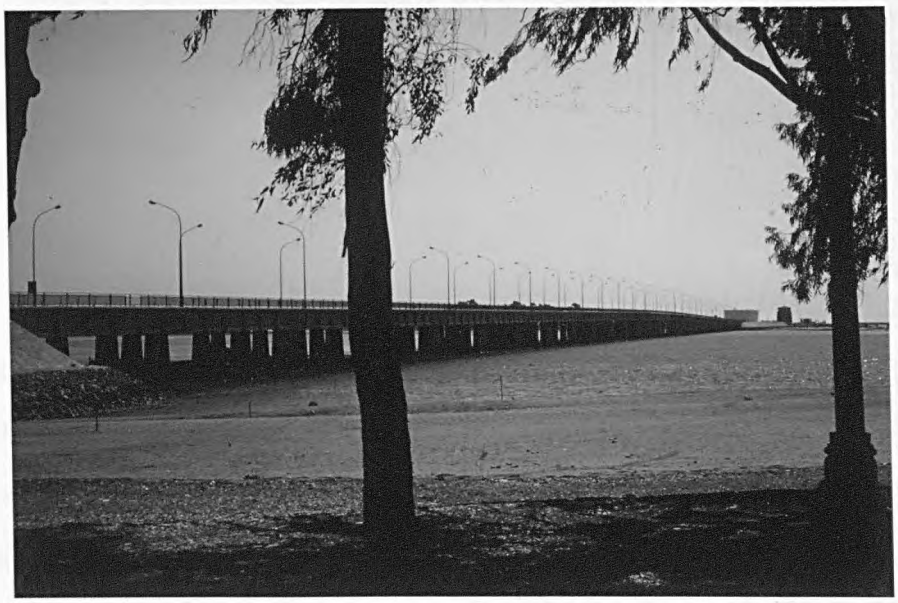


Plate 8:2 The new bridge over the Río Tinto.

direct link from the city to the new Río Tinto bridge. Lastly, a by-pass is being constructed to the north of Huelva to provide a through route for traffic on the main Seville-Portugal road (Figure 8:2). There are also plans to provide a direct rail link to the new port. However, this would be a very costly project and approval for it has not yet been granted. Neither has the route for this new line yet been fixed; this could either come in from the main line at San Juan del Puerto or, as the Ministry of Public Works prefers, could come direct from Huelva over a new bridge over the Río Tinto[24].

Prior to 1964 the only area suitable for major industrial projects was the industrial estate at Punta del Sebo. Here the Junta de Obras del Puerto has prepared the land and provided a number of facilities, water supply, drainage, etc., which have led to the important industrial developments along the Avenida del Montenegro. In order to provide a second industrial estate the Planning Commission, through the Ministry of Housing (Gerencia de Urbanización) has acquired 1,200 hectares of land in the new port area[25]. Already many of the plots in this new estate have been sold to incoming industries.

Analysis of the Firms within the Growth Pole at Huelva

Huelva's status as a polo de promoción permits any enterprise which contributes to the economic and social development of the region, invests more than three million pesetas, and creates a minimum of twenty new jobs, to apply for benefits under the growth pole scheme (above Ch.6). In May 1968 a total of 86 firms had received or were in the process of receiving such benefits[26]. However, out of this total 36 firms were still in the planning stage, several were in construction, and a number of the beneficiaries were in non-directly productive occupations such as schools, hotels and a hospital. The total number of directly productive firms already in operation in May 1968 was 21, of which 19 were interviewed. Details of these 19 firms are given in Tables 8:10 and 8:11.

The largest number of firms are included within the chemicals and the construction, glass and ceramics industries, followed by the metallurgical

TABLE 8:10

Firms Functioning in the Huelva Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Exportadores y Frigoríficos Reunidos, S.A.	refrigaration, ice
	Textiles and Clothing	
2)	Fca. Redextra, S.A.	nylon nets
	Wood and Furniture	
3)	San Juan del Condado, S.A.	chipboard
4)	José Franco Rodríguez	furniture and boards
5)	Tamsa	wood mouldings
	Paper and Printing	
6)	Cartonajes Onubeuse, S.A.	cardboard cartons and plastic bags
	Chemicals	
7)	Fertiberia, S.A.	ammonia
8)	Cía. E. de Minas de Río Tinto, S.A.	sulphuric acid
9)	Río Gulf Petroquímica, S.A.	asphalt and benzene
10)	Foret, S.A.	phosphoric acid
	Construction, Glass and Ceramics	
11)	Cerámica Omubense, S.A.	ceramic composition tiles
12)	I. Cerámicas de Huelva, S.A.	bricks
13)	I. Cementera Onubense, S.A.	cement and concrete
14)	Pavimentos de Huelva, S.A.	composition paving stones

TABLE 8:10 cont.

Number*	Firms arranged by main industrial groups	Product of firms
	Metallurgical	
15)	Río Tinto Patiño, S.A.	copper
16)	Metalurgica del Suroeste, S.A.	metal structures
17)	Varadero del Río Odiel, S.A.	boat repairs
	Various	
18)	Cía. Sevillana de Electricidad, S.A.	electricity production
19)	Félix Cifuentes González	processing of barytes and atapulgita**

* These numbers are used in Fig. 8:4 to show the location of these firms.

** No translation of the word 'Atapulgita' appears to exist. A large number of technical and scientific dictionaries were consulted but no translation was discovered. Also the definitive Spanish dictionary the 'Diccionario de la Lengua Española', published by the Read Academia Española nineteenth edition 1970, was consulted but no entry for this word was discovered. Because of this situation the Spanish word has been used here. Atapulgita is a mineral which, according to the directors of this firm, is produced nowhere else in Europe, except in the Soviet Union.

TABLE 8:11

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created*	Type of benefit(s) received**
		Food	
1)	60,365,000	20	B
		Textiles and Clothing	
2)	38,592,000	156	B
		Wood and Furniture	
3)	94,755,000	107	B, B
4)	32,728,000	151	A, A
5)	94,985,000	93	A
		Paper and Printing	
6)	104,300,000	67	B, B
		Chemicals	
7)	933,417,000	245	A
8)	828,764,000	128	B, B, C
9)	934,460,000	70	A
10)	237,644,000	103	A, A
		Construction, Glass and Ceramics	
11)	34,579,000	32	A
12)	20,150,000	45	B
13)	11,554,000	21	A
14)	27,735,000	101	B, B
		Metallurgical	
15)	1,766,977,000	543	A, A, A, A, B
16)	16,890,000	24	B
17)	28,617,000	74	B

TABLE 8:11 cont.

Number	Investment	Number of jobs to be created*	Type of benefit(s) received **
		Various	
18)	1,391,552,000	139	A, A
19)	59,061,000	87	A, A

* Note that these are the total number of new jobs which the firms are contracted to create under the terms of the growth-pole agreements. These are target figures and may not represent the actual number of new jobs created by 1968.

** Details of the types of benefits are given above in Chapter 6.

Source: Planning Commission, Relación de les empresas acogídas a los programas de desarrollo regional, Madrid (1968).

and the wood and furniture industries. In terms of investment and number of jobs to be created it is the chemicals and metallurgical sectors which are most important (Table 8:11). All the firms received class A or class B type benefits (see above Ch.6).

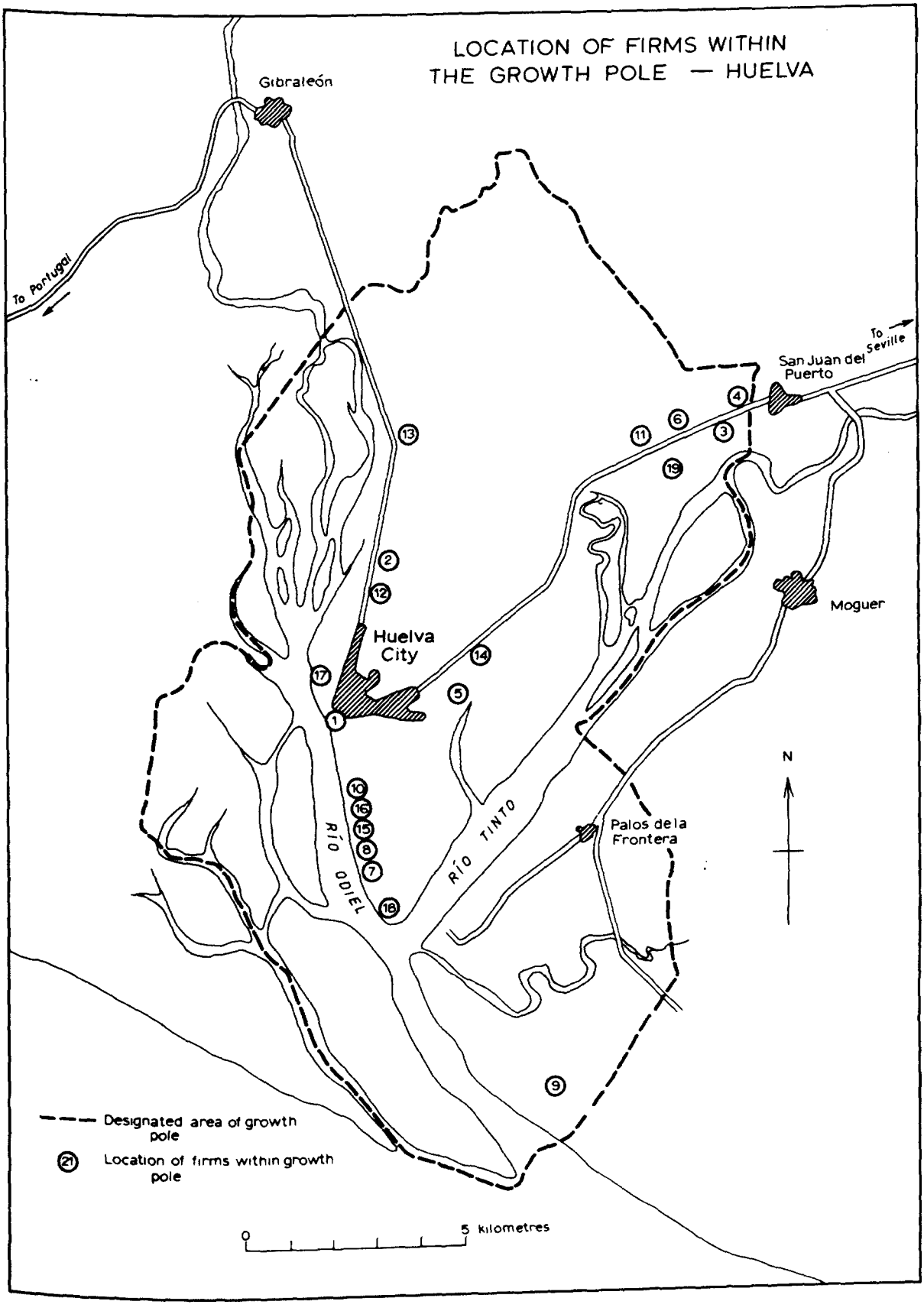
i) Factory sites of the Growth-Pole Firms

All 19 of the firms interviewed were content with the size of their factory site, all having sufficient room for expansion in the future (Table 8:12). There was less satisfaction concerning the nature of these sites. Seven of the firms had encountered serious difficulties when constructing their buildings due to the weak nature of the soils. The problem appeared to be most acute for the heavy industries built on the reclaimed marismas of the Punta del Sebo estate; for example, Río Tinto Patiño S.A. had to sink over 50,000 piles in order to secure the foundations for their factory.

In 1968 the water supply problem seriously affected most of the growth-pole firms. Although Table 8:12 shows that ten firms were content with their supply, seven of these firms either already owned wells or had to dig their own wells, and a further two firms were using the Río Odiel for the bulk of their supplies. Undoubtedly these problems will have been overcome by the supply from the new schemes; nevertheless they have imposed severe difficulties and extra costs on those firms getting into production before 1971.

For thirteen firms waste disposal was not a problem, and a further two firms had their own systems which were quite capable of dealing with waste disposal. However, for four firms (Fertiberia S.A., Foret S.A., Cía.E. de Minas de Río Tinto S.A., and Río Tinto Patiño S.A.) air pollution was a serious problem. All four firms produce noxious fumes during manufacture and have to apply stringent and very expensive measures to prevent atmospheric pollution. This problem is exacerbated for these firms because all are located in the Punta del Sebo estate (Figure 8:4) close to the city centre. Furthermore the prevailing winds at Huelva tend to be southerly and south-

FIGURE 8:4


LOCATION OF FIRMS WITHIN
THE GROWTH POLE — HUELVA
Gibraleón
To Portugal
To Seville
San Juan del Puerto
Moguer
Huelva City
Palos de la Frontera
RÍO ODIEL
RÍO TINTO
N
Designated area of growth pole
Location of firms within growth pole
0
5 kilometres

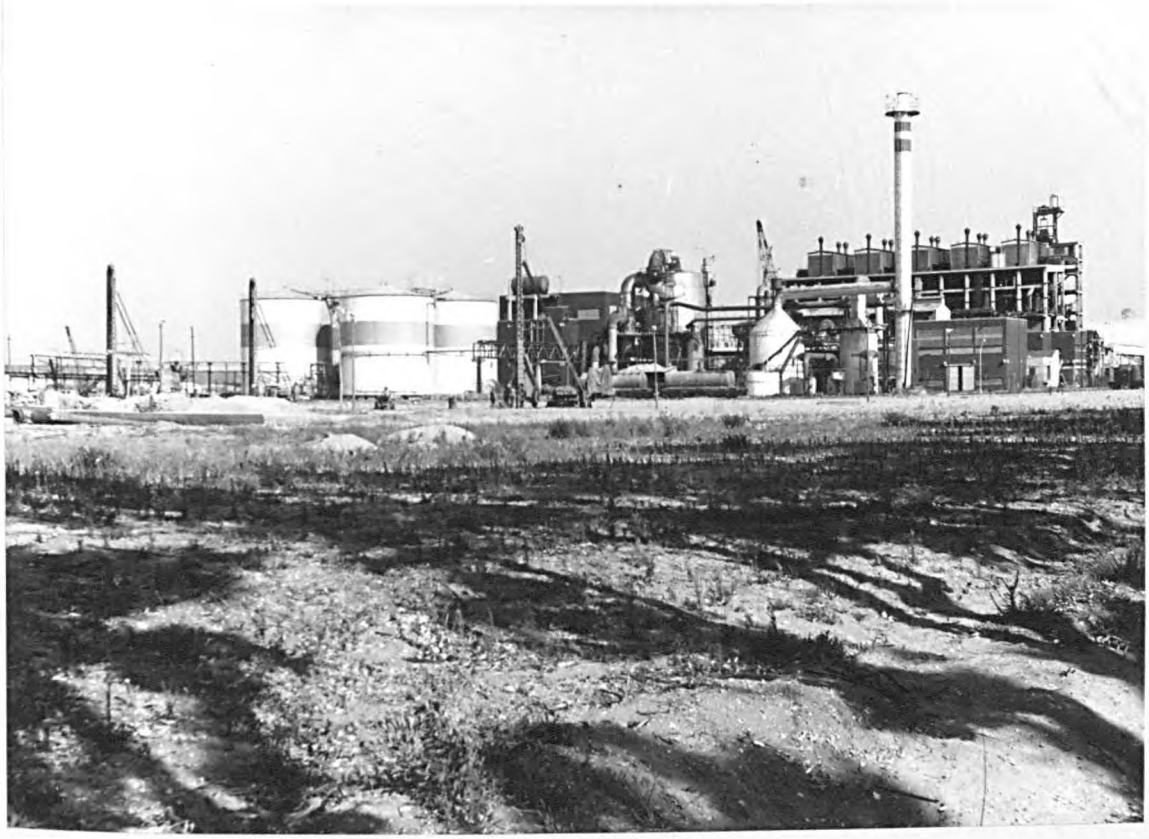


Plate 8:3 The Río Tinto company's new sulphuric acid works at Punta del Sebo.

TABLE 8:12

Firms Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Huelva.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	19	0	0	0	19
Nature of factory site	9	3	7	0	19
Water supply	10	0	9	0	19
Waste disposal	2	0	4	13	19
Telephone	2	11	4	2	19

Source: questionnaires

westerly, and carry the fumes towards built-up areas. In general it would appear that in terms of the quality of the soil and atmospheric pollution, the Punta del Sebo estate is not suitable for large chemical works, and that a better site could have been found at the new port industrial estate.

Lastly very few firms were satisfied with the telephone system at Huelva. The two firms that were satisfied were both dependant on local suppliers and customers for their business. Two other firms were still waiting for telephones to be installed, and the rest of the firms complained in varying degrees of the poor quality of the service, especially when trying to make calls to the other regions of Spain. This situation was particularly acutely felt, considering Huelva's isolation from the rest of Spain, and the need for modern industry to maintain close business contacts and have a rapid flow of information.

ii) Services used by the growth-pole firms

The range and quality of services supplied by the city of Huelva plays an important role in promoting economic growth. If a firm can avail itself of the best technical and professional services then it will have a competitive advantage over those firms that cannot. On the other hand if the city is to gain the maximum benefit from industrial developments in the local area then it must provide the full range of services required by those developments. In practice, of course, many of the larger firms will provide their own professional services because of the highly specialised nature of their work. Nevertheless the maximum 'backwash' effect in the tertiary sector, in terms of income and employment, will only occur when local industries are able to satisfy all their service requirements in Huelva.

The location of the professional and technical services supplied to the growth-pole firms is shown in Table 8:13. This table shows that in fact very few services were provided locally. Part of this is due to the poor quality of the services available in Huelva which are not geared up to the needs of modern industry. However, part of this is also due to the fact

TABLE 8:13

Location of Services used by Growth-Pole Firms at Huelva.

	City	Province	Region	Nation	Abroad	Within firm at Huelva
Commercial	3	0	4	6	0	6
Technical	0	1	5	5	1	7
Advertising	5	1	4	6	0	3
Marketing	4	0	5	5	1	4
Legal	6	0	4	6	0	3
Maintenance of mechanical equipment	2	0	1	1	0	15
Maintenance of electrical equipment	2	0	0	1	0	16
Transport	10	0	0	0	0	9

Source: questionnaires

TABLE 8:14

Attitude of the Growth-Pole Firms to the Transport Facilities at Huelva.

		Good	Indifferent	Bad	Total
Transport Services	Road	7	0	2	9
	Rail	1	0	2	3
	Sea	1	1	0	2
Transport Costs	Road	2	4	3	9
	Rail	2	1	0	3
	Sea	1	1	0	2

Note: information gained from the 10 firms that used Huelva's transport facilities (Table 8:13). Four firms used more than one facility.

Source: questionnaires

that many of the firms are subsidiaries which use the facilities provided by their parent companies. For example Tamsa relied on services provided by the parent company in Córdoba, and the technical and commercial assistance for Río Gulf came from the U.S.A. These subsidiaries constitute most of the entries in the region and nation columns. A significant number of firms provided these services for themselves largely because of the inadequate facilities provided by Huelva (Table 8:12, final column).

The most important facilities supplied by the city of Huelva are transport, used by over half of the firms, followed by the legal, advertising and marketing facilities. All the firms looked outside Huelva for technical assistance, and almost all provided their own maintenance facilities.

Of the ten firms which used Huelva's transport facilities the majority found that the roads offered the best service, but that the costs tended to be high (Table 8:14). The railway tended to offer cheaper costs but provided a less satisfactory service, and for this reason was far less used (Table 8:14). The generally unsatisfactory nature of the transport services in Huelva has imposed an extra burden, particularly on those firms whose customers and suppliers lie outside the region.

iii) Employment and Labour in the Growth-Pole Firms

The 19 firms that were surveyed in 1968 employed a total of 1,928 persons. This figure should not be given too much significance, as it does not include employment in the two firms not surveyed. It represents those firms which were functioning in 1968 and not those which were planned or in construction, and it includes only those persons employed at the time of interview and takes no account of later expansion or contractions in the labour force. However, the constituent elements of this total give an interesting insight into the labour requirements of the firms in the growth pole.

The vast majority of persons employed were male, with females filling traditional roles as secretaries, cleaners, cooks, etc. (Table 8:15). Only

TABLE 8:15

Employment in the Growth-Pole Firms Interviewed in 1968: Huelva.

Firms	Male	Female	Administration	Technical	Production	Total
			Food			
1)	21	2	4	1	18	23
					Total	23
			Textiles and Clothing			
2)	15	22	4	6	27	37
					Total	37
			Wood and Furniture			
3)	74	2	5	2	69	76
4)	130	5	8	1	126	135
5)	64	3	3	4	60	67
					Total	278
			Paper and Printing			
6)	45	5	8	5	37	50
					Total	50
			Chemicals			
7)	295	5	25	25	250	300
8)	87	3	10	30	50	90
9)	208	9	34	20	163	217
10)	72	8	7	8	65	80
					Total	687
			Construction, Glass and Ceramics			
11)	26	1	1	1	25	27
12)	29	0	4	0	25	29

TABLE 8:15 cont.

Firms	Male	Female	Administration	Technical	Production	Total
13)	36	2	6	5	27	38
14)	48	0	5	1	42	48
					Total	142
			Metallurgical			
15)	440	10	30	30	390	450
16)	65	2	6	6	55	67
17)	53	0	4	2	47	53
					Total	570
			Various			
18)	109	2	19	25	67	111
19)	30	0	2	2	26	30
					Total	141
Totals	1,847	81	185	174	1,569	1,928
Percentages	96	4	10	9	81	100

Source: questionnaires

TABLE 8:16

Origin of Work Force Employed in Growth Pole Firms Interviewed in 1968: Huelva.

Number	Local	Province	Elsewhere
1)	21	0	2
2)	34	0	3
3)	76	0	0
4)	30	105	0
5)	46	0	21
6)	44	0	6
7)	240	0	60
8)	80	10	0
9)	170	27	20
10)	73	0	7
11)	19	7	1
12)	29	0	0
13)	35	0	3
14)	45	0	3
15)	200	250	0
16)	67	0	0
17)	53	0	0
18)	43	0	68
19)	28	0	2
Totals	1,333	399	196
Percentages	69	21	10

Source: questionnaires

in the case of one firm, Fca. Redextra S.A., were women employed in significant numbers in the production processes. Technical and administrative jobs requiring formal qualifications each accounted for less than 10% of total employment, with over 80% of the jobs occurring in production. Most of the employment has been taken up by people from the city of Huelva and from the surrounding villages. In the case of two firms, Río Tinto Patiño S.A. and José Franco Rodríguez, a large proportion of the workers have been imported from other factories within the province.

For all 19 firms the training of the locally recruited workforce was conducted within the factory. Two firms mentioned courses run by the P.P.O. (Promoción Professional Obrera - a branch of the Ministry of Labour) but in both cases the courses were stated to be of little value. Further courses were promised for the future and may be of more value to the growth-pole firms. Many of the firms in the growth pole emphasised the importance of their specialist workers in the production force. However, in a relatively underdeveloped area such as Huelva there is a shortage of skilled labour. As a result many of the firms brought in key personnel from outside the province, especially when these could be supplied from a parent company. Not surprisingly the sectors most reliant on imported key workers are those using advanced technological processes, especially chemicals, oil refining and electric power production (Table 8:15). Most of the firms have provided housing for these key workers, and in some cases this has been extended to include all the workers imported into Huelva. For example, Río Tinto Patiño S.A. has built 250 houses for all its new workers, and Fertiberia S.A. has built 60 houses for its new workers.

In a country where the government takes a strong ideological and political interest in trade union and labour affairs, management is likely to make guarded replies to questions concerning labour problems. Neverthless from the interviews obtained, all of the firms genuinely seemed to be satisfied with the labour situation, both in terms of the availability and the quality of their workforce.

Conclusions

Huelva has been, until recently, one of the least developed provinces of Spain, and the city of Huelva little more than an outport for the pyrites mines. A typical comment made by one city official was:

> "Huelva is not a city, it is just a pueblo - a large pueblo mind you - but just a pueblo. It has no culture, no commerce, no university - nothing".

The new industries have brought about a fundamental change in Huelva's fortunes and this has been widely recognised. A typical industrialists' comment was:

> "The Polo de Promoción has meant everything to Huelva. Without the new industrial developments there would be nothing here".

Undoubtedly the basis for Huelva's economic growth has been the rapid expansion of the Río Tinto group of companies based on the mining resources of the province. In a period of ten years Huelva has gained the largest petro-chemical complex of Spain.

The greatest difficulties which the growth-pole firms had encountered appeared to be associated with the physical limitations of the site. The lack of a good water supply, the problem and high cost of preventing air pollution, especially from the chemical works, and the lack of a good telephone service had, to a greater or lesser extent, imposed severe difficulties on all the growth-pole firms. In contrast, the lack of a skilled labour force, of a great commercial or financial centre, and of other aspects of a firms 'economic environment' had not been a severe problem, especially for those firms which had parent companies in other parts of Spain.

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Chapter 9

THE GROWTH POLE AT BURGOS

The Economy of Burgos

Burgos province, like Huelva, displays many of the classical features of underdevelopment, especially an over-reliance on agriculture and a poorly-developed industrial sector (Table 9:1). However, unlike Huelva, Burgos has few natural resources upon which to base such economic activities as mining, fishing and forestry. Despite this lack of resources, and despite the poor 'balance' of economic activities (Table 9:1), Burgos has been able to maintain a reasonably high position in the rankings of provincial per capita income (Table 9:2). This is probably due to Burgos' ability to generate a higher general level of economic activity than provinces in other parts of Spain, particularly in the south and west, as noted in chapters 4 and 7 above. Burgos' improvement in the ranking from 18th to 16th position between 1964 and 1967 may be attributed largely to the Polo de Promoción. However the decline back to the 17th position in 1971 is slightly ominous at a time when the full benefit of the Polo in terms of employment and production should have been taking effect.

i) Agriculture and Forestry

Although the agricultural sector dominates Burgos' economy, agricultural practice tends to be backward and crop production per hectare is generally low. Part of this low productivity can be attributed to the harsh climate and poor soils of the region, and part to the predominance of the minifundio form of landholding (Table 9:3).

Attempts to reform the minifundio system by the Servicio Nacional de Concentración Parcelaria and by Ordenación Rural programmes are making some progress, the most important project being the large Ordenación Rural scheme for the La Bureba district in the north eastern part of Burgos province[1].

Diversity of relief and soils had lead to considerable variety occurring in the types of agriculture practised in Burgos. The central and

TABLE 9:1

Components of Economic Production in 1964: Burgos in Comparison with the Spanish Average.

		Burgos % G.N.P.	Spain % G.N.P.
1)	Agriculture and forestry	36.0	18.5
2)	Fishing	0.0	1.0
3)	Mining	3.0	1.5
4)	Manufacturing	24.1	35.2
5)	Commerce	10.2	11.0
6)	Transport	4.1	6.1
7)	Banking	1.9	4.0
8)	Public administration	7.1	5.5
9)	Hotels, accommodation, etc.	4.8	5.9
10)	Property, rents, etc.	1.8	3.1
11)	Other professional services	7.0	8.2
	Totals	100.0	100.0

Source: Banco de Bilbao, 1967.

TABLE 9:2

Ranking of Burgos Province in Terms of per capita National Income.

Year		Rank Position
1955	-	19
1957	-	18
1960	-	21
1962	-	19
1964	-	18
1967	-	16
1969	-	16
1971	-	17

Source: Banco de Bilbao, 1973.

TABLE 9:3

Size of Farm Holdings in Burgos Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	18.8	0.3
1 - 5 ha.	24.7	3.1
5 - 50 ha.	52.3	42.0
50 - 200 ha.	3.2	11.6
200 - 1,000 ha.	0.8	20.0
More than 1,000 ha.	0.2	23.0
Totals	100.0	100.0

Source: Censo Agrario, 1962.

southern parts of the region, the páramo lands[2], are within the main cereal-growing region of Old Castile. Wheat is by far the most important crop in this area. In the mountainous northern and eastern parts of the province forestry is the main form of land use, in fact the agricultural census states that 57% of the entire province is composed of forests and rough mountain pastures (montes). Because of the poor soils and the difficult terrain, very little of this area is given over to commercial plantations, and in 1964 forestry contributed only 3.6% to agricultural production in the province[3].

The richest agricultural zones of the province are found in the Arlanza and Duero valleys where the land is irrigated or capable of being irrigated. Here the growth of vegetables, forage crops and industrial crops provides the basis for a flourishing agrarian economy, as reflected in the growing importance of the towns of these areas, especially Aranda de Duero.

ii) Industry

Mining is of little importance in Burgos (Table 9:1). Oil was found in the northern part of the province in the early 1960's, but so far all the discoveries have been very small. The most important manufacturing industries in Burgos are the food industries, notably flour milling, artificial feedstuffs, and the preparation of pastas, hams, biscuits, etc. These industries are situated in the three main towns of Burgos, Aranda de Duero and Miranda de Ebro. The textile industry has had a long association with the province, especially the production of woollen goods. By the twentieth century this association was much reduced, although it does continue in the production of artificial silks and other fibres. Apart from these two sectors, Burgos' industrial economy was virtually non-existent prior to 1964.

iii) Services

Burgos' tertiary sector is also relatively underdeveloped (Table 9:1). Despite having some advantages for the development of tourism, the historical links with El Cid, the outstanding architecture of Burgos capital, etc., and being easy of access on the main Madrid-France highway, most of the

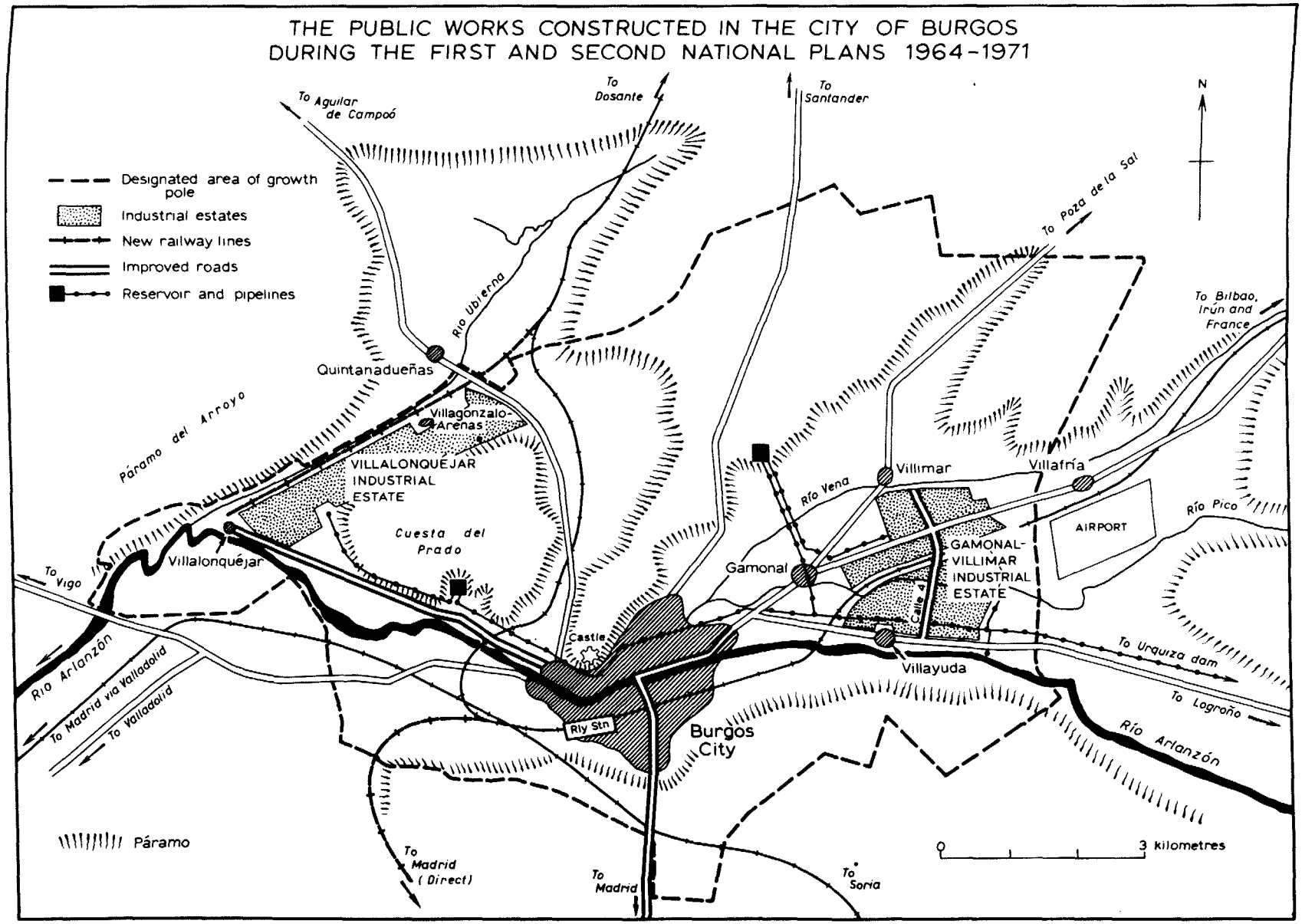
THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF BURGOS
DURING THE FIRST AND SECOND NATIONAL PLANS 1964-1971
Designated area of growth pole
Industrial estates
New railway lines
Improved roads
Reservoir and pipelines
To Aguilar de Campoó
To Dosante
To Santander
N
To Poza de la Sal
To Bilbao, Irún and France
Río Ubierna
Quintanadueñas
Páramo del Arroyo
Villagonzalo-Arenas
VILLALONQUÉJAR INDUSTRIAL ESTATE
Cuesta del Prado
Villalonquéjar
To Vigo
Río Arlanzón
To Madrid via Valladolid
To Valladolid
Río Vena
Villimar
Villafría
Río Pico
AIRPORT
GAMONAL-VILLIMAR INDUSTRIAL ESTATE
Gamonal
Calle 4
Castle
Villayuda
To Urquiza dam
To Logroño
Río Arlanzón
Rly Stn
Burgos City
Páramo
To Madrid (Direct)
To Madrid
To Soria
0
3 kilometres

FIGURE 9:1

visitors to the province stay for one night only on their way to or from other parts of Spain and the province has not been able to benefit from Spain's tourist boom[4]. The other services are also underdeveloped with the one exception of administration (Table 9:1). Burgos is an important centre for ecclesiastical and civil government, and contains large army and air force establishments. As a consequence income from this source is well above the national average (Table 9:1).

In sum, although Burgos was relatively prosperous in 1964, as the 18th richest province of Spain and with a fairly high general level of economic activity (above Chapter 7), nevertheless the structure of economic activity was relatively unbalanced, being overdependant on agriculture and non-directly productive activities such as administration. Furthermore there were few natural resources within the region to servce as a basis for future economic expansion.

The City of Burgos

Modern Burgos was founded in the year 896 as one of a line of advanced posts defending new christian settlements in the Duero valley[5]. The immediate site was at a narrowing of the Arlanzón valley where two high páramos have constricted the course of the river to a narrow channel. The northern bank of the river afforded a strong, naturally defensive site, (Figure 9:1).

Burgos' growth and importance owes much to its general situation. It lies at the confluence of the north-south routes over the higher páramo lands from Santander and León to Madrid, and the east-west valley routes from Portugal and Valladolid to the Ebro basin and France. During the middle ages the most important of these was the east-west route which formed the pilgrims' way to Santiago. In modern times it is the north-south routes which are important, linking Madrid and the rest of Spain with Bilbao and France. Largely because of its situation Burgos was able to dominate the wool trade of Old Castile, and with it much of the economy of northern Spain, especially in the period AD.1300-1600. Indeed Burgos merchants were able to

Plate 9:1 The city of Burgos looking east from the old city centre towards the new industrial area of Gamonal.

TABLE 9:4

The Population of Burgos City and Province 1900-1970.

	City	Province
1900	30,167	338,828
1910	31,489	346,694
1920	32,301	336,472
1930	40,061	355,299
1940	60,425	378,580
1950	74,063	397,048
1960	82,177	380,791
1970	119,915	358,075

Source: Censo de la Población, 1970.

control most of Spain's Atlantic coast trade[6] and her marine insurers played an important role in fostering trade in Western Europe and underwriting voyages to the New World[7]. During the seventeenth century the decline of the Castilian wool trade and the emergence of Madrid as the capital of Spain led to the collapse of the Burgalesian economy. The population of the city fell from over 20,000 in 1575 to less than 3,000 in 1646[8].

The first settlement, the medieval town, grew up at the foot of the scarp below the castle (Figure 9:1). The area of the medieval town was sufficient to enclose all urban developments until the middle of the nineteenth century. The completion of the Madrid-Irún-Paris railway in 1864 led to renewed urban expansion, especially on the south bank of the Arlanzón between the river and the railway station. In the twentieth century the city has spread out along the line of the main highway south to Madrid, and more importantly eastwards as far as the village of Gamonal del Riopico. This latest stage is characterised by large tower blocks, in stark contrast to the lower skyline of medieval and nineteenth-century Burgos. Recent industrial developments have also made use of the flat land available to the east of Burgos, especially around the village of Gamonal.

The population of Burgos province has grown during the first half of the twentieth century, and declined fairly rapidly since 1950 (Table 9:4). In contrast the population of the city of Burgos has grown at a steadily increasing rate throughout the twentieth century, and shown a very large increase in the decade 1960-1970 which can be attributed almost entirely to the activities of the Polo de Promoción.

Developments in the Infrastructure of Burgos

In 1964 the city of Burgos was ill-prepared for new industrial developments, a factor which led to the designation of the city as the second polo de promoción. In particular the planners noted that there was a lack of land suitable for the construction of factories, that the water supply was barely adequate for the domestic requirements of the city and could not hope to supply new industrial users as well, and that serious

TABLE 9:5

Public Investment in the Infrastructure of the Burgos Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Burgos	Totals: All growth poles	Totals: %
Water Supply and Drainage					
Channeling of the Río Pico	4	0			
Main water pipeline	59	1			
Main drains around Gamonal	28	0			
Network of water supply and sewerage pipes around Gamonal	1	32			
Network of water supply and sewerage pipes around Villelonquéjar	0	15			
Reservoirs for Gamonal and Villalonquéjar	0	50			
Dam at Uzquiza	0	508			
Supply of underground water	0	50			
Total	92	656	748	3,625	20.6
Roads					
Madrid - Irún road	0	180			
Underpass to Villalonquéjar	0	10			
Flyover for 'Calle 4'	0	45			
Total		235	235	1,610	14.6

TABLE 9:5 cont.

		1964-1967	1968-1971	Totals: Burgos	Totals: All growth poles	Totals: %
Other Infrastructure Works in the Growth Pole						
Madrid - Burgos line		1,270	833			
Branch line at Villalonquéjar		0	35			
	Total	1,270	868	2,138	5,248	40.7
	Totals	1,362	1,759	3,121	11,934	26.2

Note: all figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

Plate 9:2 Water supply and drainage works on the Gamonal-Villimar industrial estate.

traffic congestion was occurring within the city, especially on the main Madrid-Irún and Logroño roads[9].

A three-phase programme has been put into effect to improve the water supply and drainage situation in and around Burgos. The first phase includes the channelling of the Río Pico, the construction of main drains in the Gamonal area, and the construction of a network of water mains and reservoirs for the Gamonal-Villimar and Villalonquéjar industrial estates (Table 9:5 and Figure 9:1). These new reservoirs and mains will be supplied from a dam which is being constructed at Urquiza on the Río Arlanzón and which forms the second phase of the programme. The new reservoir at Urquiza should satisfy Burgos' water requirements for a long time into the future and will also provide sufficient water for local irrigation projects. The third phase consists of tapping underground sources of water which will supply the city until the new dam at Urquiza is ready[10].

The road building programme for Burgos has been concentrated on improving the main Madrid-Irún highway through the city (Table 9:5 and Figure 9:1). This will be of considerable help to through-traffic and will also provide good access routes for those factories situated to the south and east of the city. Improvements to the Villalonquéjar road will provide better access to the industrial estate there, and the development of Calle 4 will provide a main internal access road for the Gamonal-Villimar industrial estate (Figure 9:1).

Burgos has received the bulk of the investment on railway developments within the seven growth-poles. Most of this investment has gone towards completing the Madrid-Burgos line. Construction of this line was started in 1928, as part of the public works programme of the Primo de Rivera government, but work on it was interrupted in the 1930's and 1940's. The line was completed in 1968 and reduces the distance from Burgos to Madrid from 370 km. (via Valladolid) to 319 km. (direct). More important, the gentle gradients and curves on the line and the absence of local traffic will allow very high speeds to be attained on this route. The other railway

TABLE 9:6

Firms Functioning in the Burgos Growth-Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Central Lechera de Burgos, S.A.	powdered milk
2)	Rick, S.A.	potato crisps
3)	Conservera Campofrío	pig slaughter-house, pork products
4)	Productos Loste, S.A.	biscuits
5)	Frío Burgos, S.A.	freezing of fruit and vegetables
6)	Panadería Industrial Burgalesa, S.A.	bread and cakes
7)	Industrial Burgalesa de Bebidas, S.A.	soft drinks
8)	Cía. Hispano Holandesa de Cervezas	beer
	Textiles and Clothing	
9)	Comanche, S.A.	shoes and boots
10)	Amadeo Grells Biosca, S.A.	finishing of synthetic fibres
11)	Tejidos Arnebat	rayon textiles
12)	Manufacturas Alcides, S.A.	clothing, mens suits
13)	Confecciones Ory, S.A.	clothing, womens underwear
	Wood and Furniture	
14)	S.A. Maga	wood and metal furniture
15)	Bauwer, S.A.	furniture
16)	Muebles Español Moderna	furniture
17)	Flhomsa	mattresses and pillows
18)	Tableros Bon, S.A.	chipboard

TABLE 9:6 cont.

Number*	Firms arranged by main industrial groups	Product of firms
	Paper and Printing	
19)	Manpac, S.A.	paper and aluminium products
20)	Cartonajes Burgaleses, S.A.	paper packaging
21)	Paycart, S.A.	cardboard boxes
22)	Renker Belipa Española, S.A.	paper
	Chemicals	
23).	La Cellophane Española, S.A.	cellophane packaging
24)	Firestone Hispánia, S.A.	rubber and tyres
	Construction, Glass and Ceramics	
25)	Vidriera del Norte, S.A.	glass bottles
26)	Nueva Industria Cerámica, S.A.	construction bricks
27)	Houghton Hispania, S.A.	foundry bricks and sands
28)	Recesa	tiles
29)	Cerámica Scala Española, S.A.	bathroom suites, basins, etc.
30)	Inugara, S.A.	metal sheds and structures
	Metallurgical and Engineering	
31)	Radiadores Radial, S.A.	central heating systems
32)	Gonvarri Industrial, S.A.	finishing sheet metal
33)	Fábrica de Bisagras, S.A.	hinges
34)	Ferroli - Hispania, S.A.	central heating systems
35)	Bakymet, S.A.	plugs etc. for elctrical industry
36)	Ferro - Ommes, S.A.	metal structures for construction industry
37)	Sociedad Anónima, S.G.M.	metal structures for flooring

TABLE 9:6 cont.

Number*	Firms arranged by main industrial groups	Product of firms
38)	Metalibérica, S.A.	baths, showers
39)	Hidrotecar, S.A.	water pumps
40)	Prax, S.A.	plastics and laboratory goods
41)	Stork - Interibérica, S.A.	equipment for dairies
42)	Caosa	repair of earth moving machinery
43)	Teczone Española, S.A.	roofing and wall materials
44)	Calor y Frío Industrial, S.A.	parts for central heating systems
45)	Europea de Calefacción, S.A.	steel ovens and radiators

* These numbers are used in Fig. 9:2 to show the location of these firms.

project has been the construction of a branch line to service the Villalonquéjar estate (Figure 9:1).

The Planning Commission has not established any industrial estates in Burgos, but rather has supported the two estates set up by the city council on the initiative of the mayor of Burgos, Señor Martin-Cobos[11].

The city council, using funds from the Burgos Municipal Savings Bank, were able to purchase 245 has. of land in the Gamonal area on 24th December, 1964. This is an area of flat land, close to the main Madrid-France road and railway lines, and highly suitable for industrial development. With the designation of the city as a polo de promoción more land was purchased at this site bringing the area up to 400 has. and forming the Gamonal-Villimar estate (Figure 9:1). At the same time a new estate, also of 400 has., was created to the west of the city at Villalonquéjar. This is also an area of flat land with a good supply of water from the Río Ubierna, and separated from the city by the large area of higher ground called the Cuesta del Prado (Figure 9:1). This estate is considered to be suitable for heavy industry or for those industries producing noxious fumes or having other unpleasant characteristics[12].

The Gamonal-Villimar estate was the first to be put into operation, and by July 1968 most of the sites had been occupied. At Villalonquéjar 130 ha. in the south-west part of the estate had been prepared, and by 1968 most of the sites had been allocated and some factories already constructed. The remaining 270 has. were designed to accommodate industrial development in the period after 1968.

Analysis of the Firms within the Growth Pole at Burgos

As the second polo de promoción, any enterprise in Burgos which conforms to the same minimum conditions as in Huelva can apply for benefits under the growth-pole scheme. In May 1968 a total of 138 benefits had been granted to Burgos enterprises[13]. Out of this total a large number went to non-directly productive enterprises; at least 15 firms received more than one benefit and many firms were still in construction. As a result, the total number of

TABLE 9:7

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Food	
1)	36,333,290	49	A, A
2)	30,913,000	50	B
3)	90,027,190	152	A, A
4)	41,854,510	32	C
5)	53,983,020	112	B, B
6)	49,097,940	90	B
7)	17,999,840	40	C
8)	406,000,000	200	D
		Textiles and Clothing	
9)	37,000,000	193	A, A
10)	93,038,980	153	A, A
11)	17,522,000	78	B
12)	36,992,000	583	A, A, A
13)	12,950,000	93	C
		Wood and Furniture	
14)	76,049,400	297	B
15)	44,300,000	100	A
16)	35,000,000	40	B
17)	25,000,000	104	C
18)	99,851,790	91	C
		Paper and Printing	
19)	68,863,000	90	B
20)	88,627,600	60	B, B

TABLE 9:7 cont.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
21)	10,300,800	24	B
22)	46,020,900	41	B
		Chemicals	
23)	85,929,830	56	A, A
24)	750,000,000	770	C
		Construction, Glass and Ceramics	
25)	131,857,000	155	A
26)	37,972,890	39	B
27)	30,000,000	34	B
28)	34,000,000	95	A
29)	90,000,000	232	B
30)	19,578,780	88	B
		Metallurgical and Engineering	
31)	29,159,160	92	B
32)	43,640,000	25	A
33)	12,046,990	48	A
34)	154,840,000	315	B, B
35)	8,335,000	132	C
36)	13,274,110	104	B, B
37)	10,100,000	28	C
38)	188,750,000	190	A, A
39)	30,511,000	46	A
40)	34,882,510	51	B, B
41)	12,000,000	35	A
42)	29,347,300	31	D
43)	76,924,700	111	B, B
44)	62,008,420	138	B, B
45)	131,179,750	144	B, C

Source: Planning Commission, Relación de las empresas acogidas a los programas de desarrollo regional, Madrid, (1968).

Plate 9:3 The Firestone factory on the main Madrid-Irún highway.

Plate 9:4 A small factory on the Gamonal-Villimar industrial estate.

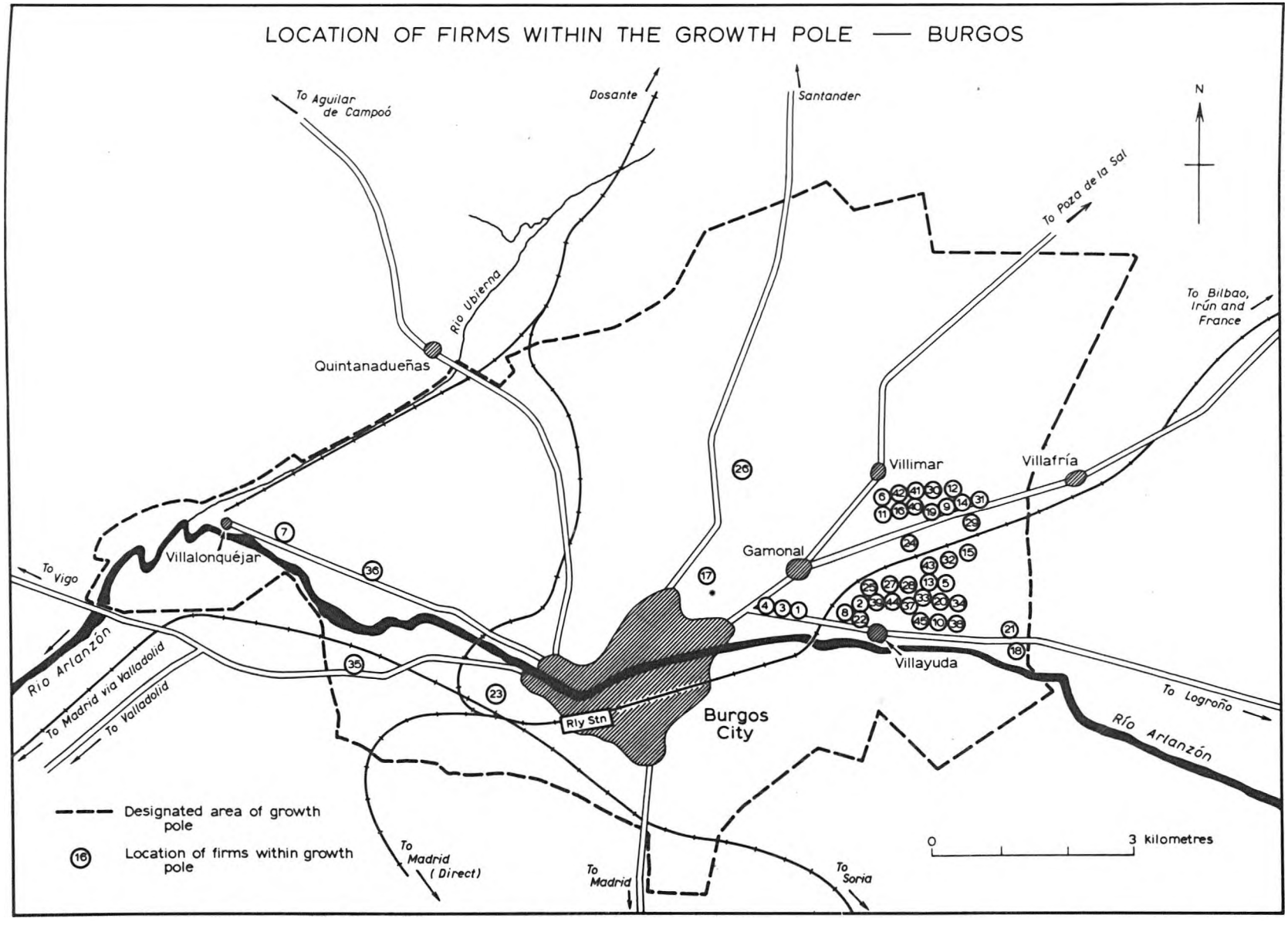
LOCATION OF FIRMS WITHIN THE GROWTH POLE — BURGOS
To Aguilar de Campoó
Dosante
Santander
N
To Poza de la Sal
To Bilbao, Irún and France
Río Ubierna
Quintanadueñas
Villimar
Villafría
Gamonal
Villalonquéjar
To Vigo
Río Arlanzón
To Madrid via Valladolid
To Valladolid
Rly Stn
Burgos City
Villayuda
To Logroño
Río Arlanzón
To Madrid (Direct)
To Madrid
To Soria
0
3 kilometres
Designated area of growth pole
Location of firms within growth pole

FIGURE 9:2

TABLE 9:8

Firms Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Burgos.

	Good	Indifferent	Bad	Not Applicable	Total
Size of factory site	44	1	0	0	45
Nature of factory site	40	3	2	0	45
Water supply	7	20	18	0	45
Waste disposal	3	4	5	33	45
Telephone	29	7	9	0	45

Source: questionnaires

directly productive firms in operation in 1968 was 59, of which 45 were interviewed. Details of these 45 firms are given in Table 9:6. In terms of the number of firms the most important sectors are metallurgy and engineering, followed by the food industry. In terms of investment and employment the construction, chemicals, wood and textile sectors are also important (Table 9:7).

i) Factory Sites of the Growth-Pole Firms

Most of the firms interviewed were content with their factory sites, both in terms of size and nature of the sites (Table 9:8). The only dissatisfaction was expressed by firms not on the industrial estates who received complaints from the local population about noise, etc. There was considerably less general satisfaction with the water supply situation in the city, only 7 firms having an adequate supply. 37 of the firms had been forced to dig their own wells in order to secure a regular supply. This situation should radically improve once the Urquiza dam is completed.

The waste disposal service was also thought to be inadequate, there being no city service on the two industrial estates at the time of interview. For 33 firms this did not impose any great difficulties because they were able to sell most of their waste as scrap, especially in the metallurgical, paper and textile industries. 29 of the firms expressed satisfaction with the telephone service. Most of these were either firms dealing in the local area or with the main cities, especially Madrid and Bilbao. Dissatisfaction was expressed by those firms which were used to foreign telephone systems or who had to call Barcelona or any of the smaller towns in Spain. One firm complained that on occasion it was quicker to send messages to Barcelona by car than by telephone.

ii) Services used by the Growth-Pole Firms

From Table 9:9 it can be seen that very few of the professional and technical services used by the growth-pole firms were provided locally. The services most frequently used in Burgos city were the transport and legal facilities. Almost no services were provided by the rest of Burgos province,

TABLE 9:9

Location of Services used by Growth-Pole Firms at Burgos.

	City	Province	Region	Nation	Abroad	Within firm at Burgos
Commercial	7	0	3	17	5	13
Technical	6	0	3	16	10	10
Advertising	11	0	2	16	3	13
Marketing	8	0	3	18	3	13
Legal	15	0	3	18	0	9
Maintenance of mechanical equipment	3	0	2	7	0	33
Maintenance of electrical equipment	3	0	2	7	0	33
Transport	19	1	5	16	0	4

Source: questionnaires

TABLE 9:10

Attitude of the Growth-Pole Firms to the Transport Facilities at Burgos.

		Good	Indifferent	Bad	Total
Transport Services	Road	17	0	2	19
	Rail	1	0	0	1
Transport Costs	Road	19	0	0	19
	Rail	1	0	0	1

Note: information gained from the 19 firms that used Burgos' transport facilities (Table 9:9). One firm used more than one facility.

Source: questionnaires

indicating the inability of the province to support industrial activity. The medium-and large-sized firms in general provided their own facilities, whilst subsidiary firms relied on the services provided by their parent companies.

Of the 19 firms that used Burgos' transport facilities, the majority were quite content with both the service provided and the cost of transport (Table 9:10). It is significant that only one firm out of the 45 interviewed was a regular user of rail transport. This suggests that the completion of the direct Madrid-Burgos line is likely to have a minimal impact on the industrial development of Burgos.

In general the picture gained is one of a large number of firms attempting to be as self-sufficient as possible due to the inadequate facilities of the area.

iii) Employment and Labour in the Growth-Pole Firms

The total number of people employed in the 45 firms interviewed was 4,870. Almost 80% of this total were male (Table 9:11), with females only forming an important source of labour in the textile and clothing industries. Administrative and technical jobs requiring formal qualifications only account for 13% of total employment with 87% of the jobs occurring in production (Table 9:11), a situation very similar to that in Huelva. Almost all of the employment has been taken up by people from Burgos city and the surrounding villages (Table 9:12). The people brought in from outside are, almost exclusively, managers, specialist workers, etc. For all the firms interviewed there was no problem in obtaining unskilled labour within the Burgos area. Training of the locally recruited labour was conducted within the factory. Nearly every firm mentioned the lack of well-trained specialist workers in the area, and for some firms this shortage created serious problems. Several firms overcame this problem by sending unskilled labour away to be trained outside the region, and some firms mentioned that in future they hoped to poach skilled workers from other factories in Burgos. Apart from the shortage of skilled workmen, there appeared to be general satisfaction with the labour situation in Burgos.

TABLE 9:11

Employment in the Growth-Pole Firms Interviewed in 1968: Burgos.

Firms	Male	Female	Administration	Technical	Production	Total
			Food			
1)	44	20	8	6	50	64
2)	12	18	1	2	27	30
3)	664	118	47	14	721	782
4)	96	144	18	5	217	240
5)	18	2	3	2	15	20
6)	77	30	6	0	101	107
7)	22	3	4	1	20	25
8)	293	22	89	7	219	315
					Total	1,583
			Textiles and Clothing			
9)	48	96	8	3	133	144
10)	76	10	12	4	70	86
11)	11	29	4	0	36	40
12)	12	113	4	1	120	125
13)	2	36	2	2	34	38
					Total	433
			Wood and Furniture			
14)	48	12	3	1	56	60
15)	37	3	5	1	34	40
16)	49	8	5	1	51	57
17)	68	30	10	0	88	98
18)	81	4	11	3	71	85
					Total	340
			Paper and Printing			
19)	50	20	10	4	56	70
20)	66	4	14	0	56	70

TABLE 9:11 cont.

Firms	Male	Female	Administration	Technical	Production	Total
21)	15	12	2	2	23	27
22)	26	9	9	1	25	35
					Total	202
			Chemicals			
23)	520	90	40	12	558	610
24)	142	8	5	13	132	150
					Total	760
			Construction, Glass and Ceramics			
25)	125	0	8	5	112	125
26)	33	0	4	0	29	33
27)	34	0	2	2	30	34
28)	60	77	20	5	112	137
29)	158	0	7	1	150	158
30)	79	6	25	3	57	85
					Totals	572
			Metallurgical and Engineering			
31)	60	20	12	3	65	80
32)	30	2	1	1	30	32
33)	16	1	3	2	12	17
34)	94	6	9	6	85	100
35)	50	30	6	3	71	80
36)	90	2	4	7	81	92
37)	24	1	5	2	18	25
38)	63	2	9	4	52	65
39)	46	3	6	6	37	49
40)	11	8	2	2	15	19
41)	39	1	4	2	34	40
42)	11	0	1	1	9	11
43)	98	2	9	3	88	100

TABLE 9:11 cont.

Firms	Male	Female	Administration	Technical	Production	Total
44)	100	20	6	4	110	120
45)	147	3	8	7	135	150
					Total	980
Totals	3,845	1,025	471	154	4,245	4,870
Percent-ages	79	21	10	3	87	100

Source: questionnaires

TABLE 9:12

Origin of Work Force Employed in Growth-Pole Firms Interviewed in 1968: Burgos.

Firms	Local	Province	Elsewhere
1)	52	0	12
2)	27	0	3
3)	768	0	14
4)	234	0	6
5)	20	0	0
6)	105	0	2
7)	25	0	0
8)	310	0	5
9)	144	0	0
10)	80	0	6
11)	40	0	0
12)	123	0	2
13)	37	0	1
14)	50	0	10
15)	37	0	3
16)	57	0	0
17)	93	0	5
18)	85	0	0
19)	64	0	6
20)	56	0	14
21)	20	7	0
22)	30	3	2
23)	600	0	10
24)	140	0	10
25)	112	0	13
26)	33	0	0

TABLE 9:12 cont.

Firms	Local	Province	Elsewhere
27)	32	0	2
28)	131	0	6
29)	154	0	4
30)	83	0	2
31)	70	9	1
32)	27	0	5
33)	17	0	0
34)	93	4	3
35)	77	0	3
36)	89	0	3
37)	22	0	3
38)	62	0	3
39)	45	0	4
40)	18	0	1
41)	37	0	3
42)	9	0	2
43)	97	0	3
44)	96	4	20
45)	141	0	9
Totals	4,642	27	201
Percent-ages	95	1	4

Source: questionnaires

Plate 9:5 Worker's housing at Gamonal.

Conclusions

The future prospects for Burgos' economy appear to be bright. Burgos' situation, approximately half-way between Madrid and Bilbao and astride the main highway to France should ensure that new factories will continue to be located in and around the city. The polo de promoción has had an important psychological impact within the region. At the outset the scheme was greeted with considerable scepticism, particularly from local landowners, small factory owners, shopkeepers, etc. The success of the growth pole has helped to change attitudes and widen the horizons of businessmen throughout the area[14]. This may well prove, in future, to have been its most useful function.

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Chapter 10

THE GROWTH POLE AT CORUNNA

The Economy of Corunna

The province of Corunna, together with the rest of Galicia, has been described as "a rich country that lives poorly"[1]. Galicia is rich in resources and possesses natural advantages which should give it a thriving economy, and yet it is one of the poorest regions of Spain (above Chapters 4 and 7). In part this is due to what one commentator describes as the 'margination' of Galicia[2]. Physically Galicia is at the margin of the nation. Distance from the rest of the country and the difficulties of transport tend to make Galicia the forgotten corner of Spain. The economy also tends to be marginal. Agriculture is still mainly a peasant enterprise aiming at self-sufficiency rather than economic progress. Industry is poorly developed except for shipbuilding and those enterprises satisfying local markets. However, the greatest drawback has been the lack of a middle class or elite which could promote new ideas, reforms, or establish new economic ventures[3]. The absence of any hope of economic advancement within Galicia has led many peasants, particularly the younger and more enterprising, to emigrate to South America[4].

The city of Corunna is situated in the most prosperous part of Galicia, the rich littoral zone stretching from El Ferrol to the Portuguese frontier. This zone contains the richest agricultural areas, the richest inshore fishing areas, and most of the industrial developments of the region. This relatively prosperous littoral zone has helped to raise the average level of wealth within the province. Thus in 1955 Corunna was ranked the 31st province of Spain in terms of per capita national income (Table 10:2).

Since 1955, Corunna's ranking fell to 37th position in the period 1962 - 1964, and then improved after 1964 back to 31st position. This suggests that as the rest of Spain began to develop during the 1950's, Corunna's economy declined in relative terms, but with the industrial developments of the early 1960's Corunna was able to regain her former position.

TABLE 10:1

Components of Economic Production in 1964: Corunna in Comparison with the Spanish average.

		Corunna % G.N.P.	Spain % G.N.P.
1)	Agriculture and Forestry	25.1	18.5
2)	Fishing	6.7	1.0
3)	Mining	0.5	1.5
4)	Manufacturing	29.7	35.2
5)	Commerce	8.1	11.0
6)	Transport	4.6	6.1
7)	Banking	2.5	4.0
8)	Public Administration	7.2	5.5
9)	Hotels, accomodation, etc.	4.6	5.9
10)	Property, rents, etc.	3.3	3.1
11)	Other professional services	7.7	8.2
	Totals	100.0	100.0

Source: Banco de Bilbao, 1967.

TABLE 10:2

Ranking of Corunna Province in Terms of per capita National Income.

Year		Rank Position
1955	-	31
1957	-	28
1960	-	33
1962	-	37
1964	-	37
1967	-	32
1969	-	31
1971	-	31

Source: Banco de Bilbao, 1973.

TABLE 10:3

Size of Farm Holdings in Corunna Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	37.1	3.0
1 - 5 ha.	39.2	22.4
5 - 50 ha.	23.3	54.4
50 - 200 ha.	0.2	3.0
200 - 1,000 ha.	0.1	4.1
More than 1,000 ha.	0.1	13.1
Totals	100.0	100.0

Source: Censo Agrario, 1962.

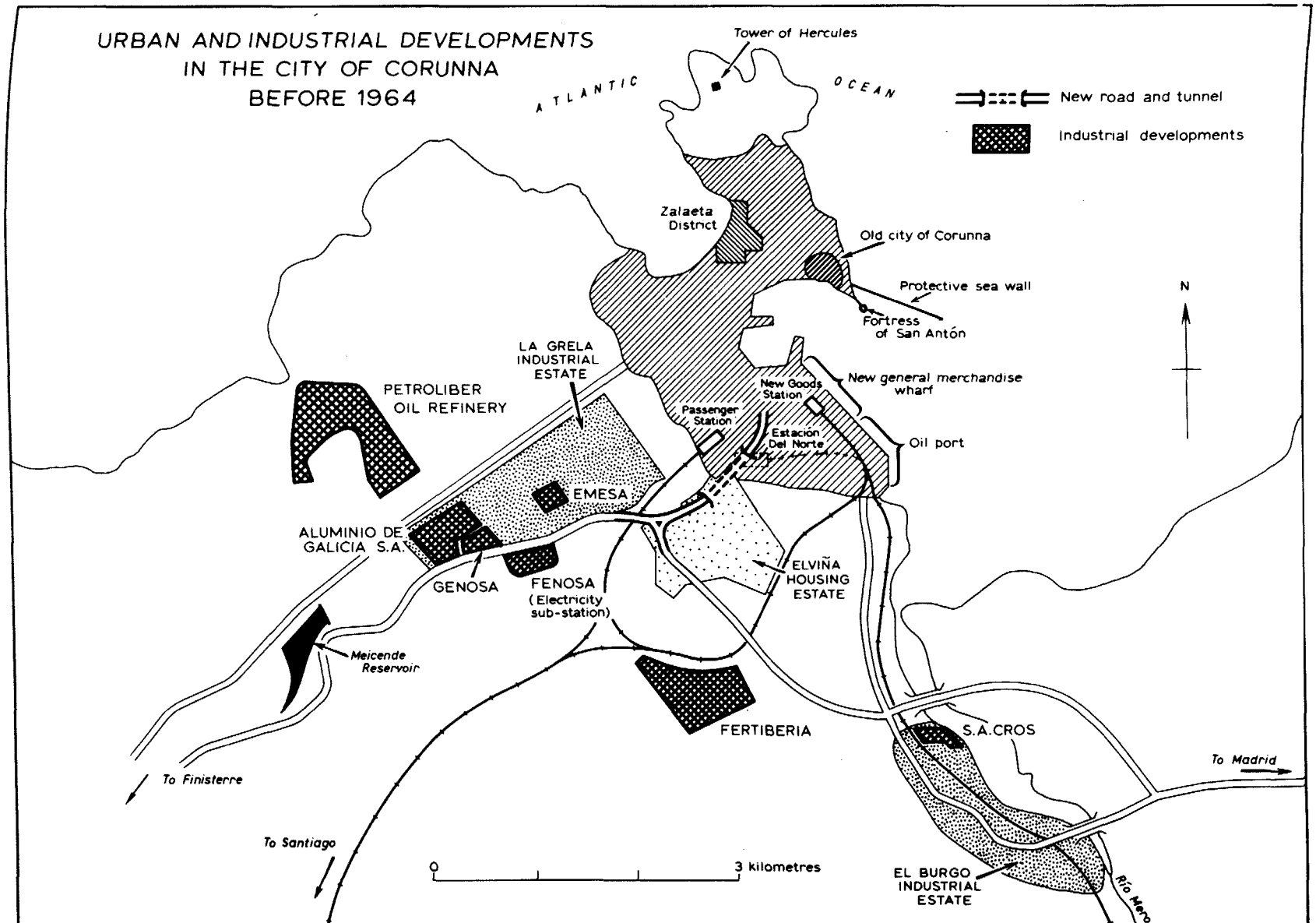

URBAN AND INDUSTRIAL DEVELOPMENTS
IN THE CITY OF CORUNNA
BEFORE 1964
ATLANTIC
OCEAN
Tower of Hercules
New road and tunnel
Industrial developments
Zalaeta District
Old city of Corunna
Protective sea wall
Fortress of San Antón
N
LA GRELA INDUSTRIAL ESTATE
PETROLIBER OIL REFINERY
New Goods Station
New general merchandise wharf
Passenger Station
Estación Del Norte
Oil port
EMESA
ALUMINIO DE GALICIA S.A.
GENOSA
FENOSA (Electricity sub-station)
ELVIÑA HOUSING ESTATE
Meicende Reservoir
FERTIBERIA
S.A.CROS
To Madrid
To Finisterre
To Santiago
0
3 kilometres
EL BURGO INDUSTRIAL ESTATE
Río Mero

FIGURE 10:1

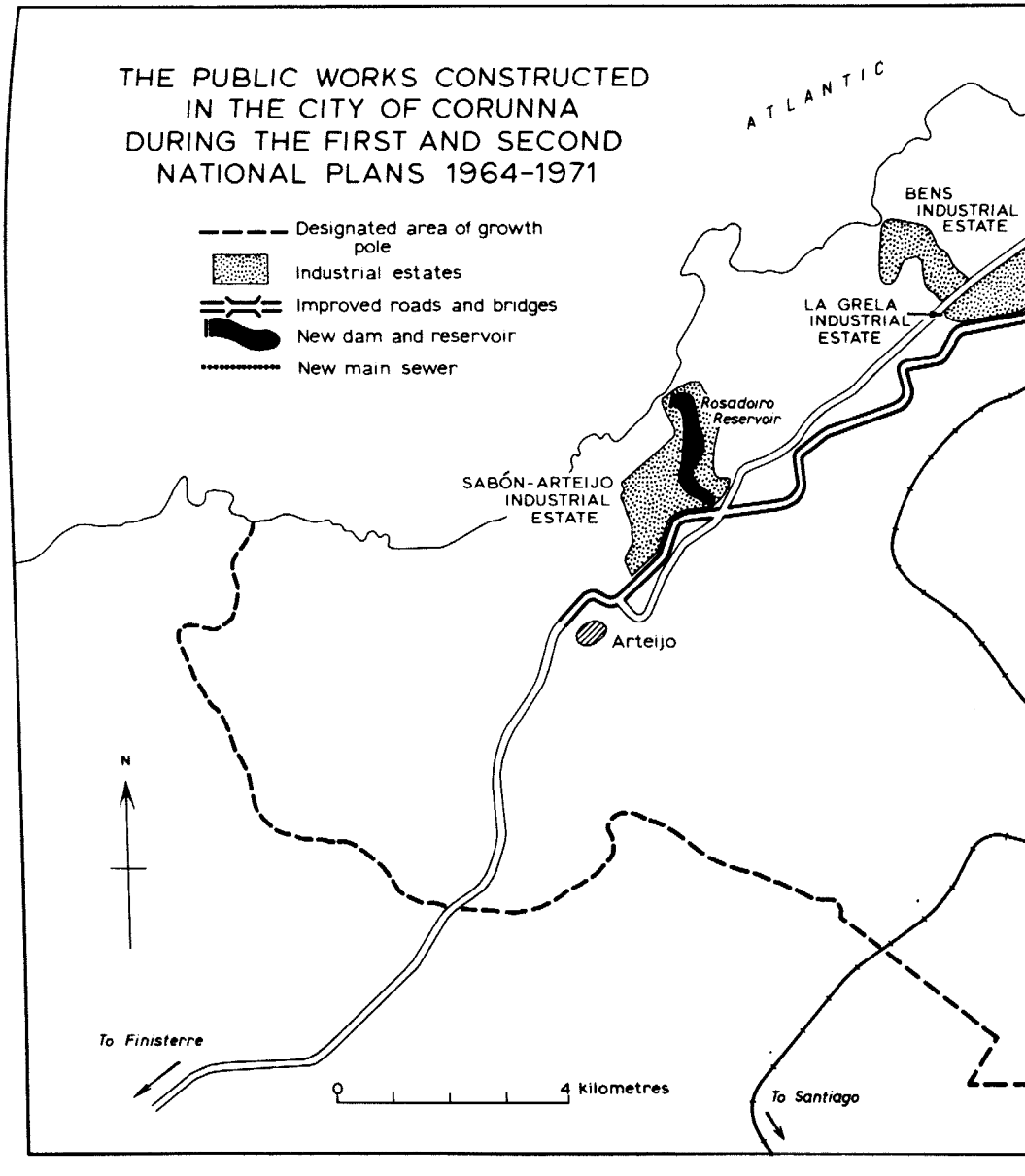
(Table 10:1) and in terms of the cash value of the total catch, Corunna is the second largest fishing province in Spain[11].

ii) Industry.

Until the beginning of the nineteenth century the province of Corunna contained few major industries apart from shipbuilding and the government run table-linen factory in Corunna city[12]. The nineteenth century and early twentieth century saw the establishment of a large textile factory, a glass works, and some smaller engineering and food preparation works in the city[13]. However, the main industrial developments in Corunna city have occurred quite recently, in the late 1950's and early 1960's. The key to this industrial growth has been the development of the considerable hydro-electric resources of Galicia by the company Fuerzas Electricas del Noroeste, S.A. (Fenosa)[14]. Between 1954 and 1959 Fenosa built its major substation at La Grela, just outside Corunna city (Figure 10:1). In the late 1950's the head of Fenosa, Don Pedro Barrié de la Maza persuaded the French firm Péchiney to contribute the technical expertise and one third of the capital towards the creation of a new firm, Aluminio de Galicia S.A. This firm built a large factory at the La Grela site which produced 34,000 Tm. of aluminium in 1967, and which was based on the supply of low-priced electricity from the Fenosa substation. For Fenosa the new firm provided a steady and fixed market for their electricity, taking 26% of their total production in 1968[15].

Fenosa was able to persuade Péchiney to participate in creating a second company, Grafitos Eléctricos del Noroeste S.A. (Genosa), and in 1959 a third company, Elaborados Metálicos S.A. (Emesa), also came to the La Grela site. Again, the key factor in the setting up of both firms was the supply of low-price electricity at La Grela[16].

In 1962 a second major impulse was given to the industrial development of the city by the location of an oil refinery at Bens, next to the La Grela estate. This firm, Petroliber, had an initial capacity of 2 million tons of oil p.a., which was increased to 4 million tons in 1969. The refinery


THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF CORUNNA DURING THE FIRST AND SECOND NATIONAL PLANS 1964-1971
Designated area of growth pole
Industrial estates
Improved roads and bridges
New dam and reservoir
New main sewer
ATLANTIC
BENS INDUSTRIAL ESTATE
LA GRELA INDUSTRIAL ESTATE
Rosadoiro Reservoir
SABÓN-ARTEIJO INDUSTRIAL ESTATE
Arteijo
N
To Finisterre
0
4 kilometres
To Santiago

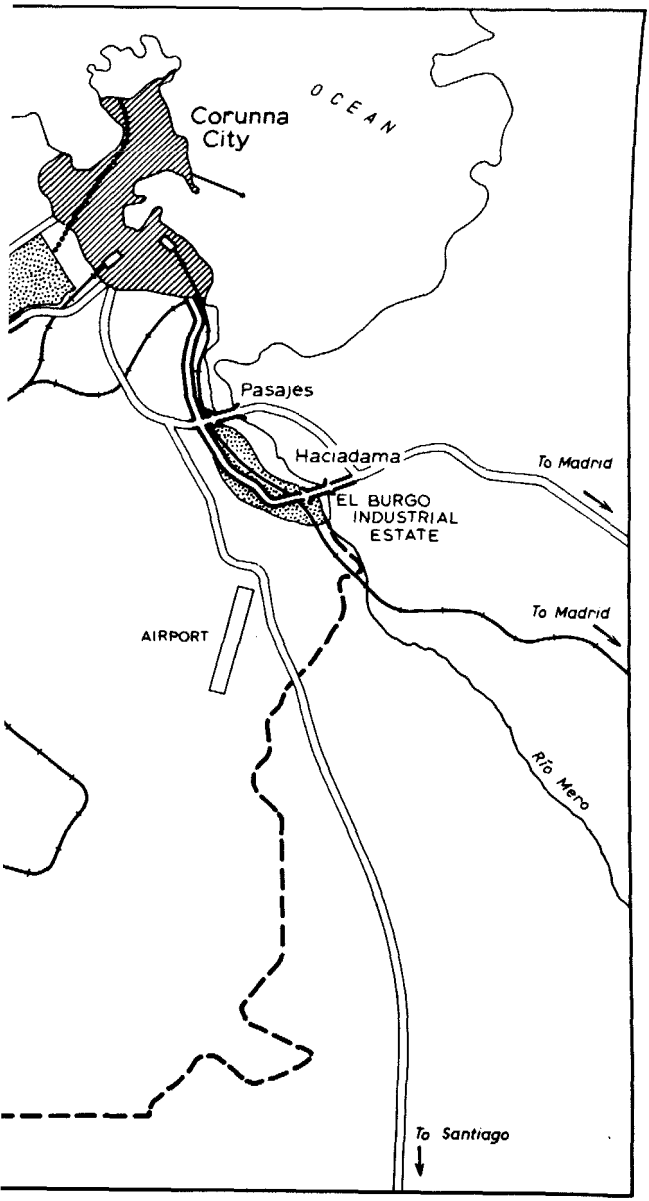

Corunna City
OCEAN
Pasajes
Haciadama
EL BURGO INDUSTRIAL ESTATE
To Madrid
To Madrid
AIRPORT
Río Mero
To Santiago

FIGURE 10:2

is linked to the oil port (see below) by a 5 km. pipeline carrying both crude and refined products. In 1968 most of the refinery products were exported to northern Europe, the only major user in Corunna being the chemical firm Fertiberia. In 1963 the Fertiberia company came to Corunna specifically to make use of the refinery output. By 1968 Fertiberia was taking more than 100,000 Tm. of naphthas for the production of fertilizers.

Apart from these major projects there has been, since the 1950's, a steady development of the food processing industries, particularly the preparation and canning of fish. Most of these industries are located within the city of Corunna.

iii) Services.

In general the tertiary sector is underdeveloped in comparison with the rest of Spain (Table 10:1). The overall lack of industry and the mainly pre-capitalist organisation of agriculture generate few opportunities for the growth of professional services. However, mention should be made of banking within the province. Although the relative contribution made by banking is below the national average (Table 10:1), nevertheless the two local banks, the Banco Pastor and the Banco de la Coruña have played an important role in promoting industrial developments in the province. In particular the Banco Pastor has helped in the financing of Fenosa's activities and has provided part of the capital for Genosa and Aluminio de Galicia,S.A.

There is considerable potential for the growth of tourism in the province, particularly along the very beautiful ría coastline. However, the difficulties of getting to the province, especially by road, have so far tended to restrict this development.

The City of Corunna

The city of Corunna is situated on an island of hard granitic rock joined to the Spanish mainland by a wide sand spit. This site provides a good defensive position and one of the best natural harbours along the Galician coastline (Figure 10:2).

Little is known of the origins of the city, but it was sufficiently important in Roman times for the construction of the very large lighthouse, the Tower of Hercules, which still stands today. It is thought that this tower - 'La Columna' - gives its name to the city - 'La Coruña'. The oldest part of the city is situated close to the fortress of San Antón and the original harbour. With the commercial development of the port, particularly after the sixteenth century, the town began to expand back across the isthmus, and since the nineteenth century has spread out onto the mainland (Figure 10:1)[17]. However, this fanning out onto the mainland has been severely hampered by the difficulties involved in obtaining building land. Much of the land in this area is owned in minute portions, under very complex forms of tenure, and often by emigrants now living in South America. Because of the difficulty in obtaining new land it has been easier to build up rather than out. Consequently from inland Corunna appears as a city of tower blocks crammed into a very small area. Within the city it has led to severe congestion, particularly at the point where the land narrows towards the isthmus.

In order to overcome the problem of congestion a number of estates have been established, both for housing and new industrial developments. The first proposal was for an industrial estate in the El Burgo estuary. In 1947 the Corunna Chamber of Commerce, with the backing of local banks and industrialists, set up the company Zonas Industriales Coruñesas S.A.(Zicsa) to reclaim two million square metres of land from the salt marshes, to canalise the river El Burgo, and to provide wharves, etc., to accommodate ships of up to 4,000 tons[18]. In the event the project for the new port was soon abandoned as being expensive and unnecessary. Until the late 1960's only one company of any size had moved to this estate, the chemical firm of S.A. Cros which produces artificial fertilizers. With the establishment of the polo de desarrollo the El Burgo estate was revived and several other firms have now moved to this site.

The relative neglect of the El Burgo estate was due to the development nearby of the La Grela estate, which offered better facilities and more room

Plate 10:1 Part of the new housing estate at Elviña.

for expansion. The La Grela estate was created in the 1950's to take maximum advantage of the electricity supply from the Fenosa substation[19]. The estate consists of an area of fairly level land with its own supplementary water supply from the Meicende reservoir (Figure 10:1). La Grela, like El Burgo, is administered by the Ministry of Housing which arranges the sale of land at fixed prices and which supplies the various services, new roads, drains, etc., required on the estate. In 1960 the La Grela estate was extended to include the land around the village of Bens, to provide land for the Petroliber oil refinery.

In 1964 the Diputación Provincial offered to promote and organise a new industrial estate at Sabón-Arteijo. The following year the Council of Ministers accepted this offer and provided legislation and other assistance to expedite the expropriation of land and the installation of basic facilities. The cost of the new estate was budgeted at 200 million pesetas, of which 116 million were allocated for compensation at above market rates for land expropriation, 45 million for new roads, and 53 million for the construction of the water supply, the drainage system and the Rosadoiro reservoir (Figure 10:2)[20].

Work on the estate began in 1966, and by 1968 over 20 firms had applied for sites and four firms had already purchased sites. Although the Sabón-Arteijo estate is designed primarily to complement the polo de desarrollo, the Diputación Provincial has placed no restriction on the type of firm which may be located there, whether or not the firm has received benefits under the growth pole scheme. There is also provision at Sabón-Arteijo for the construction of a residential area for at least 100 families, which will be undertaken by the Ministry of Housing.

In order to cope with the City's housing problem a large area of land at Elviña has been allocated for future residential expansion (Figure 10:1). This area will provide sufficient housing to accommodate the expansion of Corunna's population over a 10-20 year period. The first major development on this estate was the construction of a residential complex near to Elviña village to house the inhabitants of the Zalaeta area of the city, which is

TABLE 10:4

The Population of Corunna City and Province 1900-1970.

	City	Province
1900	43,971	653,556
1910	47,984	676,708
1920	62,022	708,660
1930	74,132	767,608
1940	104,220	883,090
1950	133,844	955,772
1960	177,502	991,729
1970	189,654	1,004,188

Source: Censo de la Población, 1970.

being re-developed[21].

The expansion of the city on the landward side and the congestion within the city has made access to the city centre increasingly difficult. To overcome this problem improvements have been made both to the road and the railway systems within Corunna. In the early 1960's the railway station dealing with general merchandise, the Estación del Norte, was moved to the area of the new oil port. This provides a better line of access for the railway and releases land for the construction of a new road system. This latter consists of a major new road from the La Grela and Elviña estates to the port area and city centre via a new tunnel under the Estación del Norte (Figure 10:1).

Despite the restrictions imposed by its site, the city of Corunna has grown in population throughout the twentieth century (Table 10:4). This growth has been at a rate much higher than that for the province as a whole. During the most recent decade, 1960-1970, the rate of growth of the city appears to have slowed down, which suggests that despite the recent and important industrial developments, the city still lacks a dynamic and self-sustaining economy.

The Port of Corunna

The importance and growth of the city of Corunna has been due to its role as the principal port of the region. The bay provides a large natural harbour with a good depth of water and is protected from the open sea. Corunna's situation close to the major shipping lanes between northern Europe and the Mediterranean and South Atlantic, and even closer to the major fishing grounds of Galicia, has made it an important trading and fishing port. In the Middle Ages the city carried on a highly profitable, if sometimes difficult trade with northern Europe, although it was not until the middle of the eighteenth century that it was able fully to develop this trade or the trade with the Americas[22]. During the nineteenth and early twentieth centuries trade with South America grew rapidly, a notable feature being the ships taking emigrants to places such as Havana and Buenos Aires.

TABLE 10:5

Total Traffic Handled in 1966:
The Port of Corunna.

		Tm.	%
1)	Oil and Petroleum products	4,146,000	85.5
2)	General Merchandise	617,780	12.7
3)	Fish	86,014	1.8
	Totals	4,829,794	100.0

Source: Ministerio de Obras Publicas, Memoria anual del La Coruña, 1966, Corunna (1967).

During the latter part of the twentieth century traffic in the port has continued to grow, the most important development being the establishment of the oil refinery and the associated oil port.

The old port of Corunna is situated close to the oldest part of the city by the fort of San Antón. Later developments have occurred progressively to the south around the bay with the oil port situated in the southernmost part of the bay (Figure 10:1). The port is now organised into general areas: ship repair yards, passenger traffic, victualling, minerals, fish, general merchandise and oil.

In 1968 the general merchandise wharves could take ships of up to 10 metres draught, and the oil port tankers of 13 metres draught. This has limited the size of the tankers that could use the oil port to an upper limit of 50,000 - 60,000 tons. The main feature of the port's development plan is to dredge a channel of 16 metres depth and construct a third jetty and oil terminal, which will then permit tankers of over 100,000 tons to use the harbour[23].

Developments in the Infrastructure of Corunna

The most important changes in the infrastructure of Corunna were initiated in the period prior to the growth-pole scheme of 1964. The development of the industrial estates at El Burgo and La Grela, the new tunnel and road access from La Grela to the port area and city centre, the movement of the goods station to the new merchandise and oil port area, and the development of the merchandise and oil port were, as has been described above, all started in the period from 1960 to 1964.

In 1964 the Planning Commission identified the main deficiency in the infrastructure of Corunna as the lack of land suitable for industrial development[24]. Despite the existence of the El Burgo and La Grela estates since the early 1950's and 1960's, the public authorities have been very slow in providing land on these estates for new industries. There are several reasons for this, particularly at La Grela. Firstly, although the area at La Grela has been designated an industrial estate, much of the land

TABLE 10:6

Public Investment in the Infrastructure of the Corunna Growth Pole 1964-1971.

		1964-1967	1968-1971	Totals: Corunna	Totals: All growth poles	Totals: %
Preparation of Industrial Land						
Industrial estate at Bens		27	100			
	Total	27	100	127	1,451	8.8
Water Supply and Drainage						
Dam on Río Mero		0	27			
Water supply and drainage at Sabón		0	38			
Sewerage pipe in Corunna		0	50			
	Total	0	115	115	3,625	3.2
Roads						
Bridge at Haciadama		0	6			
Improved roads at El Burgo		0	6			

TABLE 10:6 cont.

		1964-1967	1968-1971	Totals: Corunna	Totals: All growth poles	Totals: %
Bridge at Pasaje		0	41			
Corunna - Sabón road		0	59			
	Total	0	112	112	1,610	6.9
	Totals	27	327	354	11,934	2.9

Note: all figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

Plate 10:2 The new road tunnel which will provide better access to the city centre.

is still held in private hands and the public authorities have been very slow to expropriate lands prior to requirements. Secondly, the public authorities have not laid on basic services such as water supply, drainage, telephones, etc., to many parts of the estate. Thirdly, the public authorities generally have not acted with sufficient speed and flexibility in meeting industrialist's requirements.[25] As a consequence several companies have decided to locate their factories outside the estates on land where development is permitted rather than promoted.

To deal with this situation the Planning Commission decided not to create any new estates, but rather to promote the estates already established by the local Chamber of Commerce, the Ministry of Housing and the Diputación Provincial, and in particular the two most recent estates at Bens and Sabón-Arteijo. This has been achieved in two ways. First by a direct grant towards the cost of developing the new industrial estate at Bens (Table 10:6). Second, by improving the services and communications to all four industrial estates.

The main features of this second part of the programme are the improvements to the two bridges at Pasajes and Haciadama and to the main roads in the El Burgo area. This will improve communications within the estate and provide better access to the city and port of Corunna (Figure 10:2). The improvements to the Corunna-Arteijo road will provide an alternative to the Finisterre road and better access to both the La Grela and Sabón-Arteijo estates. The water supply and drainage at Sabón-Arteijo will also be improved, involving the construction of a new reservoir within the estate at Rosadoiro (Figure 10:2). The new main sewer constructed through Corunna will provide better drainage and sewerage facilities in the La Grela and Elviña areas. Lastly the construction of a dam on the Río Mero will provide the whole growth-pole area with a better water supply. In 1968 the city of Corunna consumed on average 725 litres per second of water, whereas the new reservoir on the Mero will provide an extra 1,000 litres per second.

TABLE 10:7

Firms Functioning in the Corunna Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Congeladora Coruñesa, S.A.	frozen meats and fish
2)	Dalmacio Arredondo López	cod processing
3)	Conservación Alimentos, S.A.	frozen fish
4)	Conserva Celta, S.A.	canned fish
5)	Koipe y Elosua, S.A.	cooking oils
	Wood and Furniture	
6)	Promasa	chipboards
	Paper and Printing	
7)	La Voz de Galicia	newspapers
	Chemicals	
8)	Genosa	graphite
	Construction, Glass and Ceramics	
9)	Preforvisa	artificial stone blocks
	Metallurgical and Engineering	
10)	La Artistica, S.A.	various types of cans
11)	Aluminio de Galicia, S.A.	aluminium
12)	Cablegasa	cables
13)	Emesa	shaped metal for construction work
14)	Tarenasa	ship repairs

* These numbers are used in Fig. 10:3 to show the location of these firms

TABLE 10:8

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Food	
1)	56,000,000	40	B
2)	17,184,000	33	B
3)	93,566,170	30	B
4)	16,053,000	89	B
5)	123,500,000	39	C, C
		Wood and Furniture	
6)	45,137,840	51	A
		Paper and Printing	
7)	64,491,270	31	B
		Chemicals	
8)	104,662,000	31	B
		Construction, Glass and Ceramics	
9)	42,583,000	52	C
		Metallurgical and Engineering	
10)	41,350,000	72	C
11)	444,000,000	86	C
12)	30,200,000	31	C
13)	50,491,000	288	B
14)	11,456,000	60	B

Note: the investment figures are given in millions of pesetas, 1968.

Source: Planning Commission, Relación de las Empresas acogidas a los programas de desarrollo regional, Madrid (1968).

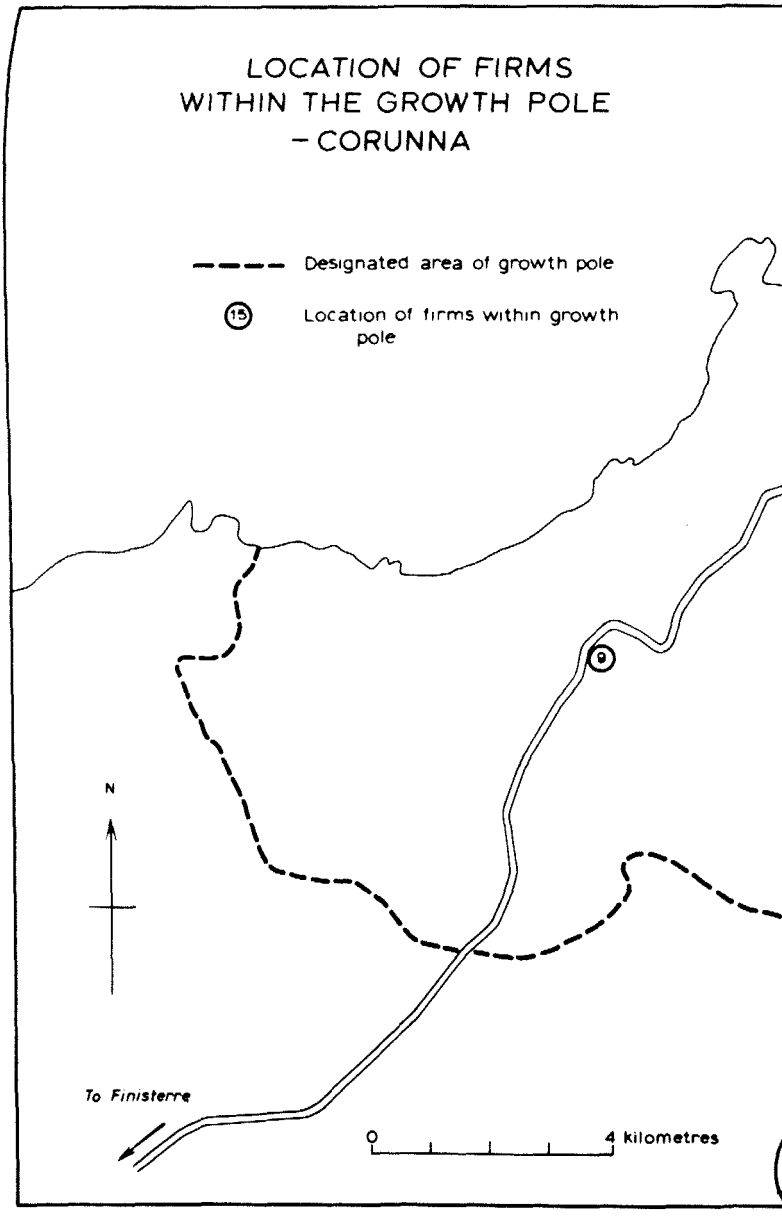
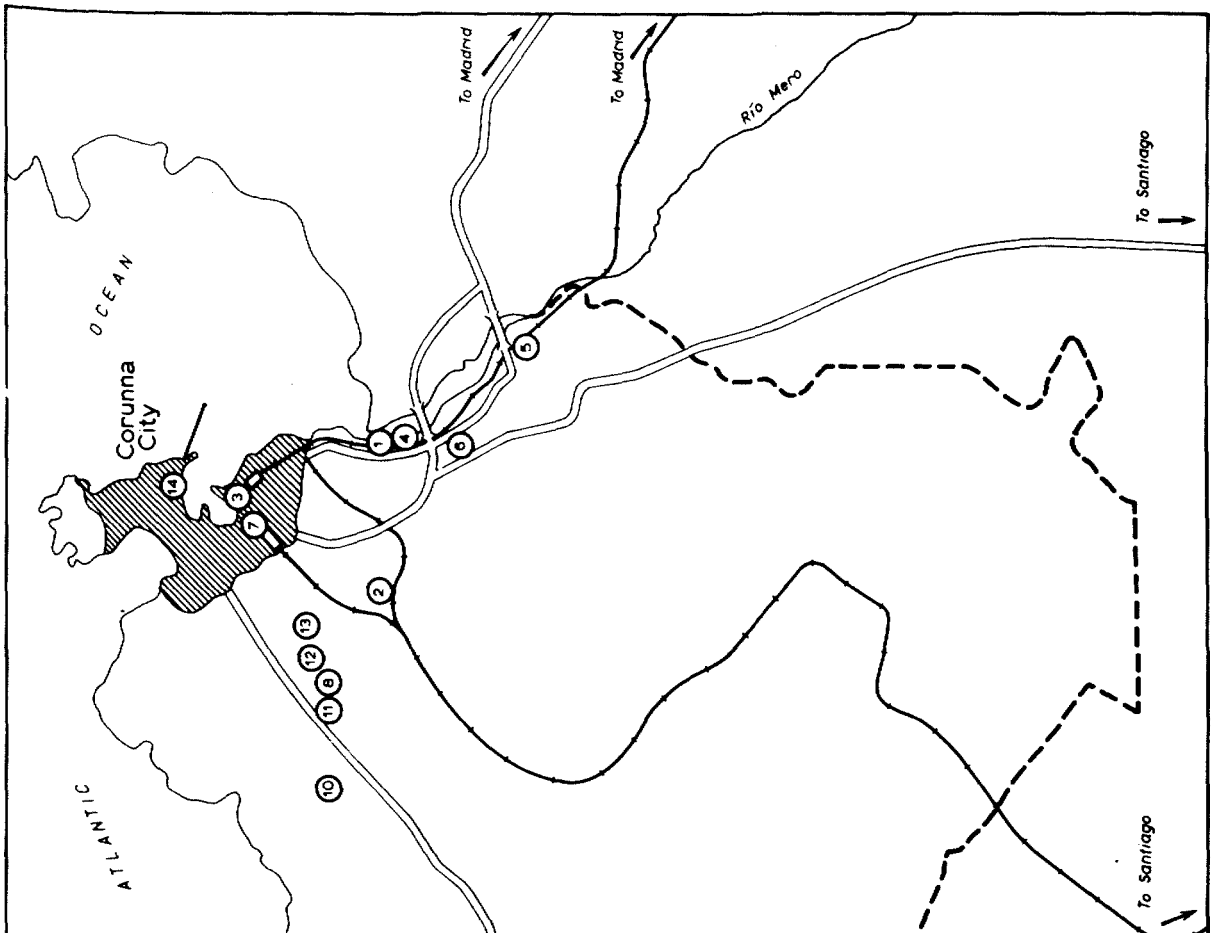

LOCATION OF FIRMS
WITHIN THE GROWTH POLE
– CORUNNA
Designated area of growth pole
15
Location of firms within growth pole
9
N
To Finisterre
0
4 kilometres

FIGURE 10:3


ATLANTIC
OCEAN
Corunna City
To Madrid
To Madrid
Río Mero
To Santiago
To Santiago
1
2
3
4
5
6
7
8
9
10
11
12
13

Analysis of the Firms within the Growth Pole at Corunna

Details of the types of economic activity which may apply for benefits in the Corunna growth pole and the minimum size of enterprise which qualifies for these benefits, have been given in Chapter 6 above. In May 1968 a total of 55 enterprises had received, or were in the process of receiving benefits. However, this total includes 10 schools and institutes of higher education, and a large number of firms that were still in the planning stage. The number of firms in directly productive activities and in operation by February 1968 was 15, of which 14 were interviewed. Details of these 14 firms are given in Tables 10:7 and 10:8. The most important industrial sector in the growth-pole at Corunna, both in terms of investment and number of jobs to be created, is the iron and steel and general engineering sector, followed by the food industry.

i) Factory Sites of the Growth-Pole Firms

A majority of the firms interviewed were content with the size of their factory site; the firms that had insufficient land were located either within, or very close to the city, where extra land is difficult to obtain and very expensive. Most firms were content with the general nature of their factory site, and no firms had encountered any major difficulties in constructing factories on these sites.

There was general satisfaction with the water supply in the growth pole, although two firms not on the industrial estates received no supply and had been forced to dig their own wells and Genosa and Aluminio de Galicia, S.A. had combined to build the Meicende reservoir in order to secure industrial water supplies (Figure 10:1). Waste disposal was a problem for several firms, and in particular there appeared to be a lack of drainage facilities in the La Grela-Elviña area. However, this situation should be improved by the construction of the new sewer and main drainage system in Corunna (Figure 10:2). Most firms stated that the telephone service to the city of Corunna was adequate, but that the service to Corunna province and to the rest of Spain was not good. Again it was the larger firms, which generally had to

TABLE 10:9

Firm's Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Corunna.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	8	4	2	-	14
Nature of factory site	11	3	-	-	14
Water supply	11	1	2	-	14
Waste disposal	7	-	5	2	14
Telephone	4	7	3	-	14

Source: questionnaires

TABLE 10:10

Location of Services used by Growth-Pole Firms at Corunna.

	City	Province	Region	Nation	Abroad	Within firm at Corunna.
Commercial	7	0	0	4	0	3
Technical	0	0	1	4	5	4
Advertising	10	0	0	3	0	1
Marketing	6	0	1	3	0	4
Legal	10	0	0	1	0	3
Maintenance of mechanical equipment	2	0	0	0	0	12
Maintenance of electrical equipment	1	0	0	0	0	13
Transport	8	0	0	1	0	5

Source: questionnaires

Plate 10:3 The Aluminio de Galicia, S.A. works on the La Grela industrial estate.

Plate 10:4 A small ship repair yard in the old port of Corunna.

TABLE 10:11

Attitude of the Growth-Pole Firms to the Transport Facilities at Corunna.

		Good	Indifferent	Bad	Total
Transport Services	Road	8	0	0	8
	Rail	1	2	0	3
Transport Costs	Road	8	0	0	8
	Rail	1	2	0	3

Note: information gathered from the 8 firms that used Corunna's transport facilities (Table 10:10). Three firms used more than one facility.

Source: questionnaires

contact other parts of Spain and which had experience of foreign telephone services, that expressed most dissatisfaction.

ii) Services used by the Growth-Pole Firms

The location of the services used by the growth-pole firms is given in Table 10:10. This table shows that quite a large number of services were obtained from the city, especially legal, advertising, transport and commercial services. However, a significant number of services were provided within firms, suggesting that several firms preferred to be self-reliant rather than rely on the city.

Corunna's location a long distance from the rest of Spain gives good transport links an added importance, especially for those firms trading outside the Galicia region. There appeared to be a general satisfaction with the transport services of the area. Of the eight firms that used the local transport facilities, all were content with the road services although the three firms that used the railway were less satisfied (Table 10:11).

iii) Employment and Labour in the Growth-Pole Firms

In February 1968 the 14 firms interviewed employed a total of 1,797 persons; 79% of these were male, with females employed as office staff, cleaners, cooks, etc. In the case of two food firms, Dalmacio Arredondo López and Conserva Celta, S.A., the newspaper firm La Voz de Galicia, and the firm of La Artistica, S.A., women formed the major element in the work force. Administrative and technical jobs requiring formal qualifications only account for 14% of total employment, with 86% of the jobs occurring in production, (Table 10:12), a situation very similar to that in Huelva and Burgos.

Most of the employment had been taken up by people from the city of Corunna and the neighbouring villages. However, some firms were able to attract labour from distances up to 20-30 kms. distance. Most of the people involved worked in the La Grela or El Burgo areas, and most owned cars or motorbikes. For example the firm of Conserva Celta, S.A., situated in the El Burgo area, has been able to attract labour from the surrounding towns and villages.

TABLE 10:12

Employment in the Growth-Pole Firms Interviewed in 1968: Corunna.

Firms	Male	Female	Administration	Technical	Production	Total
			Food			
1)	27	3	4	1	25	30
2)	3	17	1	0	19	20
3)	29	1	4	1	25	30
4)	15	85	3	1	96	100
5)	68	7	8	5	62	75
					Total	255
			Wood and Furniture			
6)	61	1	6	1	55	62
					Total	62
			Paper and Printing			
7)	87	91	23	23	132	178
					Total	178
			Chemicals			
8)	244	5	33	16	200	249
					Total	249
			Construction, Glass and Ceramics			
9)	30	0	4	2	24	30
					Total	30
			Metallurgical and Engineering			
10)	40	141	8	2	171	181
11)	225	12	47	25	165	237

TABLE 10:12 cont.

Firms	Male	Female	Administration	Technical	Production	Total
12)	26	0	1	2	23	26
13)	500	12	18	12	482	512
14)	67	0	4	1	62	67
					Total	1,023
Totals	1,422	375	164	92	1,541	1,797
Percent-ages	79	21	9	5	86	100

Source: questionnaires

TABLE 10:13

Origin of the Work Force Employed in the Growth-Pole Firms Interviewed in 1968: Corunna.

Firms	Local	Province	Elsewhere
1)	30	0	0
2)	20	0	0
3)	30	0	0
4)	42	58	0
5)	75	0	0
6)	54	4	4
7)	146	11	21
8)	231	2	16
9)	26	0	4
10)	176	1	4
11)	203	23	11
12)	25	0	1
13)	472	36	4
14)	46	20	1
Totals	1,576	155	66
Percent-ages	88	8	4

Source: questionnaires

All the firms,except those in the food industry, brought in skilled labour and management from outside the province. In almost every case the main labour force was recruited locally and taught within the factory. Only in the case of the food firms could skilled labour be 'poached' from other local factories. None of the local education establishments offered sufficiently specialised courses to be of value to the growth-pole firms, although a few workers voluntarily attended the Escuela de Formación Profesional Accelerada in the city. Despite the general lack of skilled labour in Corunna, none of the growth-pole firms had encountered serious labour difficulties.

Conclusions

The province of Corunna possesses considerable potential for economic development, containing very rich resources in agriculture, fishing and forestry. These resources ought to be a great stimulus to industrial development, and yet the Corunna polo de desarrollo has been the least successful of all the seven growth poles. In Corunna the most important industrial developments - Aluminio de Galicia, S.A., Genosa, Emesa, Petroliber, and S.A.Cros - were all established before 1964. Nothing comparable has happened since 1964.

One reason for Corunna's lack of success can be ascribed to the general structure of Galician society. The lack of a strong middle class able to promote reforms and act as an entreprenuerial élite has, as has been mentioned above, severely limited industrial developments. Secondly, agriculture is in the hands of a largely pre-capitalist peasantry, so that a large proportion of agricultural produce never leaves the farm to enter the regional economy. Quite fundamental reforms applied to the whole of Galicia will be required to change this situation.

A more specific reason for Corunna's lack of success as a growth pole has been the lethargy of local authorities in providing the infrastructure and services required by modern industry. For example, although La Grela and El Burgo have been designated industrial estates for over a decade, much of the land in both estates is in private hands and there is still no

provision of access roads, etc. Several local dignitaries expressed the view that a delay of a year or two whilst they arranged the expropriation of the land for individual companies was not unreasonable[26], whilst to the companies concerned such a delay usually proved to be disastrous. One company owner described his dealings with local officialdom as 'one long tremendous battle'. Such an atmosphere as this completely militates against the industrial development of the growth pole[27].

There is also evidence of neglect of the region by central government, perhaps itself a by-product of Galicia's distance from Madrid. For example, the range of benefits conceded in Corunna has been the same as those in Valladolid or Saragossa, although the problems involved are larger in Galicia. In addition the Planning Commission has spent far less on infrastructure in Corunna than in any other of the seven growth poles (see Chapter 15).

In recent years a considerable number of studies of the economic and social state of Galicia have been published[28]. With the problems so well documented there is no excuse for the relative neglect of the region. What can be achieved in the area is shown in the developments promoted by Fenosa and the Banco Pastor, one of the few cases where local initiative, using local capital, has promoted local schemes.

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Chapter 11

THE GROWTH POLE AT SEVILLE

The Economy of Seville

Seville is the wealthiest province of Andalusia. It is rich in resources, particularly in agriculture, and is far less mountainous than the other Andalusian provinces. Despite these natural advantages Seville's wealth and productive output has not kept pace with economic development in the country as a whole. In terms of per capita income Seville's rank position slipped from 17th in 1955 to 30th in 1964. The onset of the growth-pole scheme was unable to prevent a further fall to 33rd position in 1969, although there has been a recent improvement to 27th position (Table 11:2).

Of the seven growth poles Seville has a pattern of economic output that is closest to the national average (Table 11:1). Apart from being slightly above the national average in agriculture and forestry, and slightly below in industry, the remaining sectors conform closely to the national pattern. This suggests that any weakness in Seville's economy is not due to a poor balance of its components but to a lower overall level of economic activity, as shown in Chapter 7 above. Seville's economy is a victim of its location in the less productive south-west corner of the country.

i) Agriculture

Agriculture in Seville is strongly influenced by the good natural conditions of the province which favour the cultivation of certain crops - olives, wheat, rice, cotton - and ensure high yields. Agricultural practice is also strongly influenced by the predominence of latifundios, especially in olive and cereal crop growing, and livestock farming areas. Much has been written on the origins[1] and social problems[2] of the latifundios. In economic terms the latifundios have tended to stifle innovation, both in agriculture and the agricultural industries. The large estates have ensured a good living for the landowners without their having to make recourse to improved crops or new techniques.

TABLE 11:1

Components of Economic Production in 1964: Seville in Comparison with the Spanish Average.

		Seville % G.N.P.	Spain % G.N.P.
1)	Agriculture and forestry	22.8	18.5
2)	Fishing	0.1	1.0
3)	Mining	0.6	1.5
4)	Manufacturing	33.3	35.2
5)	Commerce	11.1	11.0
6)	Transport	6.0	6.1
7)	Banking	3.4	4.0
8)	Public administration	6.5	5.5
9)	Hotels, accommodation, etc.	5.4	5.9
10)	Property, rents, etc.	3.3	3.1
11)	Other professional services	7.5	8.2
	Totals	100.0	100.0

Source: Banco de Bilbao, 1967.

TABLE 11:2

Ranking of Seville Province in Terms of per capita National Income.

Year		Rank Position
1955	-	17
1957	-	21
1960	-	20
1962	-	27
1964	-	30
1967	-	30
1969	-	33
1971	-	27

Source: Banco de Bilbao, 1973.

TABLE 11:3

Size of Farm Holdings in Seville Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	11.8	0.1
1 - 5 ha.	35.4	2.6
5 - 50 ha.	42.4	20.0
50 - 200 ha.	7.1	20.2
200 - 1,000 ha.	3.0	37.4
More than 1,000 ha.	0.3	19.7
Totals	100.0	100.0

Source: Censo Agrario, 1962.

The area to the east of the city of Seville is probably the best in the world for the production of olives, especially the green (eating) olives. In value of production Seville is the main olive-producing province of Spain[3]. Further to the east of the province cereals form the dominant crop, especially wheat. Other crops important in Seville are sugar beet, citrus fruits and, in the irrigated areas, rice and cotton.

Drainage and cultivation of the marismas of the Guadalquivir delta only began in the twentieth century[4] and it was not until the Civil War that large crops of rice were obtained from this area. Cotton now covers 85% - 90% of the irrigated land where cultivation is not restricted by excessive salinity to rice production[5]. It is intended that the Canal del Bajo Guadalquivir should be connected to the recently completed Iznájar reservoir, and so rapidly increase agricultural production from the marismas area.

The climate of Seville is not suitable for most modern breeds of livestock. However, the recent development of the Retinto Andaluza breed of cattle, which is both heat-and disease-resistant and has good meat-producing qualities, could well make a big impact on the livestock production of the region in the future[6].

ii) Mining and Industry

In 1964 mining was of little importance in Seville (Table 11:1). There were a few small copper and iron pyrites mines and also lead and zinc mines in the northern part of the province. Since 1964 an important pyrites deposit has been discovered at Aznalcóllar. This deposit has a high lead-zinc content and should also form an important source of iron, sulphur and copper[7]. The most important manufacturing industries are located in the city of Seville and include industries based on local agricultural production such as olive oil, cork and cotton textiles, as well as chemicals, engineering, shipbuilding and the construction industries. An important boost to the industrial economy of Seville occurred during the Civil War, when the two large aircraft firms C.A.S.A. and H.A.S.A., and the huge

textile firm H.Y.T.A.S.A., were established here in order to provide war material for the Nationalist armies. All three firms have grown since that time, although C.A.S.A. is known to be in serious financial difficulties at present.

iii) Services

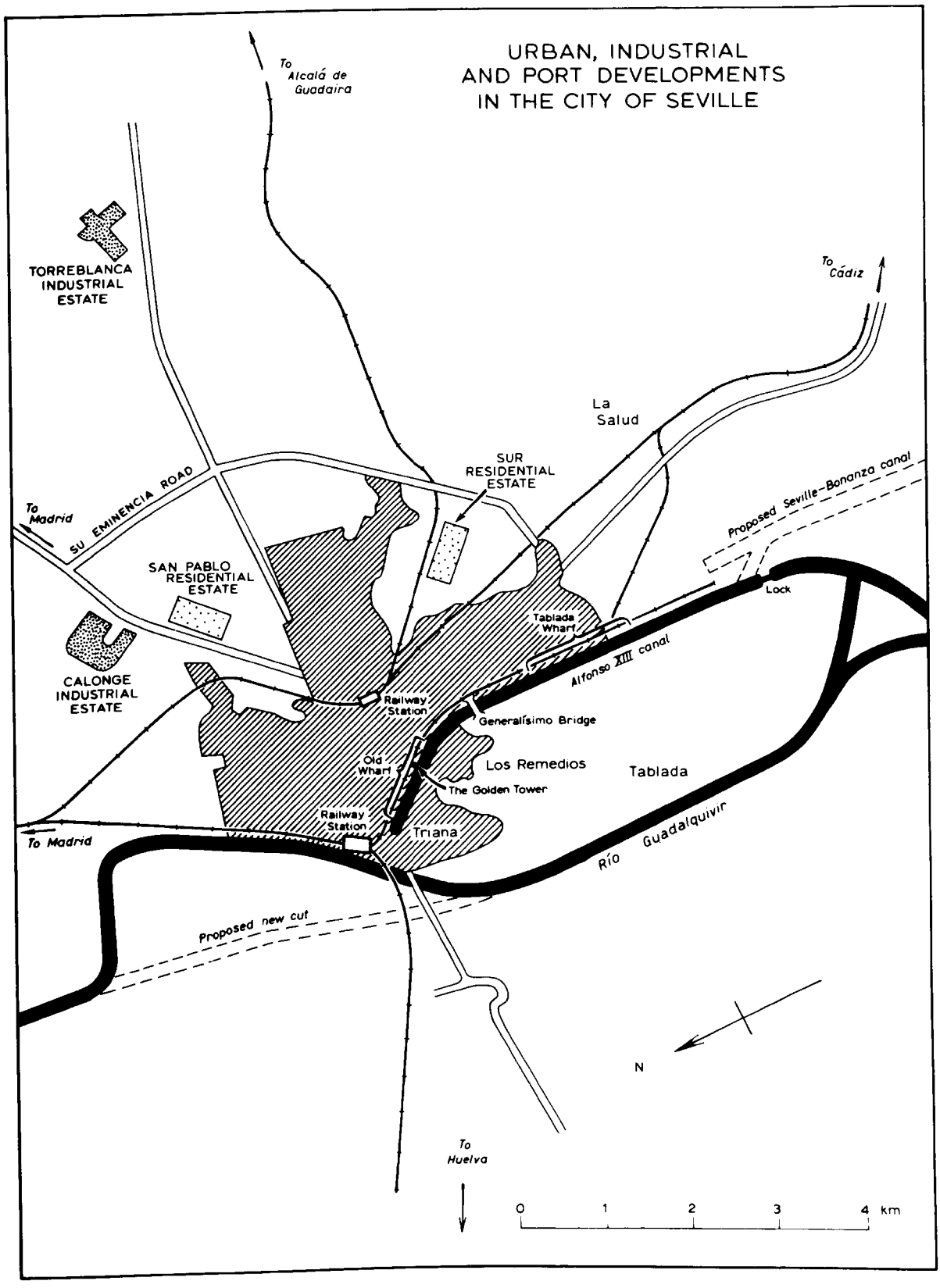
The service sector's contribution to provincial income is close to the national average (Table 11:1). The fact that Seville tends to act as a regional capital for the whole of western Andalusia is reflected in the higher proportion of income generated by public administration. Possibilities for future growth in the service sector of the economy are limited. The city of Seville is able to attract some tourist traffic, but without a coastline the province is not likely to generate a large income from this source in the future.

Seville has a well-balanced economy, but with an overall lower level of activity than the national average. The province's resources, particularly in agriculture, should help to make Seville one of the richest provinces in Spain. However, the Sevillian economy is hampered by being, in Alfonso Comín's word, desarticulada[8]. The large and sometimes modern unit of production exists alongside the minute and often 'pre-capitalist' unit. In agriculture the latifundio exists alongside the minifundio and in industry the big modern factory exists alongside the artesanía or workshop.

The City of Seville

Seville owes its origin and prosperity to the river Guadalquivir, the city being situated on the east bank within a large meander of the river, and at the normal head of navigation. In Roman times Seville developed into a major port, exporting wheat from the Campiña, one of the great granaries of the Roman Empire, as well as olives, cotton, silver and many other goods[9]. Seville's role as the principal port of Andalusia continued throughout the Moslem period with the town also developing as an important manufacturing centre of Moorish craftsmen. At the end of the fourteenth century Seville had a population of 75,000 and was the second largest (if not the largest) and certainly the most prosperous city in Spain[10].

FIGURE 11:1


URBAN, INDUSTRIAL
AND PORT DEVELOPMENTS
IN THE CITY OF SEVILLE
To Alcalá de Guadaira
TORREBLANCA INDUSTRIAL ESTATE
To Cádiz
La Salud
SUR RESIDENTIAL ESTATE
SU EMINENCIA ROAD
To Madrid
Proposed Seville–Bonanza canal
SAN PABLO RESIDENTIAL ESTATE
Lock
Tablada Wharf
Alfonso XIII canal
CALONGE INDUSTRIAL ESTATE
Railway Station
Generalísimo Bridge
Old Wharf
Los Remedios
Tablada
The Golden Tower
Railway Station
Triana
To Madrid
Río Guadalquivir
Proposed new cut
N
To Huelva
0
1
2
3
4 km

Seville's size and location enabled it to take full advantage of the trade with the Americas. Shortly after 1492 Seville was given the monopoly trade with the Americas and so the city entered into yet another phase of expansion. This monopoly was to continue until 1717, when the trade was transferred to Cádiz.

During the eighteenth and nineteenth centuries Seville's economy stagnated. Attempts were made to revive the city through the establishment of royal factories, the most famous being the tobacco factory constructed 1728 - 1757. Those measures made little overall impact and it was not until the late nineteenth century that the city began to expand beyond the medieval walls. Most of the walls were pulled down at this time to provide space for a wide boulevard which now rings the city centre[11]. In late medieval times an artisan and gypsy quarter was established at Triana on the west bank of the Guadalquivir. However, Triana was regularly inundated by winter floods, and the area did not form a suitable area for urban expansion[12]. To overcome this problem a new cut was made through the Tablada plain, taking the main part of the Guadalquivir river to the west of the city. This work was begun in 1909, although not completed until 1935. It was not until the early 1960's that the old river course, now called the Alfonso XIII Canal, was finally blocked off and a strong defensive wall erected (Figure 11:1). These improved river defences have led to the development of the residential area of Los Remedios, and an increase in industrial developments at Tablada.

In June 1968 it was announced that a new cut of seven kilometres was to be constructed on the Guadalquivir, eliminating a further meander of the river (Figure 11:1). This new cut will reduce considerably the flood risk to the city and release 450 has. of land for urban expansion.

During the twentieth century Seville again entered a period of prosperity and expansion. During the First World War Seville's industries supplied a wide variety of goods to both France and England. In the 1920's the construction of the Seville Exhibition in the María Luisa Park provided employment for large numbers of workmen.

TABLE 11:4

The Population of Seville City and Province 1900-1970.

	City	Province
1900	148,315	555,526
1910	158,287	597,031
1920	205,529	703,747
1930	228,729	805,252
1940	312,123	963,044
1950	376,627	1,099,374
1960	442,300	1,234,435
1970	548,072	1,327,190

Source: Censo de la Población, 1970.

Industrial expansion especially since the 1930's with the establishment of the war industries, has led to the rapid growth of the city, whose population has almost quadrupled since 1900, whilst the population of the province as a whole has merely doubled (Table 11:4). This rapid growth has imposed considerable difficulties on the city, especially in the field of housing. To meet this problem several very large housing estates have been constructed, the most important being the Sur and the San Pablo estates (Figure 11:1).

The modern development of the city is being channelled eastwards along the Málaga road to the village of Alcalá de Guadaira, and south-eastwards along the Cádiz road towards Dos Hermanas and beyond. This policy is also being pursued through the growth-pole scheme, which has been extended to include both these areas (Figure 11:2), and which is specifically directing new industrial developments to these areas.

The Port of Seville

The Guadalquivir is Spain's only navigable river and Seville, situated at its head of navigation, is the country's only inland port. In terms of overall tonnage handled in 1967 Seville was Spain's sixteenth largest port, or in terms of general merchandise handled the tenth. The traffic handled was split fairly evenly into three categories: petroleum products, minerals and general merchandise (Table 11:5).

The oldest part of the port is situated close to the city centre in what is now called the Alfonso XIII Canal. It was at the Old Wharf that Seville's monopoly trade with South America was conducted; the Tower of Gold that received all the precious metal proceeding from that continent remains as testimony to that trade.

When the new cut was made taking the Guadalquivir west of the city a large lock was constructed at the downstream end of the Alfonso XIII Canal, so that the level of water in the docks could be kept constant. This has overcome the problem of the dock area being influenced by the highly variable regime of the river.

With the developments of the twentieth century, especially the

Plate 11:1 The main lock for the port of Seville.

TABLE 11:5

Total Traffic Handled in 1967:
The Port of Seville.

		Tm.	%
1)	Petroleum products	785,755	32.3
2)	Minerals and other bulk solid materials	994,469	40.9
3)	General merchandise	651,312	26.8
	Totals	2,431,536	100.0

Source: Ministerio de Obras Publicas, Memoria anual del puerto de Sevilla, 1967, Seville (1968) p. 4

construction of bridges over the river, the port area has tended to move downstream, and most of the traffic is now handled at the Tablada Wharf (Figure 11:1). This downstream area has also seen a number of industrial developments, including the establishment in 1942 of the shipbuilding firm Empresa Nacional Elcano and more recently a number of chemical firms.

Navigation on the Guadalquivir faces considerable natural difficulties. At Sanlúcar there is an offshore bar which has to be dredged continuously. There is a minimum depth of water in the river at lowtide of four metres[14], so that most ships can only go up the river by using the high tide which gives an average depth of six to seven metres. Going downstream is more difficult and most of the larger ships have to anchor before reaching Sanlúcar and wait for a second high tide in order to pass over the bar[15]. Further problems are caused by the winter floods which can close the port for several days and can alter the course and depth of the river channels. The largest ship to have entered Seville has been of 15,800 gross tonnage, although the normal maximum size is less than 10,000 tons[16].

Because of the hazards and inconveniences of river navigation, the port authorities are very keen to build a navigation canal from Seville to Bonanza on the coast. The idea for such a canal is not new and was first suggested in 1864. The present project is for a canal 68 km. long and with a depth of water of nine metres, the whole canal to be lined with new industrial developments. The proposed canal would slightly increase the size of the ships able to use the port, but more importantly it would enable such ships to reach Seville irrespective of tides. However, the proposals would involve considerable competition for land-use in the delta area. Any navigation canal would seriously disrupt the land reclamation and colonization schemes in the area. Opposition to the canal would also come from the biologists and naturalists who wish to preserve the marismas for the very rich variety of wildlife of the region[17].

It is becoming increasingly doubtful whether a canal would be economically viable. The canal would do nothing to solve the problem of the

Plate 11:2 The San Pablo housing estate.

offshore bar, which would still have to be dredged. The trend towards ever larger ships would make the canal of use to a decreasing proportion of the world's shipping. Lastly, the development of the main port and the planned container port at Cádiz and the construction of a fast motorway from Cádiz to Seville, has thrown doubt on the need for a second major port at Seville.

Despite these factors in June 1968 it was announced that the first phase of the canal was to be started[18]. However, this first phase was confined entirely to works which would improve the existing port at Seville. At present it seems likely that the most that will be achieved is a short canal which would re-join the main river a short distance to the south of the city.

Developments in the Infrastructure of Seville

There have been two main aims behind government spending on improvements to the infrastructure of Seville. The first aim has been generally to improve the services available within the city, giving special attention to water supply, road access and the availability of industrial estates. The second aim has been to promote the expansion of the city east and south to the villages of Alcalá de Guadaira and Dos Hermanas, and both areas have been included in the growth-pole area (Figure 11:2).

In 1968 there were three industrial estates within the city of Seville (Figures 11:1 and 11:2). The Calonge estate had been set up by private initiative, and the Torreblanca estate by municipal initiative. Both estates are quite small, they have not received any assistance from the growth-pole scheme, and although the Calonge estate has been fairly successful, by 1968 there had been very little development at Torreblanca. The third estate, at Carretera Amarilla, was created by the Ministry of Housing, and has received financial assistance within the growth-pole scheme (Table 11:6). It is a large estate of approximately 130 ha. and has all basic services installed. The Carretera Amarilla estate has been very successful and by 1968 most of the 180 plots had been sold. To cater for later industrial developments a fourth estate of 1,000 has. has been planned, to be located in the Dos Hermanas area. 300 million pesetas has been allocated for this project (Table 11:6)[19].

TABLE 11:6

Public Investment in the Infrastructure of the Seville Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Seville	Totals: All growth poles	Totals: %
Preparation of Industrial Land					
Industrial estate at Dos Hermanas	0	300			
Total	0	300	300	1,451	20.7
Water Supply and Drainage					
Studies	2	0			
Water supply, urban area Alcalá de Guadaira	4	0			
Water supply, industrial area Alcalá de Guadaira	7	0			
Water supply, industrial area Dos Hermanas	17	0			
Enlarge water purification plant El Carambolo	33	18			
Drainage, industrial area Alcalá de Guadaira	0	75			
Drainage, industrial area Dos Hermanas	0	75			
Total	63	168	231	3,625	6.4
Roads					
Improve main access roads to Seville	0	65			

TABLE 11:6 cont.

	1964-1967	1968-1971	Totals: Seville	Totals: All growth poles	Totals: %
Improve Su Eminencia road	0	45			
Improve Carmona - Utrera road	0	145			
Total	0	255	255	1,610	15.8
Other Infrastructure Works in the Growth Pole					
Industrial estate at Carretera Amarilla	154	42			
Improve main access roads to Seville	84	932			
Improve Seville-Alcalá de Guadaira railway line	0	69			
Improve Seville - La Salud railway line	0	399			
Total	238	1,442	1,680	5,248	32.0
Totals	301	2,165	2,466	11,934	20.7

Note: all figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

FIGURE 11:2

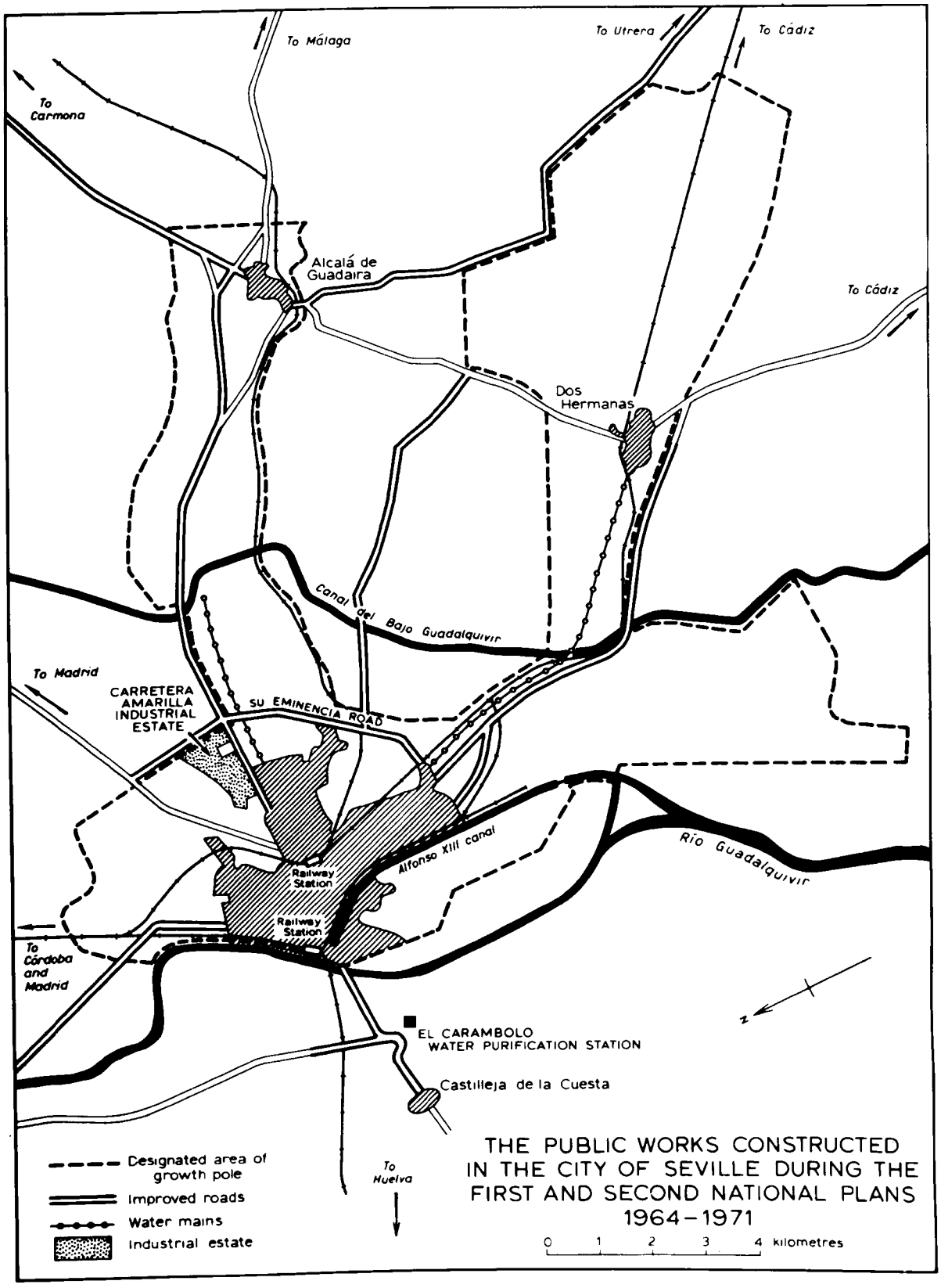

To Málaga
To Utrera
To Cádiz
To Carmona
Alcalá de Guadaira
To Cádiz
Dos Hermanas
Canal del Bajo Guadalquivir
To Madrid
CARRETERA AMARILLA INDUSTRIAL ESTATE
SU EMINENCIA ROAD
Alfonso XIII canal
Río Guadalquivir
Railway Station
Railway Station
To Córdoba and Madrid
EL CARAMBOLO WATER PURIFICATION STATION
Castilleja de la Cuesta
To Huelva
Designated area of growth pole
Improved roads
Water mains
Industrial estate
THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF SEVILLE DURING THE FIRST AND SECOND NATIONAL PLANS 1964–1971
0 1 2 3 4 kilometres

Plate 11:3 The new Generalísimo bridge over the Guadalquivir river.

The rapid growth of Seville, both in terms of population and industrial development, has led to a sharp increase in the demand for water. Up till the early 1960's this demand could be met from the Minilla reservoir in the Sierra Morena. To cater for future requirements the city council began the construction in 1968 of a new reservoir in the Sierra Morena at Aracena. In the meantime, increased demand will be supplied from the water purification plant at El Carambolo, which has been enlarged to supply up to 400,000 M^3 of water per day (Table 11:6)[20].

The second part of the programme has involved the construction of two large mains to supply the city expansion areas of Alcalá de Guadaira and Dos Hermanas. Main drainage systems are being constructed in these areas as well (Table 11:6).

The road-building programme has been concentrated on three major projects: the improvement of the Su Eminencia road to form a by-pass on the eastern side of the city, the improvement of the Carmona-Utrera road to provide better access to the eastern parts of Seville province, and the improvement of all the major access roads to the city except the Madrid road, which was already a three-lane motorway. In line with the general policy of expanding the city towards Alcalá and Dos Hermanas, the roads to both villages are being upgraded to two-lane motorway standards.

A further improvement, although not included within the growth-pole scheme, has been the construction of the Generalísimo bridge. This bridge, completed in 1968, provides a fourth crossing of the Alfonso XIII Canal. More importantly it helps to open up the west bank area of the city and provides a better link between the Cádiz and Huelva roads (Figure 11:1).

There are also plans to improve the rail link from Seville to Alcalá and the main Madrid-Cádiz line from the northern part of the city to La Salud in the south (Table 11:6). However, in 1968 there was some doubt whether these projects would go ahead.

Analysis of the Firms within the Growth Pole at Seville

In May 1968 a total of 99 benefits had been granted to Seville firms[21]. This total includes a number of education establishments and other non-

TABLE 11:7

Firms Functioning in the Seville Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Cadesa	stuffed olives
2)	Cavir	meat
3)	Pacsa	artificial feedstuffs
4)	Exisa**	olive oil
5)	Vegé Sevilla, S.A.	food refrigeration
6)	Libby España, S.A.	olives
	Textiles and Clothing	
7)	Hytasa**	wool and cotton clothing
8)	Confecciones Edlitam, S.A.	clothing
9)	Clara Moya Sánchez	vegetable fibres
	Paper and Printing	
10)	Envases Industriales Sevillanos de Papel	paper packaging
11)	Manipulados Kraft del Sur, S.A.	cardboard boxes
	Chemicals	
12)	Polan	nylon
13)	Idogra	refined oils
14)	Abonos Orgánicos Sevilla, S.A.	artificial fertilize fertilizers
15)	Porres Osborne, S.A.	refined olive and seed oils
16)	Grapol, S.A.	plastic mouldings
	Construction, Glass and Ceramics	
17)	Giralt Laporta, S.A.	glass bottles
18)	Uralita, S.A.	fibre-cement
19)	Pavimentos Sur, S.A.	paving stones
20)	Yesera Andaluza, S.A.	gypsum

TABLE 11:7 cont.

Number*	Firms arranged by main industrial groups	Product of firms
21)	Hormigones Sevilla, S.A.	concrete
22)	Cerámica de Bellavista, S.A.	bathroom ceramics
23)	Cristalería Española, S.A.	glass
24)	Bloques San Pablo, S.A.	concrete blocks
25)	Ytong Andalucía, S.A.	concrete blocks
	Metallurgical and Engineering	
26)	Compañia Auxiliar de Obras, S.A.	repair of civil engineering machinery
27)	I.S.A.	gear boxes and engines
28)	Casa	aircraft
29)	Siderúrgica Sevillana, S.A.	iron and steel
30)	Industrias Carroceras del Sur	coach bodies
31)	Fasa - Renault	gear boxes and transmissions
32)	Sacom	metal structures
33)	Unión Metalgráfica Andaluza	metal cans
	Various	
34)	Stylex	ball point pens
35)	Compañia Sevillana de Electricidad	electricity production

* These numbers are used in Fig. 11:3 to show the location of these firms

** The firms Exisa and Hytasa also obtained benefits within the chemical sector. However, as their main products occur within the food and textiles industries respectively, they have been categorised within these industries.

Source: questionnaires

TABLE 11:8

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Food	
1)	31,137,000	69	A
2)	139,801,000	100	A, A
3)	23,375,000	46	C
4)	38,478,000	37	B
5)	20,800,000	32	B
6)	28,310,000	320	B
		Textiles and Clothing	
7)	1,005,408,000	1,310	B, C
8)	134,114,000	691	B, B
9)	39,863,000	65	B
		Paper and Printing	
10)	21,804,000	45	C
11)	38,969,000	44	B
		Chemicals	
12)	21,909,000	44	C
13)	14,852,000	40	B
14)	58,913,000	37	A
15)	24,010,000	30	A
16)	55,475,000	34	A
		Construction, Glass and Ceramics	
17)	374,458,000	832	A
18)	397,889,000	371	A
19)	21,754,000	65	B
20)	37,664,000	46	A

TABLE 11:8 cont.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
21)	22,240,000	46	B
22)	185,210,000	191	A, A, B
23)	440,000,000	300	A
24)	74,500,000	148	A
25)	57,665,000	62	A
		Metallurgical and Engineering	
26)	44,241,200	44	D
27)	309,874,000	38	B
28)	26,649,000	60	B
29)	121,652,000	159	B
30)	10,518,000	60	C
31)	301,706,000	507	B
32)	52,600,000	145	B
33)	9,158,100	40	A
		Various	
34)	17,000,000	75	B
35)	145,990,800	338	A, A

Note: all investment figures given in pesetas, 1968.

Source: Planning Commission, Relación de las empresas acogidas a los programas de desarrollo regional, Madrid (1968).

directly productive enterprises. The total number of directly productive firms in operation in 1968 was 48, of which 35 were interviewed. Details of these firms and their products are given in Table 11:7.

The data obtained from the 35 firms interviewed showed that the economic sectors creating the highest number of jobs and the largest investments were the construction, glass and ceramics industries (mainly because of the existence of the two large glass firms), the metallurgical and engineering sector, and the textile and clothing sector, this latter almost entirely due to the expansion of the large textile firm of Hytasa (Table 11:8).

i) Factory Sites of the Growth-Pole Firms

Most of the firms interviewed were content with the size of their factory site, several having room to double the area of their buildings. However, a number of firms pointed out that there had been an enormous amount of speculation in land prices within the designated area of the growth pole, with only those firms and projects included in the growth-pole scheme having the right of compulsory purchase. As several of these firms were likely to require more land in the near future, with the liklihood of these extensions not being included in the growth-pole scheme, they would have to pay inflated prices. One company owner stated that before the growth pole the price of land had been 5 ptas. a square metre, but through speculation he had been forced to pay 30 ptas. a square metre.

Most firms were content with the nature of their factory sites, although the textile firm Hytasa stated that the alluvial soils were very weak and for their new chemical plant being constructed at the Tablada wharf they were having to put in a large number of piles. There was very little satisfaction with the water supply service in Seville (Table 11:9), particularly at Alcalá and Dos Hermanas where there was no municipal supply at all; 26 of the firms interviewed had been forced to build their own wells. The new water-supply schemes should do much to overcome these problems; nevertheless, the initial lack of a water-supply has imposed severe difficulties and extra expense on a large number of growth-pole firms.

FIGURE 11:3

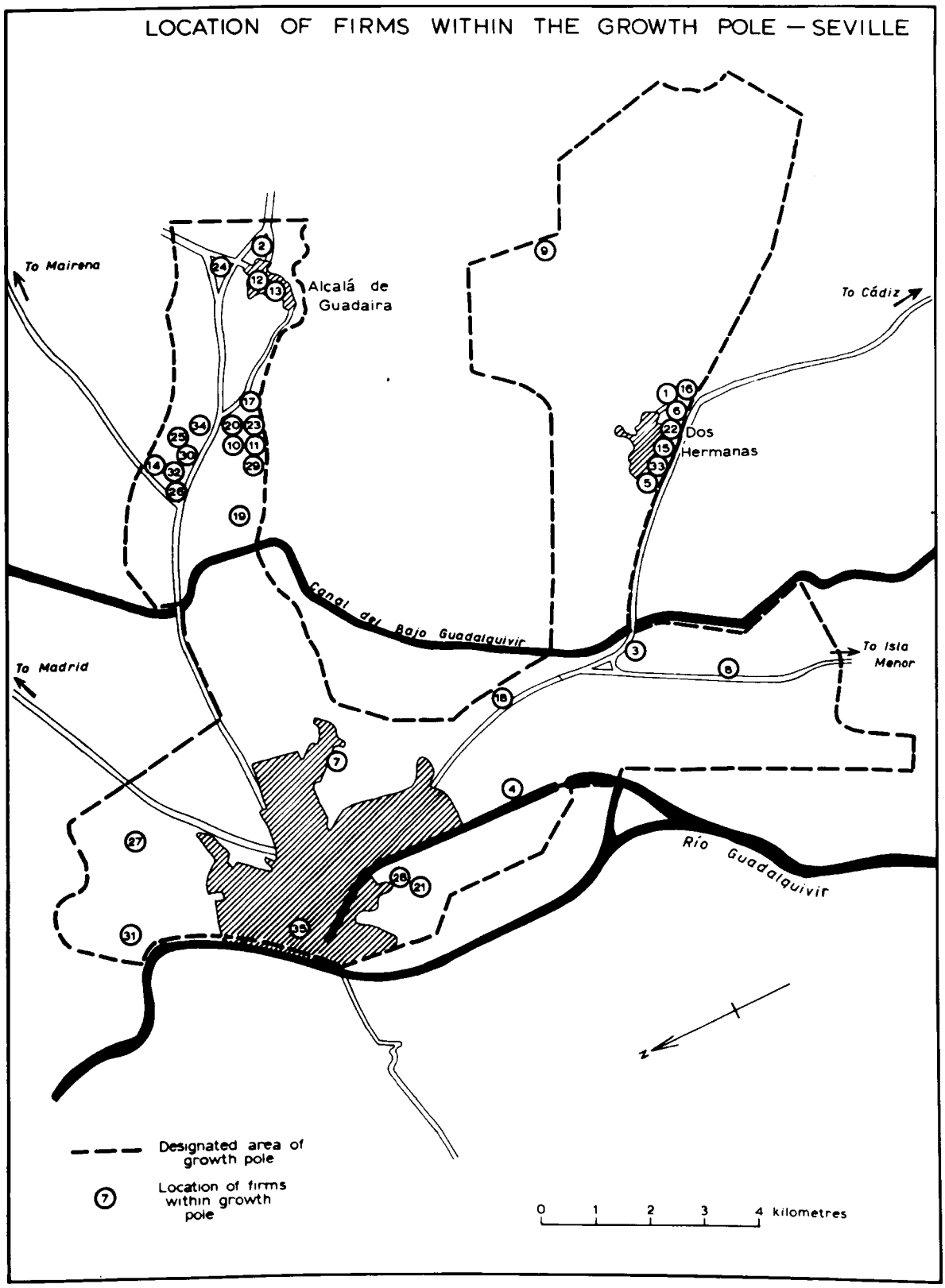

LOCATION OF FIRMS WITHIN THE GROWTH POLE — SEVILLE
To Mairena
Alcalá de Guadaira
To Cádiz
Dos Hermanas
Canal del Bajo Guadalquivir
To Madrid
To Isla Menor
Río Guadalquivir
Designated area of growth pole
Location of firms within growth pole
0 1 2 3 4 kilometres

Plate 11:4 Porres Osborne, S.A. an olive oil refining plant situated on the main Seville-Cádiz highway.

Plate 11:5 The Cadesa factory. A large olive preparation and bottling factory.

TABLE 11:9

Firm's Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Seville.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	32	0	2	1	35
Nature of factory site	30	3	1	1	35
Water supply	6	7	21	1	35
Waste disposal	5	4	7	19	35
Telephone	10	8	17	0	35

Source: questionnaires

TABLE 11:10

Location of Services used by Growth-Pole Firms at Seville

	City	Province	Region	Nation	Abroad	Within firm at Seville
Commercial	15	0	0	8	1	11
Technical	14	0	0	8	1	12
Advertising	17	0	0	8	1	9
Marketing	15	0	0	8	1	11
Legal	20	0	0	8	0	7
Maintenance of mechanical equipment	2	0	0	0	0	33
Maintenance of electrical equipment	4	0	0	0	0	31
Transport	29	0	0	0	0	6

Source: questionnaires.

TABLE 11:11

Attitude of the Growth-Pole Firms to the Transport Facilities At Seville.

		Good	Indifferent	Bad	Total
Transport Services	Road	28	1	0	29
	Rail	5	0	0	5
Transport Costs	Road	25	1	3	29
	Rail	2	2	1	5

Note: information gained from the 29 firms that used Seville's transport facilities (Table 11:10). Five firms used more than one facility.

Source: questionnaires

There was also general dissatisfaction with the waste-disposal and drainage facilities in Seville. Several firms had been forced to build their own drainage systems and a group of firms in the Cádiz road area had banded together to supply all their own services including drains, sewerage, domestic and industrial water supply, etc. A majority of the firms interviewed thought that the telephone service in Seville was indifferent or bad. Several firms were still not connected to the telephone service and others had no direct line to Seville. For some firms it was quicker to take messages to Seville by car. These deficiencies in the telephone service imposed a considerable extra burden on the business activities of the area.

ii) Services used by the Growth-Pole Firms

From Table 11:10 it can be seen that a considerable proportion of the growth-pole firms used the professional and technical facilities provided by the city. This is in sharp contrast to the smaller growth-pole towns such as Burgos and Huelva. However, several firms emphasised that they used these facilities as little as possible and preferred to supply their own services. No facilities at all were provided from the rest of Seville province or Andalusia, emphasising the generally underdeveloped nature of this region.

Seville contains a large number of small transport firms, mainly small family concerns and all working to the barest margins; 29 of the firms interviewed used these firms and the majority were happy both with the costs and the service provided. Of the five firms that used the railway all were content with the service but three firms thought that the costs were high (Table 11:11).

iii) Employment and Labour in the Growth-Pole Firms

The total number of people employed in the 35 firms interviewed was 15,515 (Table 11:12). However, this total includes the7,000 employed by the Compañía Sevillana de Electricidad, most of whom work in other parts of Andalusia. A more realistic figure for the number of those employed in

TABLE 11:12

Employment in the Growth-Pole Firms Interviewed in 1968: Seville.

Firms	Male	Female	Administration	Technical	Production	Total
			Food			
1)	40	70	8	0	102	110
2)	113	20	17	9	107	113
3)	44	8	19	12	21	52
4)	117	3	20	5	95	120
5)	41	5	15	0	31	46
6)	35	315	10	6	334	350
					Total	811
			Textiles and Clothing			
7)	2,700	100	150	32	2,618	2,800
8)	30	500	2	5	523	530
9)	20	30	10	2	38	50
					Total	3,380
			Paper and Printing			
10)	16	27	4	2	37	43
11)	108	42	13	9	128	150
					Total	193
			Chemicals			
12)	15	17	5	2	25	32
13)	96	2	6	2	90	98
14)	60	0	8	5	47	60
15)	30	0	3	1	26	30
16)	32	2	9	1	24	34
					Total	254
			Construction, Glass and Ceramics			
17)	778	22	34	42	724	800

Firms	Male	Female	Administration	Technical	Production	Total
18)	826	24	60	18	772	850
19)	64	1	5	2	58	65
20)	17	0	3	0	14	17
21)	30	0	4	1	25	30
22)	170	30	15	25	160	200
23)	270	10	20	20	240	280
24)	44	1	10	0	35	45
25)	57	3	17	3	40	60
					Total	2,347
			Metallurgical and Engineering			
26)	34	1	5	0	30	35
27)	568	14	140	23	419	582
28)	1,425	75	350	110	1,040	1,500
29)	345	5	15	20	315	350
30)	52	0	2	2	48	52
31)	884	20	21	22	861	904
32)	100	0	6	8	86	100
33)	125	125	12	15	223	250
					Total	3,773
			Various			
34)	29	18	11	4	32	47
35)	6,200	800	3,200	2,100	1,700	7,000
					Total	7,047
Totals	15,515	2,290	4,229	2,508	11,068	17,805
Total without firm no. 35)	9,315	1,490	1,029	408	9,368	10,805
Percentages	87.1	12.9	23.7	14.1	62.2	100
without firm no. 35)	86.2	13.8	9.5	3.8	86.7	100

Source: questionnaires

TABLE 11:13

Origin of Work Force Employed in Growth-Pole Firms Interviewed in 1968: Seville.

Firms	Local	Province	Elsewhere
1)	102	0	8
2)	87	0	46
3)	48	0	4
4)	117	0	3
5)	46	0	0
6)	338	2	10
7)	2768	0	32
8)	528	0	2
9)	48	2	0
10)	42	0	1
11)	139	0	11
12)	31	0	1
13)	97	0	1
14)	52	0	8
15)	30	0	0
16)	27	4	3
17)	782	5	13
18)	835	4	11
19)	61	1	3
20)	11	6	0
21)	28	0	2
22)	160	26	14
23)	221	19	40
24)	44	0	1
25)	59	0	1

Firms	Local	Province	Elsewhere
26)	26	8	1
27)	543	9	30
28)	1,431	22	47
29)	332	4	14
30)	49	1	2
31)	882	4	18
32)	98	0	2
33)	233	1	16
34)	42	0	5
35)	1,300	500	5,200
Totals	11,637	618	5,550
Total without firm no. 35)	10,337	118	350
Percentages	65.3	3.5	31.2
without firm no. 35)	95.7	1.1	3.2

Source: questionnaires

Seville would be nearer 10,000. Of the total employed a high proportion (87.1%) were male, females forming an important source of labour only in the food, textile and clothing industries.

Figures for all 35 firms interviewed show a high proportion of the labour force employed in administrative and technical grades (Table 11:12). This proportion includes the Compañía Sevillana de Electricidad figures, and the proportions for the remaining 34 firms show a situation very similar to that in the other growth poles, with almost 87% of employment occurring in production. Most of the employment in the 34 firms has been supplied from the Seville area, with only a small proportion (4.3%) coming from the rest of the province and elsewhere (Table 11:13).

Almost all of the skilled labour force had been taught within the factories and two of the large engineering firms maintained their own apprentice schools. Several firms mentioned that in the past it had been difficult to obtain specialist labour (electricians, plumbers, etc.), as many such workmen had left for better-paid jobs in Europe.

The new Labour University in Seville should ensure a plentiful supply of specialist workmen in the future and thereby overcome this shortage. There was no difficulty in obtaining unskilled labour in the area.

Generally most firms were very content with the quality of their labour force and one firm, with branches in several parts of Spain, commented on the hard-working nature and the lack of unrest amongst its Seville labour force.

Conclusions

Amongst the business community of Seville it is generally thought that the growth pole has only had a marginal effect on the industrial development of the city, and in 1968 more interest was being taken in the projected Seville-Bonanza Canal[22]. Any success of the growth pole has been due, in part, to Seville's location in the centre of western Andalusia, and more importantly to the rich agriculture of the area, especially in olives. Apart from the effect that agriculture has had on the development of the

food industry, it has also led to the development of linked industries, as in the case of one of the glass firms which sells much of its output to olive-and fruit-bottling plants.

Several factors have limited the development of the growth pole. First, the general lack and sometimes the complete absence of infrastructure has placed an extra financial burden on firms who have had to provide these services for themselves. One company owner stated that despite the growth-pole the local authorities still did not understand the needs of industry and were still tending to follow the traditional practice of not providing municipal services and forcing firms to become self-sufficient.

A second problem has been the amount of red tape and bureaucratic delay encountered by firms applying for growth-pole benefits and customs clearance on imported machinery. In the case of one firm these delays lasted for over a year. The third problem has been the fierce speculation in the price of land following the designation of the growth-pole area. Those firms with no rights of expropriation have found it very difficult and very expensive to obtain land. In this respect the growth pole has had a deliterious effect on industrial development in the Seville area.

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The Economy of Valladolid

Valladolid lies at the centre of the northern Meseta and acts as a focus for much of the economic activity within this region. The province also contains some of the richest agricultural areas of the northern Meseta. These two factors have helped to make Valladolid by far the most prosperous province of Old Castile[1]. This prosperity is reflected in the figures for per capita national income which show that in 1955 Valladolid was the 11th wealthiest province in Spain (Table 12:2). Although Valladolid had slipped to 18th position by 1960, since 1964 there has been an improvement back to 12th position, which can be ascribed largely to recent industrial developments within the city of Valladolid.

i) Agriculture and Forestry

The prosperity of the agricultural sector is shown in the large contribution made to overall economic production, which is well above the national average (Table 12:2). Although Valladolid lies in the heart of the *minifundio* zone of Old Castile (Table 12:3) this does not form a serious problem as many of the smaller farms are located in the more productive areas and the few *latifundios* are located mainly on the poorer marginal lands[2]. Until the middle of the nineteenth century the dominance of the Mesta made Valladolid a predominately sheep-and livestock-rearing province[3], however since the 1840's cereals, especially wheat, have been the main crop, with some cultivation of vines as well. In the irrigated areas around the Canal de Castilla fruit, vegetables and sugar-beet are also grown. Since the end of the Civil War Valladolid has become the major chicken-and poultry-rearing province of Spain, based on the large animal feedstuffs industries located within Valladolid city[4]. During the 1960's there has occurred in Valladolid, as in the rest of Spain, an overproduction of wheat. To meet this situation the S.N.C. in Valladolid has tried to encourage farmers to grow maize and

TABLE 12:1

Components of Economic Production in 1964: Valladolid in Comparison with the Spanish average.

		Valladolid % G.N.P.	Spain % G.N.P.
1)	Agriculture and forestry	25.3	18.5
2)	Fishing	0.0	1.0
3)	Mining	0.1	1.5
4)	Manufacturing	30.1	35.2
5)	Commerce	11.9	11.0
6)	Transport	7.0	6.1
7)	Banking	2.9	4.0
8)	Public Administration	7.7	5.5
9)	Hotels, accomodation, etc.	4.2	5.9
10)	Property, rents, etc.	2.2	3.1
11)	Other profession services	8.6	8.2
	Total	100.0%	100.0%

Source: Banco de Bilbao, 1967.

TABLE 12:2

Ranking of Valladolid Province in Terms of per capita National Income.

Year		Rank position
1955	-	11
1957	-	12
1960	-	18
1962	-	17
1964	-	17
1967	-	12
1969	-	14
1971	-	12

Source: Banco de Bilbao, 1973.

TABLE 12:3

Size of Farm Holdings in Valladolid Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	17.0	0.3
1 - 5 ha.	29.9	3.0
5 - 50 ha.	41.6	34.2
50 - 200 ha.	10.1	36.7
200 - 1,000 ha.	1.3	20.3
More than 1,000 ha.	0.1	5.5
	100.0%	100.0%

Source: Censo Agrario, 1962.

other cereals, but this diversification programme has had little success as yet[5].

ii) Industry

Manufacturing industries have developed almost entirely within the city of Valladolid. The first important industrial development was the expansion of flour milling which followed the increase in cereal production in Old Castile in the mid-nineteenth century[6]. At first flour output was limited to supplying the local market, but with the completion of the Canal de Castilla from Valladolid to Alar del Rey in 1840 and the creation of the railway system in the 1860's, output was expanded to supply national and colonial markets as well. Until the 1950's flour milling was Valladolid's single most important industry, and many of the original mills, situated along the Canal de Castilla, the Río Pisuerga and the Arco de Ladrillo area of the city were still in production in 1968. Flour milling has led to the growth of a large baking and confectionery industry within the city.

The arrival of the railway in 1858-1860 placed Valladolid on the main line from Madrid to France and led to the development of the large railway workshops in the southern part of the city (Figure 12:1). Although now much reduced in size they are still Renfe's most important workshops and in 1968 employed 1,950 workmen[7]. The third major industry to date from the latter half of the nineteenth century was cotton textiles. This industry was largely in the hands of Catalans and Basques who fled the unrest and civil wars in their home areas[8]. This pattern was to be repeated during the Civil War of 1936-1939 when the firm Textil Castilla came to Valladolid from Barcelona. This is now the largest textile concern in the city.

Since 1939 there have been two important new developments - the establishment of the aluminium and the motor vehicle industries. In 1943 the aluminium firm Endasa was created with I.N.I. holding a 75% share of the capital. This firm located its first and main plant at Valladolid in order to be close to the electricity distribution centre at Mudarra, the most important in Spain, and thus be assured of a plentiful power supply[9]. Since

Plate 12:1 Old flour mills on the Río Pisuerga.

1939 a number of firms producing aluminium goods have been located in Valladolid. The motor-vehicle industry began in 1954 when a small local engineering firm, Fasa, obtained the right to assemble Renault vehicles under licence. This was followed in 1960 when another local engineering firm, Sava, obtained a similar right to assemble Austin lorries and coaches. Following the setting up of these two firms a number of smaller vehicle component firms have been established in Valladolid.

iii) Services

Valladolid is the largest city of the northern Meseta and its central position helps to make it the commercial and administrative capital of the region. This is reflected in the contribution made to economic production by commerce, transport, public administration and other professional services, all of which are above the national average (Table 12:1).

The City of Valladolid

Valladolid is a relatively modern town. The first known settlement came after the Reconquest in the eleventh century, when a castle and walled town were established on a terrace above the junction of the Esgueva and Pisuerga rivers. This site served both to protect the first bridge across the Pisuerga and to protect the whole line of the Duero. From a late start Valladolid grew rapidly, becoming a bishopric, university town and, for a while, capital of Spain. In 1559 the period of rapid expansion came to a halt when Philip II moved his court to Toledo and later to Madrid[10]. From a population of 38,100 in 1540 Valladolid declined to a population of 15,000 in 1750[11]. It was not until the industrial developments of the nineteenth century that the city expanded beyond the medieval walls.

In 1848 the Río Esgueva was diverted to the north and channelled to prevent flooding. This helped to open up the area south and east of the medieval town. The establishment of the railway workshops and the flour mills in the Arco de Ladrillo district led to the construction in that area of a large amount of workers' housing (Figure 12:1).

The main railway line represents the limit of the city's expansion to the south and east at the end of the nineteenth century. Twentieth-century

TABLE 12:4

The Population of Valladolid City and Province 1900-1970.

	City	Province
1900	68,789	278,561
1910	71,066	284,473
1920	76,791	280,931
1930	91,089	301,571
1940	116,024	332,526
1950	124,212	347,768
1960	151,807	363,106
1970	236,341	412,572

Source: Censo de la Población, 1970.

Plate 12:2 The city of Valladolid, showing the undeveloped Huerta del Rey on the left, the Río Pisuerga, and the congested city centre.

urban expansion has been confined by the main railway, the Río Esgueva and the Río Pisuerga. As a consequence there has been a marked tendency to build taller buildings within the existing city area and to expand along the narrow outlet to the south west along the old Simancas road (Figure 12:1). To overcome the barrier of the railway line the Arco de Ladrillo bridge was constructed in the nineteenth century. This represented the only bridge over the railway until the 1960's when a second bridge was built, but this latter is limited to providing access to the new industrial estate at Argales (Figure 12:1). The only other access from the city to the south and east is provided by two level crossings, which are frequently closed and cause a great deal of traffic congestion.

There are plans to expand the city to the west of the Río Pisuerga. In the early 1950's an area of low density housing was constructed along the Avenida de Gijón, and in the late 1960's the Ministry of Housing started to develop the Huerta del Rey for a new residential estate. Despite these developments the natural tendency is for the city to expand to the south and east, and in the future more attention will have to be given to overcoming the barrier caused by the Madrid-France railway line.

The population of Valladolid has steadily grown throughout the twentieth century, with a particularly rapid increase occurring after 1960 (Table 12:4). This rapid growth has been caused in large part by the high rate of rural-urban migration occurring within the province. This has led to a changing balance of population and by 1970 the city contained more than half the total inhabitants of the province (Table 12:4).

Developments in the Infrastructure of Valladolid

The 1968 regional planning report mentioned three aspects of the infrastructure which were receiving or which required further attention - industrial estates, water supply and access roads to the city[12].

In 1964 the Ministry of Housing had begun work on the first stage of an industrial estate at Argales in the southern part of the city (Figure 12:1). This first stage consisted of 34 has. of land with access roads, etc., which

FIGURE 12:1

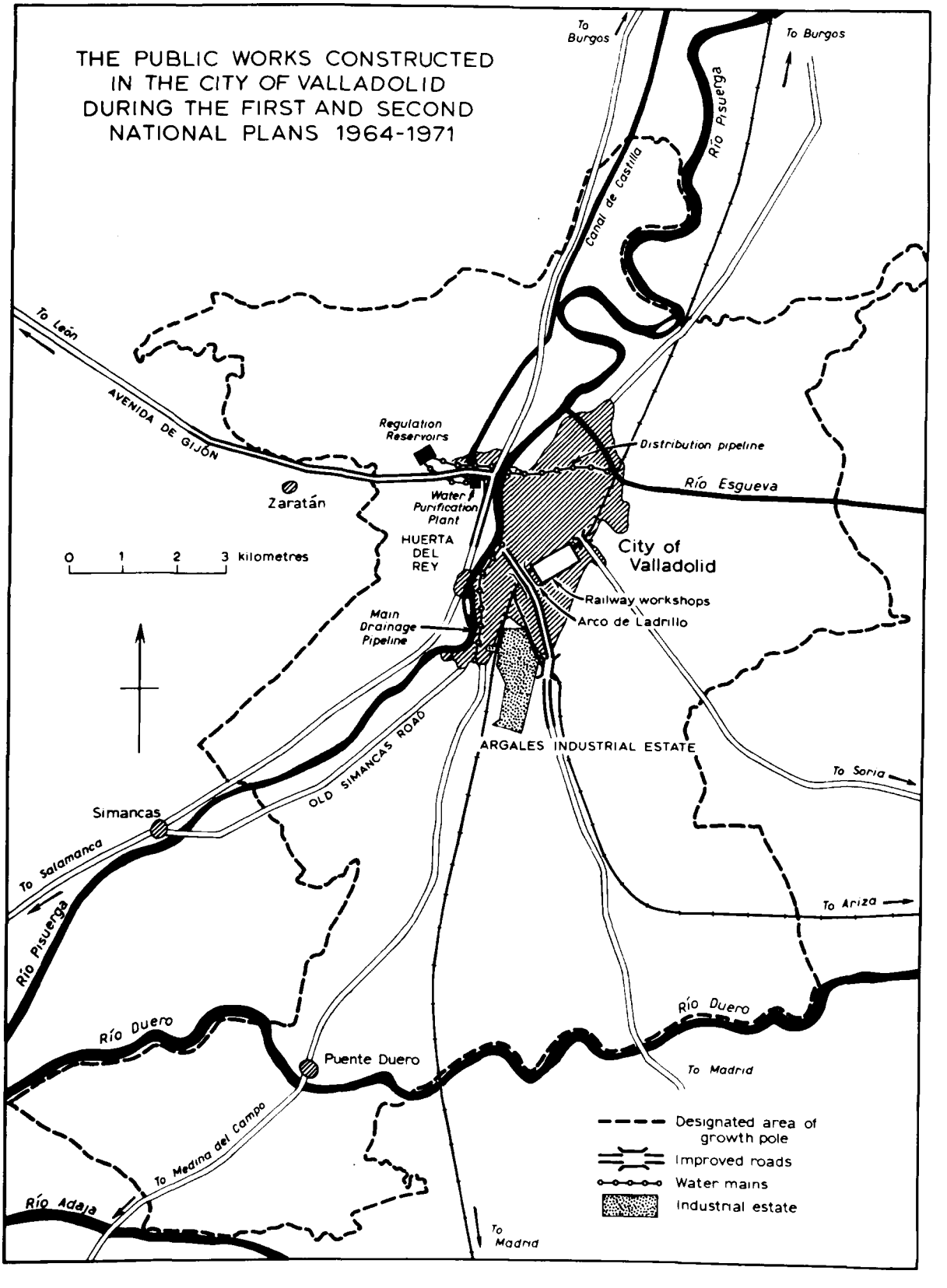
THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF VALLADOLID DURING THE FIRST AND SECOND NATIONAL PLANS 1964-1971
To Burgos
To Burgos
Río Pisuerga
Canal de Castilla
To León
AVENIDA DE GIJÓN
Regulation Reservoirs
Distribution pipeline
Río Esgueva
Zaratán
Water Purification Plant
HUERTA DEL REY
City of Valladolid
0 1 2 3 kilometres
Railway workshops
Arco de Ladrillo
Main Drainage Pipeline
ARGALES INDUSTRIAL ESTATE
OLD SIMANCAS ROAD
To Soria
Simancas
To Salamanca
Río Pisuerga
To Ariza
Río Duero
Río Duero
Puente Duero
To Madrid
To Medina del Campo
Río Adaja
To Madrid
Designated area of growth pole
Improved roads
Water mains
Industrial estate

TABLE 12:5

Public Investment in the Infrastructure of the Valladolid Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Valladolid	Totals: All growth poles	Totals: %
Preparation of Industrial Land					
Industrial estate at Argales	0	100			
Total	0	100	100	1,451	6.9
Water Supply and Drainage					
Extension of water purification plant	0	18			
Pipeline to reservoirs	0	11			
Regulation reservoirs	0	15			
Distribution pipeline	0	11			
Main drainage pipeline	0	63			
Total	0	118	118	3,625	3.3
Roads					
Improvement of main León road	0	85			
Improvement of main Madrid road	0	40			
Flyover on Madrid road	0	32			
Flyover on Soria road	0	45			
Widening of Salamanca-Burgos road	0	16			
Total	0	218	218	1,610	13.5

TABLE 12:5 cont.

		1964-1967	1968-1971	Totals: Valladolid	Totals: All growth poles	Totals: %
Other Infrastructure Works in the Growth Pole						
Industrail estate at Argales		120	38			
	Totals	120	38	158	5,248	3.01
	Totals	120	474	594	11,934	4.98

Note: all figures are given in millions of pesetas 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

Plate 12:3 The industrial estate at Argales.

cost 120 million pesetas and which was financed by the Ministry of Housing. In the period 1968-1971 the Planning Commission agreed to invest 100 million pesetas in helping to develop the second stage consisting of 50 has. of land (Table 12:5). The land within the estate has been offered at a fixed price of 250-300 pesetas per square metre, which according to one local official of the Ministry of Housing was approximately one tenth of the price of speculative building land in the area. By 1968 options on most of the 156 plots in the estate had been taken up by over 100 firms, the majority of which were old-established firms moving out of the congested city centre[13]. Several of these firms had gained benefits under the growth-pole scheme[14].

The main water supply for the city of Valladolid is the Canal de Castilla, which provides 600 litres of water per second. To satisfy the future needs of the city and new industries a further 300 litres per second is to be taken from the Canal[15]. This has involved an extension to the water purification plant, the construction of a new pipeline to take the water up to the regulation reservoirs, and an improvement to the main distribution network (figure 12:1). Apart from improvements to the water supply, a large main drain is to be constructed down the eastern bank of the Río Pisuerga.

The main aim of the road-building programme has been to improve access to the city. The main road from the west, from León, is to be improved from Zaratán to the Pisuerga bridge. Similarly the main road from Madrid into the southern part of the city is to be improved. However, more important for opening up the south-eastern side of the city is the scheme to do away with the two most restrictive level crossings on the main railway line by the construction of flyovers on the Madrid and Soria roads (Figure 12:1).

Analysis of the Firms within the Growth Pole at Valladolid

By May 1968 a total of 84 benefits had been granted to Valladolid enterprises. As in the other growth poles this total includes a number of firms in the planning stages. The number of firms in directly productive

TABLE 12:6

Firms Functioning in the Valladolid Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Intra, S.A.	chicken products
2)	Panificadora Vallisoletana, S.A.	bread
3)	Productos Maggi, S.A.	soups, potato puree
4)	Ovosec, S.A.	powder egg
5)	Cooperativa Azucarera Onésimo Redondo	sugar
6)	Castellana de Piensos, S.A.	artificial feedstuffs
7)	Uvesa	artificial feedstuffs
	Textiles and Clothing	
8)	Eusebio Alcalde y Cía, S.R.C.	clothing
9)	Industrial Confeccionista Los Hermanos, S.A.	clothing
10)	Industrial de Fibras Aplicadas, S.A.	carpets
	Wood and Furniture	
11)	Tableros de Fibras, S.A.	chipboards, softboards
	Paper and Printing	
12)	Papelera Victoria, S.A.	straw paper
13)	Papel y Carton, S.A.	corrugated cardboard
14)	Fabrisa	paper sacks
15)	Sacopel, S.A.	paper sacks
	Chemicals	
16)	Plamasa	polythene sacks
17)	Sacofiplás, S.A.	polythene sacks
	Construction, Glass and Ceramics	
18)	Napresa	agricultural sheds
19)	Iberit, S.A.	asbestos sheets and pipes

TABLE 12:6 cont.

Number*	Firms arranged by main industrial groups	Product of firms
20)	Cerámica del Duero, S.A.	bricks
21)	Tecnifer, S.L.	sheds for livestock
	Metallurgical and Engineering	
22)	Gonzalo Gonzalo Rodríguez	lamps
23)	Construcciones Especiales Valladolid, S.A.	electrical and electronic equipment
24)	Félix Lucio Díez	vehicle springs
25)	Sadfe	refrigeration equipment
26)	Fasa - Renault	car assembly
27)	Sava - Austin	van and lorry assembly
28)	Beloit y Segura, S.A.	paper making machinery
29)	Técnicas de Automación, S.A.	pistons
	Various	
30)	Prodes, S.A.	seed merchants

* These numbers are used in Fig. 12:2 to show the location of these firms.

TABLE 12:7

Investment and Employment to be Created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Food	
1)	18,379,000	84	B
2)	62,000,000	238	B
3)	166,634,000	223	B
4)	28,304,000	53	A
5)	433,270,650	82	A
6)	9,635,000	31	B
7)	74,500,000	67	B
		Textiles and Clothing	
8)	12,854,780	79	B
9)	6,440,850	73	C
10)	22,583,000	43	A
		Wood and Furniture	
11)	50,000,000	31	B
		Paper and Printing	
12)	146,000,000	132	B, B
13)	82,808,570	87	C
14)	35,000,000	31	C
15)	35,400,000	36	B
		Chemicals	
16)	6,620,590	32	B
17)	48,128,000	104	B
		Construction, Glass and Ceramics	
18)	5,582,000	34	D
19)	525,240,000	379	A, B
20)	29,162,570	30	B

TABLE 12:7 cont.

Number	Investment	Number of jobs to be created	Type of Benefit(s) received
21)	19,000,000	232	C
		Metallurgical and Engineering	
22)	16,138,700	96	B
23)	20,000,000	75	A
24)	19,295,350	47	B
25)	7,009,000	45	B
26)	595,700,340	2,203	C, C, C
27)	551,934,000	1,153	C, C, C
28)	50,639,020	211	B
29)	330,880,000	1,018	C
		Various	
30)	13,674,840	33	A

Source: Planning Commission, Relación de las empresas acogidas a los programas de desarrollo regional, Madrid (1968).

FIGURE 12:2

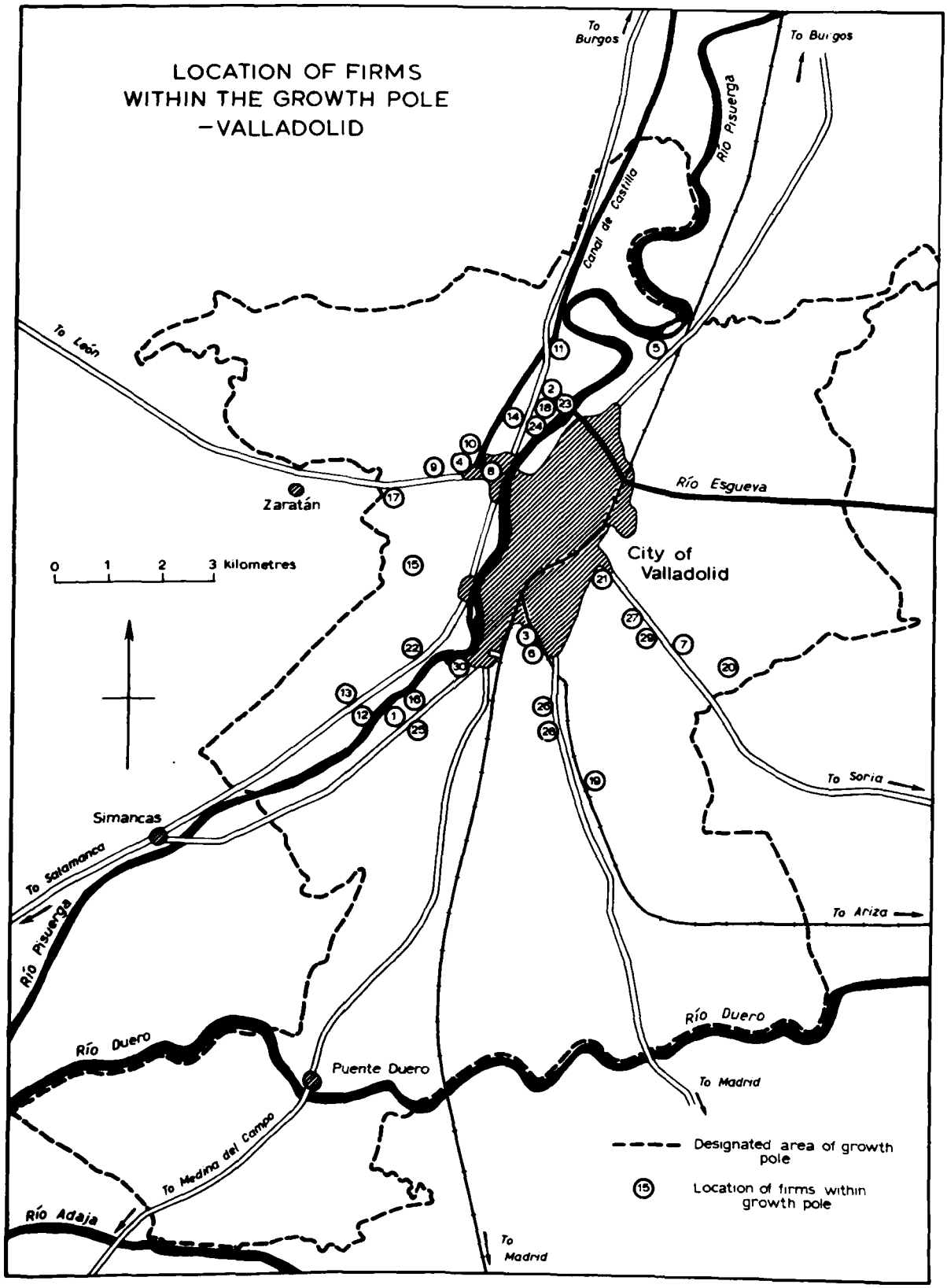
LOCATION OF FIRMS
WITHIN THE GROWTH POLE
-VALLADOLID
To Burgos
To Burgos
Río Pisuerga
Canal de Castilla
To León
Río Esgueva
Zaratán
0 1 2 3 kilometres
City of Valladolid
Simancas
To Salamanca
Río Pisuerga
To Soria
To Ariza
Río Duero
Río Duero
Puente Duero
To Madrid
To Medina del Campo
Río Adaja
To Madrid
Designated area of growth pole
Location of firms within growth pole

TABLE 12:8

Firm's Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Valladolid.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	29	1	0	0	30
Nature of Factory site	30	0	0	0	30
Water supply	27	3	0	0	30
Waste disposal	14	2	2	12	30
Telephone	23	3	2	2	30

Source: questionnaires

TABLE 12:9

Location of Services used by Growth-Pole Firms at Valladolid.

	City	Province	Region	Nation	Abroad	Within firm at Valladolid
Commercial	0	0	0	8	2	20
Technical	1	0	0	6	7	16
Advertising	2	0	0	10	0	18
Marketing	1	0	0	9	1	19
Legal	2	0	0	11	0	17
Maintenance of mechanical equipment	1	0	0	0	0	29
Maintenance of electrical equipment	1	0	0	0	0	29
Transport	23	0	0	2	0	5

Source: questionnaires

TABLE 12:10

Attitude of the Growth-Pole Firms to the Transport Facilities at Valladolid.

		Good	Indifferent	Bad	Total
Transport Services	Road	23	0	0	23
	Rail	0	0	0	0
Transport Costs	Road	23	0	0	23
	Rail	0	0	0	0

Note: information gained from the 23 firms that used Valladolid's transport facilities (Table 12:9).

Source: questionnaires

activities and in full operation by September 1968 was 38, of which 30 were interviewed. The most important sectors in terms of numbers of firms are the food and the metallurgical and engineering industries (Table 12:6). These sectors are also the most important in terms of investment and the number of jobs to be created (Table 12:7).

i) Factory Sites of the Growth-Pole Firms

Amongst the firms interviewed there was almost unanimous satisfaction both with the size and the nature of their factory sites (Table 12:8). Most firms also expressed satisfaction with the water supply although 17 had found it necessary to construct their own wells. The city waste disposal service was thought to be satisfactory but expensive, although a considerable proportion of firms were able to sell their waste (paper or metal) for scrap and therefore had no problems. The telephone service had improved in Valladolid in recent years, and apart from two companies which had not been connected, most firms were content with this service. This is in marked contrast to the experience of the other growth poles. In general the infrastructure presented no real problems or barriers to economic expansion in Valladolid.

ii) Services used by the Growth-Pole Firms

A large proportion of firms in Valladolid were self-sufficient in the services they used (Table 12:9). Those firms which formed part of larger companies relied on services provided elsewhere, mainly in Madrid and Barcelona, and a few on parent or affiliated companies abroad. Practically no services were provided within the city of Valladolid apart from transport. This is a little surprising considering the size of the city and the importance of industry within the area.

Of the 23 firms which used local transport services, all used road transport and all were satisfied with the service they received (Table 12:10). Part of this satisfactory service may be the result of Valladolid's central location and the good transport links with the rest of the country.

TABLE 12:11

Employment in the Growth-Pole Firms Interviewed in 1968: Valladolid.

Number	Male	Female	Administration	Technical	Production	Total
			Food			
1)	19	43	3	1	58	62
2)	208	22	14	5	211	230
3)	100	100	30	5	165	200
4)	8	16	3	3	18	24
5)	150	0	6	4	140	150
6)	71	9	14	12	54	80
7)	30	4	15	3	16	34
					Total	780
			Textile and Clothing			
8)	25	50	6	0	69	75
9)	2	70	2	0	70	72
10)	30	40	15	3	52	70
					Total	217
			Wood and Furniture			
11)	171	4	18	6	151	175
					Total	175
			Paper and Printing			
12)	115	5	11	2	107	120
13)	85	7	11	4	77	92
14)	20	16	3	1	32	36
15)	12	33	2	3	40	45
					Total	293
			Chemicals			
16)	14	10	3	1	20	24
17)	20	78	3	2	93	98
					Total	122

TABLE 12:11 cont.

Number	Male	Female	Administration	Technical	Production	Total
			Construction, Glass and Ceramics			
18)	81	4	7	3	75	85
19)	258	12	60	7	203	270
20)	41	1	7	2	33	42
21)	374	6	29	25	326	380
					Total	777
			Metallurgical and Engineering			
22)	86	14	5	2	93	100
23)	50	2	5	3	44	52
24)	33	1	4	1	29	34
25)	93	5	20	8	70	98
26)	4,418	150	968	90	3,510	4,568
27)	1,520	80	450	100	1,050	1,600
28)	235	15	40	20	190	250
29)	199	1	15	20	165	200
					Total	6,902
			Various			
30)	35	15	26	4	20	50
					Total	50
Totals	6,634	268	1,795	340	7,181	9,316
Percent-ages	91.3	8.7	19.3	3.6	77.1	100

Source: questionnaires

TABLE 12:12

Origin of Work Force Employed in Growth-Pole Firms Interviewed in 1968: Valladolid.

Number	Local	Province	Elsewhere
1)	61	0	1
2)	228	2	0
3)	190	4	6
4)	21	0	3
5)	146	1	3
6)	80	0	0
7)	20	0	14
8)	75	0	0
9)	72	0	0
10)	70	0	0
11)	134	38	3
12)	115	3	2
13)	83	5	4
14)	36	0	0
15)	41	4	0
16)	24	0	0
17)	98	0	0
18)	85	0	0
19)	255	13	2
20)	28	13	1
21)	361	18	1

TABLE 12:12 cont.

Number	Local	Province	Elsewhere
22)	84	16	0
23)	51	1	0
24)	32	2	0
25)	96	2	0
26)	4,214	213	141
27)	1,429	104	67
28)	222	12	16
29)	189	8	3
30)	48	0	2
Totals	8,588	459	269
Percent-ages	92.2	4.9	2.9

Source: questionnaires

iii) Employment and Labour in the Growth-Pole Firms

The 30 firms interviewed employed a total 9,316 persons in September 1968. Of this total a high proportion (91.3%) were male, a consequence of the large engineering sector in Valladolid (Table 12:11). Female employment was important in the food and clothing sectors and more surprisingly in the chemical sector. However, the two chemical firms were engaged in the production of polythene bags and sheets, which provides a large amount of work suitable for female labour (Table 12:11).

Out of the total labour force 77.1% was unqualified and engaged in production, and only 3.6% were qualified technicians. This latter may appear a very low proportion considering the advanced nature of much of Valladolid's industry but in the case of the two vehicle and a number of other firms, they were reliant on research and development work done elsewhere.

The majority of firms interviewed emphasised the difficulty and sometimes near impossibility of obtaining skilled labour, even in a city such as Valladolid with its outstanding reputation for education and its institutes of advanced learning. Most firms could get all the unskilled labour they required, but almost all specialists were trained within the factories. In a number of firms, especially those with affiliations abroad, key workers were sent to be trained in the parent or affiliated company. As in the other growth poles, most of the labour force was obtained from within the city with very few workers coming from the surrounding province (Table 12:12).

In general most firms were content with the labour situation in Valladolid, both in terms of the availability and the quality of their workforce.

Conclusions

Valladolid, together with Saragossa, forms the richest of the seven growth poles. The province includes some of the richest agricultural areas of the northern Meseta and the city forms the administrative and commercial capital of this region. However, the biggest factor in Valladolid's growth

has been the expansion of industry, particularly in the period since 1939. An important feature of this growth has been the existence of a number of propulsive industries which have given rise to new industries, even when the original propulsive industry has declined in importance. The most outstanding examples of such propulsive industries are the Renfe workshops, which have encouraged the engineering and vehicle industries, and flour milling, which has given rise to the baking and confectionery industries.

Few of the firms interviewed had encountered any major difficulties through lack of services or facilities. The one problem which had arisen for a number of firms was the congested nature of the city. The constricted area of the city centre had led to high land prices and severe traffic congestion, and several firms complained that as a result many basic costs in Valladolid were as high as those in Madrid or Barcelona.

In general Valladolid appears to contain very favourable conditions for industrial development, and the prospects for continued growth appear to be good.

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12. Planning Commission, Desarrollo Regional, Madrid (1968).

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14. See the various pamphlets on the Argales industrial estate published by the Ministry of Housing.

15. Planning Commission (1968) op. cit. p.221.

Chapter 13

THE GROWTH POLE AT VIGO

The Economy of Pontevedra

Vigo, like the city of Corunna, is situated in the rich coastal belt of Galicia, which contains fertile agricultural land, very rich fishing grounds and the bulk of the province's industrial capacity. The interior parts of Pontevedra province contain few natural resources and agriculture is often limited by poor soils and steep terrain. This poor hinterland, which contains some of the most backward areas of Spain, helps to explain the province's low overall level of development. In 1955 Pontevedra was the 29th wealthiest province in Spain, but despite improvements during the 1950's and 1960's, and despite the influence of the growth pole, by 1971 the province still only held the same rank position (Table 13:2).

i) Agriculture, Forestry and Fishing

The importance of agriculture and forestry can be seen in Table 13:1 which shows that in 1964 this sector contributed almost one quarter of the province's gross national product. Cultivated crops constituted 36% of total agricultural production, the most important crops grown being maize, potatoes, rye, fruit and vegetables[1]. As in Corunna province, most of these crops are consumed on the farms and never enter the market economy[2]. In Pontevedra the main cash crop is the vine, which can be grown in most parts of the province. Since 1953 when the first wine co-operatives were established in the area there has been a marked improvement in the quality of the wines and a consequent increase in profitability[3]. Now many Pontevedran wines are being marketed under the 'El Ribeiro' label and are being sold in the national and international market.

Pontevedra is one of the main cattle and pig rearing provinces of Spain, and in 1964 livestock contributed 55% of total agricultural production[4]. Despite its importance the livestock economy remains underdeveloped and is capable of considerable improvement. In particular there is a need for a

TABLE 13:1

Components of Economic Production in 1964: Pontevedra in Comparison with the Spanish Average.

		Pontevedra % G.N.P.	Spain % G.N.P.
1)	Agriculture and forestry	24.6	18.5
2)	Fishing	8.6	1.0
3)	Mining	0.2	1.5
4)	Manufacturing	29.6	35.2
5)	Commerce	9.8	11.0
6)	Transport	5.6	6.1
7)	Banking	2.5	4.0
8)	Public Administration	5.0	5.5
9)	Hotels, accommodation, etc.	3.9	5.9
10)	Property, rents, etc.	2.5	3.1
11)	Other professional services	7.7	8.2
		100.0%	100.0%

Source: Banco de Bilbao, 1967.

TABLE 13:2

Ranking of Pontevedra Province in Terms of per capita National Income.

Year		Rank Position
1955	-	29
1957	-	23
1960	-	25
1962	-	32
1964	-	26
1967	-	26
1969	-	27
1971	-	29

Source: Banco de Bilbao, 1973.

TABLE 13:3

Size of Farm Holdings in Pontevedra Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	54.7	6.9
1 - 5 ha.	39.0	26.7
5 - 50 ha.	6.0	16.7
50 - 200 ha.	0.1	1.1
200 - 1,000 ha.	0.1	11.8
More than 1,000 ha.	0.1	36.8
	100.0%	100.0%

Source: Censo Agrario, 1962.

greater use of forage crops and feedstuffs, better sanitary conditions to combat high rates of disease and mortality, and a better selection of animal breeds[5]. At present most farmers stock the 'Celta' pig and the 'rubia gallega' cow, both of which are indigenous and well suited to local conditions, but which have low meat and milk yields.

The most important factor restricting production of both crops and livestock is the minute size of many farms. The extent of minifundismo is indicated in Table 13:3 which shows that over half of the farms are less than 1 hectare in extent. The small size of these farms limits the amount of mechanization, irrigation, etc., which can be introduced into the province, whilst the low levels of profitability limit the introduction of artificial fertilizers, new seeds, and new breeding animals[6].

Over 70% of Pontevedra province is classified as forest; however, half of this area is covered in scrub and matorral and the wooded area covers only 33.7% of the province[7]. Although forestry covers a large area of land, because of neglect and backward practices, it only contributes 9% to agricultural production[8]. Little care is taken of the trees; fertilizers and pesticides are rarely used, and most of the area is forested through natural regeneration rather than planting. It has been calculated that with simple improvements timber yields could be trebled[9]. However, the main drawback, as with the rest of the agricultural sector, is the preponderance of properties which are too small to be economically viable[10].

Fishing plays a very important part in the economy of Pontevedra, not only in terms of the value of production (Table 13:1), but also because it has given rise to important fish processing and shipbuilding industries. Vigo is Spain's leading fishing port. This is due in part to Vigo's magnificent natural harbour (see below), and in part to Vigo's location close to Spain's richest fishing grounds, both for shellfish and deep water fish[11]. Since the beginning of this century boats from Vigo have visited the fishing grounds off the West African coast, and since 1939 the larger factory ships (over 1,000 tons) have fished off Greenland, the Grand Banks and other parts of the western Atlantic[12].

Plate 13:1 The Citroën factory in the Zona Franca at Vigo.

ii) Industry

The most important manufacturing industries in Pontevedra province are based on local raw materials. The fish conserving industry has already been mentioned and in 1965 employed 6,386 persons within the province, (31.2% of the national total) most of them in Vigo city[13]. This sector is dominated by the Mar, S.A. group of firms which own the largest fishing fleet in Spain, a large fish preserving factory, a net and rope works and various shops and restaurants. This group of companies was established during the Civil War to supply the Nationalists with fish foods. The companies have prospered ever since[14].

Shipbuilding in Pontevedra is limited mainly to the construction of fishing vessels. With the modernisation and expansion of the fishing fleet in recent years this sector has prospered, particularly in the construction of factory ships.

The ceramics industry, based on local kaolins, is dominated by the Alvarez group of companies. In 1937 this firm contained the only ovens for glassware in Nationalist Spain. Production of glass rapidly expanded during the Civil War, and since the end of hostilities the firm has progressively diversified into porcelain, earthenware, tableware, hardened glass and sanitary ware[15].

The establishment of a Zona Franca has added a new element to the industrial development of Vigo. This is the third Zona Franca on mainland Spain (the other two are in Barcelona and Cádiz) and has both a commercial and an industrial function. The former consists of a number of warehouses within the port where goods may be stored and re-exported without payment of duty. The industrial aspect permits firms within the Zona Franca to import machinery and raw materials without payment of duty in respect of those goods destined for export[16]. After its creation in 1947 little was achieved until 1958, when the Citroën Hispania, S.A. company built a vehicle factory on the Zona Franca industrial estate (Figure 13:1). The Citroën factory has begun to stimulate the local engineering sector in Vigo, with several local firms supplying components to the company. As yet this forms only a small

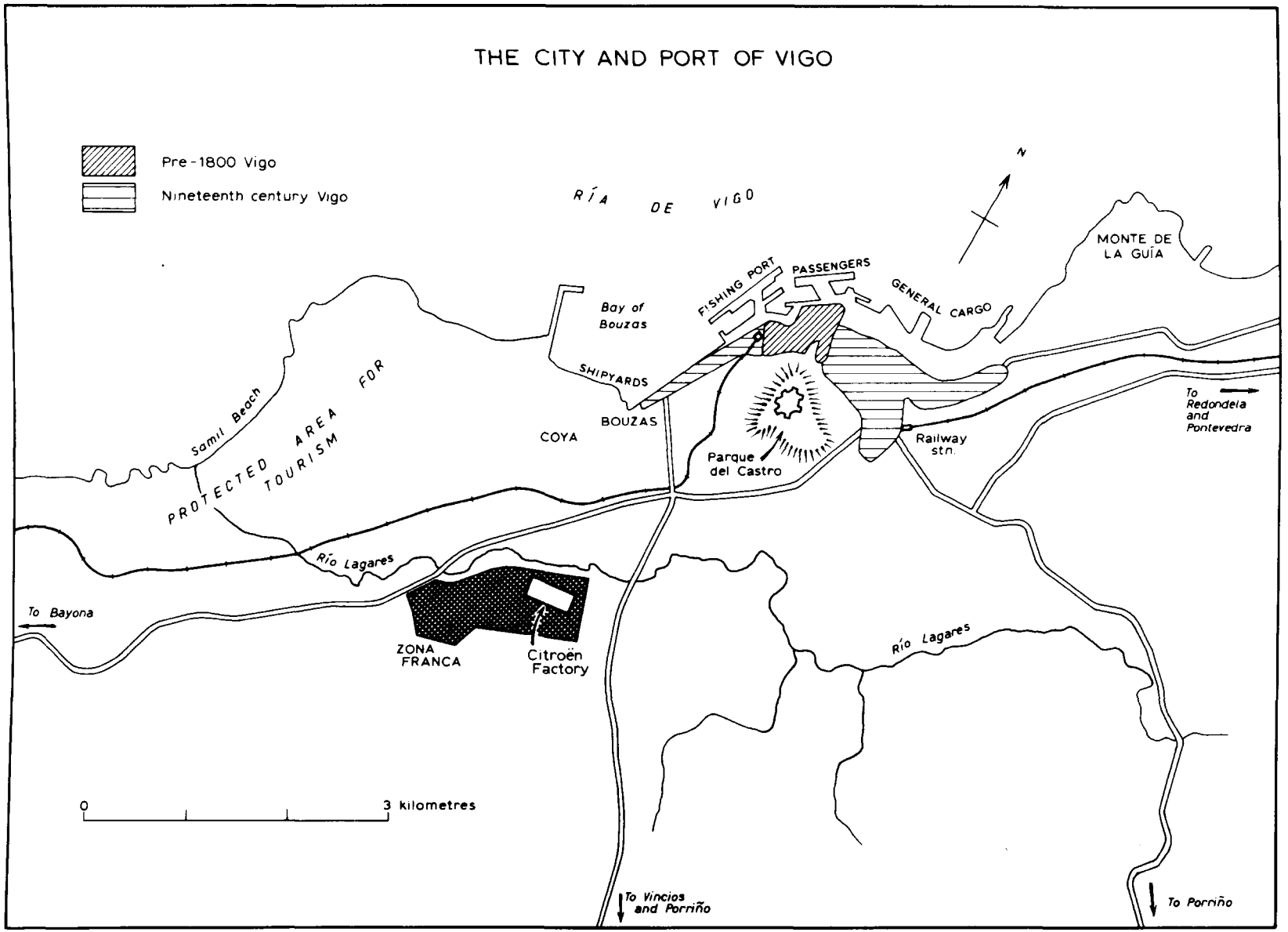

THE CITY AND PORT OF VIGO
Pre-1800 Vigo
Nineteenth century Vigo
RÍA DE VIGO
N
MONTE DE LA GUÍA
FISHING PORT
PASSENGERS
GENERAL CARGO
Bay of Bouzas
SHIPYARDS
BOUZAS
COYA
Samil Beach
PROTECTED AREA FOR TOURISM
Parque del Castro
Railway stn.
To Redondela and Pontevedra
Río Lagares
To Bayona
ZONA FRANCA
Citroën Factory
Río Lagares
0
3 kilometres
To Vincios and Porriño
To Porriño

FIGURE 13:1

Plate 13:2 The site of Vigo between the Parque del Castro and the Bay of Bouzas.

proportion of Citroën's total inputs.

iii) Services

The service sector in Pontevedra tends to be underdeveloped in comparison with the national average (Table 13:1). The main possibility for expansion lies in the tourist sector. Until recently Pontevedra has not been an important tourist centre[17] and has been used mainly by Spanish nationals. The one development of any note has been the luxury hotel complex on the island of La Toja. However, local authorities are aware of the possibilities of tourism and in Vigo the area of the growth pole around and behind the Samil beach has been declared a protected area for tourism (Figure 13.1).

The City of Vigo

The origins of Vigo can be traced back at least to Roman times when it formed the port for southern Galicia[18]. Following the reconquest Vigo remained a small and fairly unimportant fishing village dominated by the nearby town and port of Pontevedra which also became the administrative capital of the area. Vigo did not begin to expand until the eighteenth century when the port of Pontevedra began to silt up, simultaneously with the need of increasingly larger ships for deeper anchorages. The ending of the Andalusian monopoly of trade with the Americas further increased the traffic in Vigo port. The city and port of Vigo have been described as....."the great Galician creation of the nineteenth century"[19]. The city was built out from the old fishing village, the main street pattern was laid out and parks and open places established. By the end of the nineteenth century Vigo, with a population of 23,000 was approximately the same size as Pontevedra. In the twentieth century Vigo has continued to flourish and in 1970 the city had a population of almost 200,000 whereas Pontevedra was only a quarter of this size.

The site of the original town is on the ría coast, protected on the inland side by a hill 150 metres high upon which various fortresses have been built (Figure 13:1). The nineteenth century town spread out from this centre, mainly to the east along the shores of the ría to avoid the steeper

TABLE 13:4

The Population of Vigo City and Pontevedra Province 1900 - 1970.

	City	Province
1900	23,259	457,262
1910	41,213	495,356
1920	53,100	533,419
1930	65,012	568,011
1940	85,272	641,763
1950	137,873	671,609
1960	144,914	680,229
1970	197,144	750,701

Source: Censo de la Población, 1970.

Plate 13:3 The new housing estate in the Coya district of Vigo.

slopes of the inland hills. During the twentieth century much of the city's development has occurred in the countryside outside the core area. This has been an unplanned development and consists mainly of single dwellings on isolated plots. Greater Vigo now consists of thousands of such houses, a recent estimate stating that over half the city's population live in such areas[20]. Many of these houses lack proper water supplies, drainage, access roads, etc. To help meet this situation the Ministry of Housing created a housing estate in the Coya district in 1961 (Figure 13:1). This estate, when complete, will consist of 8,934 dwellings in an area of 69 has. It is hoped to add a second stage to this estate consisting of 100 has. and 10,000 dwellings[21].

In general more attention will have to be given to town planning in Vigo, not only to control housing developments but also to ensure that a full range of services exists within the city. For example, in 1967 there were no properly designed car parks or children's playgrounds within the city[22].

The Port of Vigo

The Ría de Vigo consists of a deep inlet of the sea extending some 25 km. inland, with most of the ría more than 20 metres deep. The ría is protected from Atlantic storms by a natural breakwater, the Cíes islands (Figure 13:2). The whole ría forms a natural harbour and the calm deep waters allow ships to dock at Vigo at all times without requiring tugs or other assistance[23]. Vigo's port, like that of Corunna, is situated very close to the main shipping lanes between northern Europe and the Mediterranean and south Atlantic.

The construction of the modern port began in 1910[24] and now consists of three main working areas, for general merchandise, passenger traffic and fish (Figure 13:1). All three port areas have depths of water of at least nine metres at low water, and in the case of the passenger port twelve metres. All three areas have modern dockside facilities and cargo handling equipment.

Despite these many advantages both in terms of situation and facilities, Vigo's trade began to decline in the early 1960's, and in comparison with

Plate 13:4 The fishing harbour and ría at Vigo.

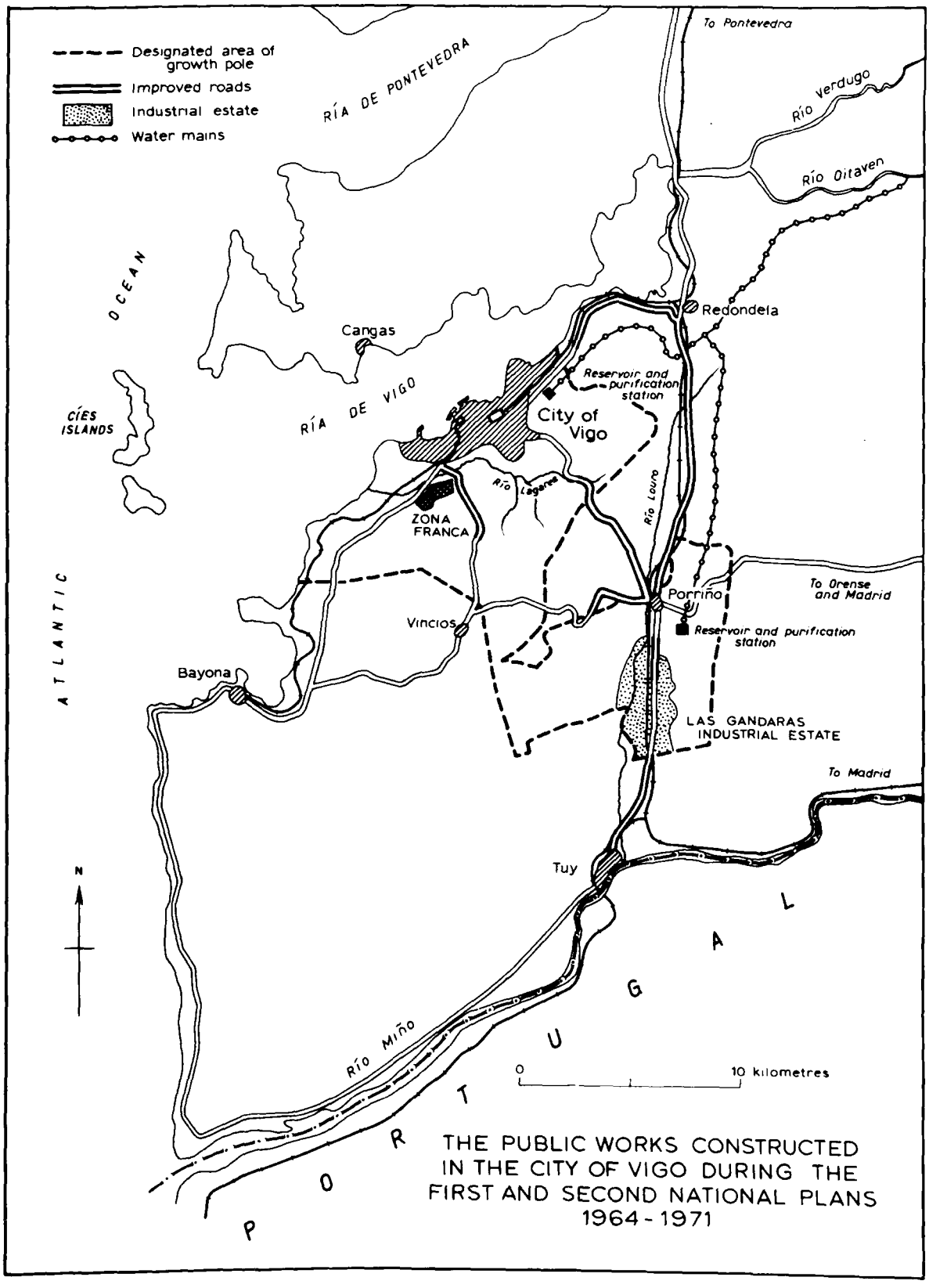
TABLE 13:5

The Port of Vigo: Total Traffic Handled in 1967.

		Tm.	%
1)	Oil and petroleum products	372,236	46.7
2)	Chemicals	6,934	0.9
3)	Minerals	203,377	25.5
4)	General merchandise	214,069	46.9
	Totals	796,616	100.0%

Source: Ministerio de Obras Publicas,
Memoria anual del puerto de Vigo, 1967,
Vigo (1968) p. 36

FIGURE 13:2



THE PUBLIC WORKS CONSTRUCTED IN THE CITY OF VIGO DURING THE FIRST AND SECOND NATIONAL PLANS 1964 - 1971

TABLE 13:6

Public Investment in the Infrastructure of the Vigo Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Vigo	Totals: All growth poles	Totals: %
Preparation of Industrial Land					
Industrial estate at Porriño	67	250			
Total	67	250	317	1,451	21.8
Water Supply and Drainage					
Extension of water supply to Vigo	32	79			
Pipeline to Porriño	0	34			
Water purification plant at Vigo	0	39			
Water purification plant at Porriño	0	39			
Water collection point on río Lagares	0	24			
Total	32	215	247	3,625	6.8
Roads					
Improvement of Porriño-Tuy road	1	17			
Improvement of Porriño-Vigo road	0	40			
Improvement of Porriño-Redondela road	0	70			
Improvement of Vigo-Vincios road	0	15			
Improvement of Porriño-Vincios road	0	7			

TABLE 13:6 cont.

		1964-1967	1968-1971	Totals: Vigo	Totals: All growth poles	Totals: %
Improve steep gradients		0	7			
Improvement of Redondela-Vigo road		0	24			
	Total	1	180	181	1,610	11.2
Other Infrastructure Works in the Growth Pole						
Railway branch line at Lagares		0	150			
	Total	0	150	150	5,248	2.9
	Totals	100	795	895	11,934	7.5

Note: all figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

other Spanish ports has gone into a marked decline. This has been ascribed to the lack of economic development occurring within Vigo's hinterland[25].

Vigo's port traffic in 1967 is shown in Table 13:5. In addition 152,396 Tm. of fish were landed, making Vigo Spain's leading fishing port[26].

Developments in the Infrastructure of Vigo

The 1968 planning report mentioned three aspects of the infrastructure that required attention; industrial estates, water supply and improvements to the communication links between Vigo and Porriño[27].

Prior to the establishment of the growth-pole scheme in 1964 the amount of land suitable for industrial development was limited to an area of land around the Bouzas bay which contained no proper services or facilities, and the Zona Franca. The Zona Franca contains a fully organised industrial estate of approximately 1,000,000 square metres with all basic facilities provided, but is of course restricted to those firms included in the Zona Franca scheme.

In order to provide better factory sites an industrial estate of approximately 500 has. has been prepared at Las Gandaras, to the south of Porriño (Figure 13:2). This estate is situated well away from the congested area around the city of Vigo and is on flat land in the valley of the Río Louro (Figure 13:2). From Porriño there are main roads leading north to Pontevedra and the rest of Galicia, east to Orense and the rest of Spain, and south to Tuy and Portugal. Within the Las Gandaras estate the Ministry of Housing, at the request of the Planning Commission, has prepared 200 has. of land with access roads, electricity, etc., and is selling the land at 160 pesetas per square metre. The other 300 has. are mainly in the hands of the Porriño municipal authority and are being sold off in an unprepared state at 30 pesetas per square metre[28]. Apart from industrial land, 350 has. have been reserved for residential developments, of which the first 30 has. are already in process of construction[29].

In 1964 the water supply was only just sufficient to meet the needs of

TABLE 13:7

Firms Functioning in the Vigo Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Procsa	pre-cooked foods
2)	Frigorificos del Berbés	refrigeration
3)	Auxiliar Conserva, S.A.	ice
4)	M.A.R., S.A. **	refrigeration
5)	Unión Terit. Cooperativas del Campo***	chicken products
	Textiles and Clothing	
6)	Cividanes, S.A.	suitings
	Paper and Printing	
7)	La Artística, S.A.	Lithographs for cans
8)	Cartonajes Vigueses, S.A.	cardboard boxes
	Chemicals	
9)	Cooper Zeltia, S.A.	insecticides
10)	Pedramol, S.A.	abrasive powders
	Construction, Glass and Ceramics	
11)	Unión Cristalera, S.A.	sheet and plate glass
12)	Rubiera Stalton Galicia, S.A.	prefabricated ceramic blocks
13)	Prefabricados Abrain, S.A.	concrete blocks
14)	M. Riego Porriño, S.A.	floor tiles
15)	A. Fernández Vázquez	floor tiles
16)	Moises Alvarez, S.A.	glass and earthenware

TABLE 13:7 cont.

Number*	Firms arranged by main industrial groups	Product of firms
	Metallurgical and Engineering	
17)	Citroën Hispania, S.A.	motor vehicles
18)	Inoxidables Fegosam, S.A.	stainless steel products
19)	Caravanas Turísticas, S.A.	trailers
	Various	
20)	Fenosa	electricity production

* These numbers are used in Fig. 13:3 to show the location of these firms.

** The firm M.A.R., S.A. also obtained benefits within the textile and clothing sector. As this firm's main products occur within the food sector the firm has been categorised within that industry.

*** The firm Unión Terit. Cooperativas del Campo also obtained benefits within the chemical sector. As this firm's main products occur within the food sector the firm has been categorised within that industry.

TABLE 13:8

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Food	
1)	33,602,000	53	B
2)	55,000,000	30	B
3)	52,055,040	34	B
4)	317,305,330	280	A, B, B
5)	36,321,000	534	A, A, A
		Textiles	
6)	7,803,110	169	B
		Paper and Printing	
7)	12,877,000	30	A
8)	115,000,000	50	C
		Chemicals	
9)	60,121,000	66	B
10)	9,684,020	43	C
		Construction, Glass and Ceramics	
11)	11,000,000	91	C
12)	67,066,820	85	B, B
13)	5,600,000	33	C
14)	29,489,700	64	B, B
15)	21,000,000	51	B
16)	1,561,393,940	3,298	4 x A, 6 x B

TABLE 13:8 cont

Number	Investment	Number of jobs to be created	Type of benefit(s) received
		Metallurgical and Engineering	
17)	607,000,000	2,997	C
18)	10,000,000	58	B
19)	5,000,000	104	C
		Various	
20)	179,637,250	31	A

Note: the large number of benefits (10) that are attributed to firm 16 (Moises Alvarez, S.A.) in fact is the sum of the benefits gained by all the firms within the Alvarez group of companies.

Source: Planning Commission, Relación de las empresas acogidas a los programas de desarrollo regional, Madrid (1968).

the city, and was inadequate to deal with new industrial developments or the continued increase in population of the city of Vigo. To cope with future demands two new sources of supply are being tapped (Figure 13:2). One, on the Río Lagares, will feed straight into the Vigo municipal water supply. The other and much larger scheme is to take 1,750 litres per second from the Río Oitaven and to distribute the water both to Vigo and to Porriño (Figure 13:2).

The aim of the road building programme has been to improve the state of the roads in the triangle Vigo-Porriño-Redondela, - and to improve access to northern Portugal along the Porriño - Tuy road (Figure 13:2). These improvements should enable normal industrial traffic to move with ease between the main industrial centres of the area.

The other communications project, although not included in the main growth-pole budget (Table 13:6), is the construction of a railway branch line to the Río Lagares area which is designed to improve the links between the port of Vigo and the industrial area near the Zona Franca (Figure 13:2).

Analysis of the Firms within the Growth Pole at Vigo

By May 1968 a total of 77 benefits had been granted to Vigo enterprises[30]. Out of this total the number of directly productive firms in full operation in July 1968 was 23, of which 20 were interviewed. Details of these firms are given in Tables 13:7 and 13:8. The most important industrial sector, both in terms of total investment and number of jobs to be created, is the construction, glass and ceramics sector. Also important are the food and engineering sectors.

i) Factory Sites of the Growth-Pole Firms

Of the 20 firms interviewed 14 expressed complete satisfaction with the size of their factory sites and this was especially true for those firms at Porriño (Table 13:9). The three firms which had insufficient room on their present sites for any future extensions were all located in the dockside area of town. Similarly most firms were satisfied with the nature of their sites (Table 13:9), although three firms complained of having locations within congested areas of the city and the firm Citroën stated that they had

FIGURE 13:3

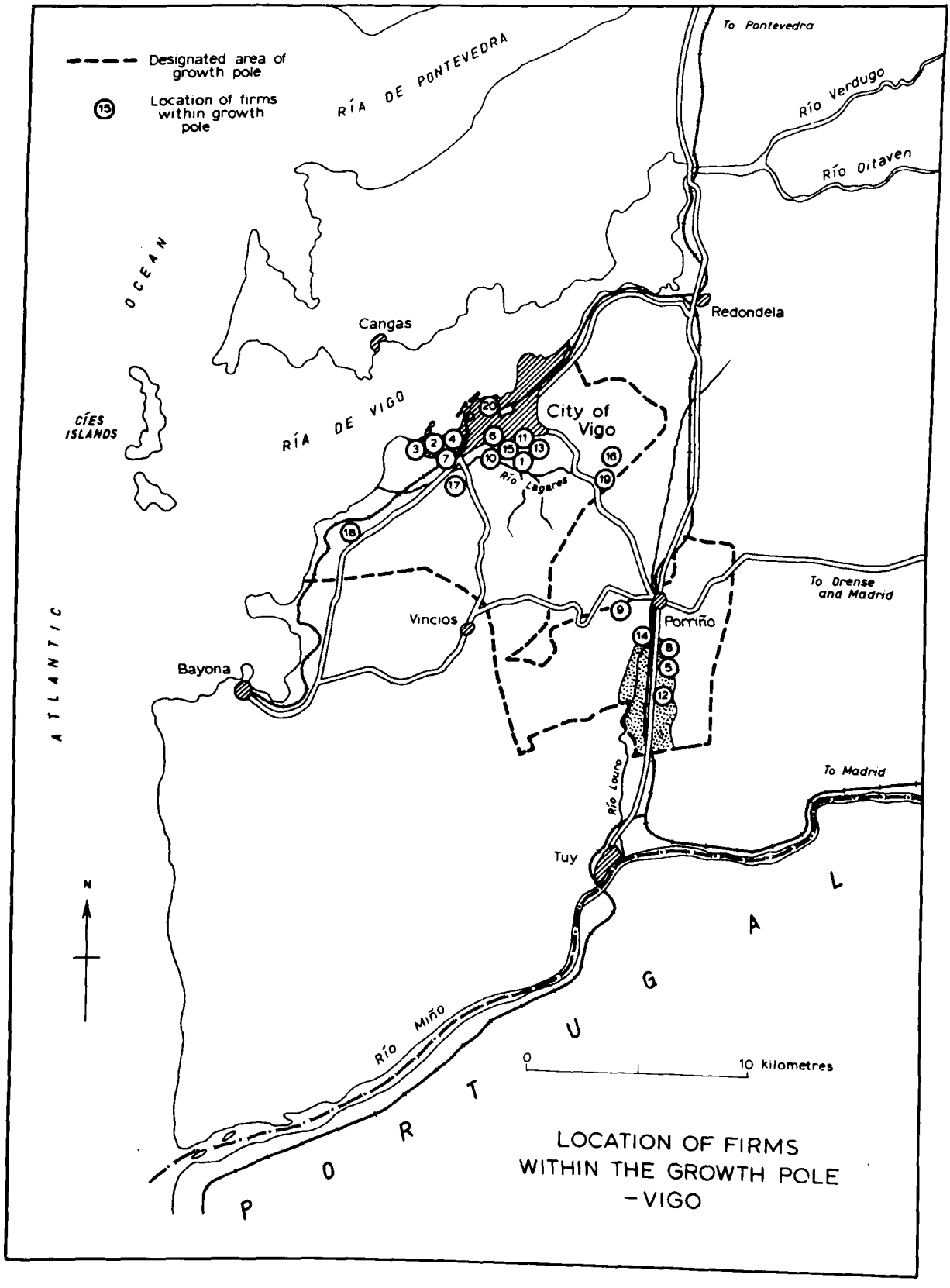

Designated area of growth pole
Location of firms within growth pole
RÍA DE PONTEVEDRA
To Pontevedra
Río Verdugo
Río Oitaven
OCEAN
Cangas
Redondela
CÍES ISLANDS
RÍA DE VIGO
City of Vigo
Río Lagares
To Orense and Madrid
Vincios
Porriño
Bayona
ATLANTIC
Río Louro
To Madrid
Tuy
N
Río Miño
PORTUGAL
0
10 kilometres
LOCATION OF FIRMS WITHIN THE GROWTH POLE - VIGO

TABLE 13:9

Firms Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Vigo.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	14	1	3	2	20
Nature of factory site	14	1	3	2	20
Water supply	9	1	8	2	20
Waste disposal	3	1	1	15	20
Telephone	10	2	8	0	20

Note: for the electricity supply firm Fenosa and one other firm in temporary accommodation which had not yet been able to purchase a factory site, several of these questions were not applicable.

Source: questionnaires

TABLE 13:10

Location of Services used by Growth-Pole Firms at Vigo.

	City	Province	Region	Nation	Abroad	Within firms at Vigo.
Commercial	7	1	1	2	1	8
Technical	6	1	1	1	2	9
Advertising	11	1	1	3	-	4
Marketing	8	1	1	3	-	7
Legal	10	1	1	1	-	7
Maintenance of mechanical equipment	1	-	1	1	-	17
Maintenance of electrical equipment	1	-	1	1	-	17
Transport	12	-	1	1	-	6

Source: questionnaires

TABLE 13:11

Attitude of the Growth-Pole Firms to the Transport Facilities at Vigo.

		Good	Indifferent	Bad	Total
Transport Services	Road	8	1	3	12
	Rail	-	1	-	1
Transport Costs	Road	10	2	-	12
	Rail	1	-	-	1

Note: information gained from the 12 firms that used Vigo's transport facilities (Table 13:10). One firm used more than one facility.

Source: questionnaires

found it necessary to put in many piles to support the buildings on their site close to the Río Lagares.

For a considerable proportion of firms water supply was a problem. Half the firms interviewed, including all those at Porriño had no official water supply, and a total of 15 firms had found it necessary to construct their own wells. Several of the food firms also mentioned the difficulty of obtaining water of sufficient purity for their needs. All these problems should disappear when the new water supply scheme is completed.

Most of the firms interviewed had no difficulties with waste disposal, they either generated no waste or were able to sell all their waste products. A more severe problem for those firms located outside Vigo was the state of the telephone service. Conditions were so bad at Porriño that a manager of one firm went into Vigo everyday to do the firm's telephoning.

ii) Services used by the Growth-Pole Firms

A significant proportion of the firms interviewed used the professional services supplied by the city of Vigo. These were mainly the smaller firms indigenous to the area. Most of the larger firms preferred to supply their own services within the company at Vigo. Very few firms received professional assistance from outside Vigo, either from Spain or abroad (Table 13:10).

Of the 12 firms who used Vigo's transport facilities those who traded mainly in Galicia were content with the facilities, both in terms of service and cost. Those firms trading with the rest of Spain were less satisfied, particularly with the service (Table 13:11). One firm stated that the average time taken by a lorry from Barcelona was eight days, a situation which caused them considerable delays and difficulties.

iii) Employment and Labour in the Growth-Pole Firms

In July 1968 the 20 firms interviewed employed a total of 8,994 persons, of which 74% were male (Table 13:12). Female employment was important in the food sector, especially in the frozen fish firm Mar, S.A., and in the textile firm Cividanes, S.A.

TABLE 13:12

Employment in the Growth-Pole Firms Interviewed in 1968 - Vigo.

Firms	Male	Female	Administrative	Technical	Production	Total
			Food			
1)	35	30	18	1	46	65
2)	30	-	8	1	21	30
3)	57	3	11	3	46	60
4)	200	1,200	200	100	1,100	1,400
5)	12	19	2	3	26	31
					Total	1,586
			Textiles and Clothing			
6)	25	75	3	1	96	100
					Total	100
			Paper and Printing			
7)	200	100	25	6	269	300
8)	43	7	15	-	35	50
					Total	350
			Chemicals			
9)	106	43	39	13	97	149
10)	15	15	5	1	24	30
					Total	179
			Construction, Glass and Ceramics			
11)	92	3	20	-	75	95
12)	94	1	10	-	85	95
13)	29	-	2	1	26	29
14)	75	-	3	1	71	75
15)	50	-	2	1	47	50
16)	1,800	700	300	200	2,000	2,500
					Total	2,844

TABLE 13:12 cont.

Firms	Male	Female	Administrative	Technical	Production	Total
			Metallurgical and Engineering			
17)	3,500	100	600	400	2,600	3,600
18)	25	5	5	1	24	30
19)	24	1	2	1	22	25
					Total	3,655
			Various			
20)	260	20	34	93	153	280
					Total	280
Totals	6,672	2,322	1,304	827	6,863	8,994
Percent-ages	74%	26%	14%	9%	77%	100%

Source: questionnaires

TABLE 13:13

Origin of Work Force Employed in Growth-Pole Firms Interviewed in 1968: Vigo.

Firms	Local	Province	Elsewhere
1)	58	4	3
2)	28	2	-
3)	48	8	4
4)	1,050	300	50
5)	28	3	-
6)	95	4	1
7)	198	2	-
8)	45	4	1
9)	98	22	29
10)	28	2	-
11)	91	4	-
12)	89	5	1
13)	29	-	-
14)	53	20	2
15)	45	3	2
16)	2,150	200	150
17)	3,132	48	420
18)	30	-	-
19)	25	-	-
20)	130	150	-
Totals	7,450	781	663
Percentages	84%	9%	7%

Source: questionnaires

Administration and technical jobs together employed 23% of the labour force, a proportion similar to that occurring in other growth poles. Most of the employment was taken up by people from the city and municipio of Vigo (Table 13:13). Only the four largest firms, Citroën; Alvarez, S.A; Mar, S.A; and Cooper Zeltia, S.A. had found it necessary to import any significant number of employees. This is a reflection on the generally lower levels of training and sophistication required by the smaller firms in Vigo.

Almost all the skilled workmen had been trained within the factories, there being no pool of skilled labour which the growth-pole firms could tap. Despite this and other difficulties most firms appeared to be well satisfied with the labour situation in Vigo.

Conclusions

The province of Pontevedra contains very rich resources in agriculture, fishing and forestry which could provide the basis for a high rate of economic growth. Despite these advantages Pontevedra is one of the poorer provinces in Spain and Vigo one of the less successful growth poles.

The lack of success at Vigo, as at Corunna, is largely due to the nature of Galician society and economy (Chapter 10). Agriculture, fishing and forestry are still largely in the hands of small proprietors who are orientated towards a self-sufficient rather than a market economy. Probably the greatest possibilities for development lie in the agriculture-based industries, yet the low yields and the highly variable quality of the local crops and animals severely limit the amount of commercial development that can take place[31].

Lack of adequate infrastructure has hindered industrial progress in the growth pole. The poor telephone service has restricted the business activities of a number of firms. For other firms the difficulty of obtaining building land has delayed production by two or more years, and at least one firm has been forced to cancel an important investment programme because of delays. This lack of infrastructure was exacerbated by an antipathy between the city administration (Ayuntamiento) and the local

growth-pole authorities, which meant that certain projects were not being properly co-ordinated[32]. The completion of the industrial estate at Porriño should overcome many of these problems.

The main industrial developments which have occurred within the growth-pole have been due to the expansion of four of the largest established firms in Vigo: Citroën; Mar, S.A., Alvarez and Cooper-Zeltia, S.A. The industrial prosperity of Vigo would appear largely to depend, as it did before the growth pole, on the fortune of these four firms.

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Chapter 14

THE GROWTH POLE AT SARAGOSSA

The Economy of Saragossa

The city and province of Saragossa lie in the centre and have tended to dominate the natural region formed by the central depression of the Ebro valley. This region corresponds in large part with the medieval kingdom of Aragón. Aragón contains very few resources upon which to base a modern economy. There is very little mining activity within the region, which is reflected in Saragossa's low income from this sector (Table 14:1). Agriculture is limited by a harsh climate which has imposed semi-desert conditions over much of Aragón, and until the construction of hydo-electric power stations, mainly in the period after 1939, there were few energy resources within the region. Despite these limitations the economy of Saragossa has flourished. In 1955 Saragossa was the 10th wealthiest province in Spain (Table 14:2) and, with the province of Valladolid, forms the most prosperous of the seven growth poles.

One reason for this prosperity is Saragossa's central location. Apart from being the main city of the Ebro valley Saragossa also lies midway along the line of the Pyrenees and dominates the mountain passes and much of the traffic with France. Saragossa has benefitted also from lying at the centre of the quadrilateral formed by Spain's four main industrial cities; Madrid, Barcelona, Bilbao and Valencia. As a consequence Saragossa lies on many of the main national and international transport routes and the city enjoys close contacts with the major economic areas of the nation.

In the period since 1955 Saragossa's share of national economic production has declined from 10th to 14th position (Table 14:2), and despite a small recovery after 1964 possibly due to the growth pole, by 1971 the province again occupied the 14th position. This suggests that in recent years Saragossa's advantages in terms of location, etc., have been marginally outweighed by the disadvantages of a harsh climate, lack of mineral wealth, etc.

TABLE 14:1

Components of Economic Production in 1964: Saragossa in Comparison with the Spanish average.

		Saragossa % G.N.P.	Spain % G.N.P.
1)	Agriculture and Forestry	20.2	18.5
2)	Fishing	0.0	1.0
3)	Mining	0.4	1.5
4)	Manufacturing	36.1	35.2
5)	Commerce	12.8	11.0
6)	Transport	6.4	6.1
7)	Banking	4.3	4.0
8)	Public Administration	6.3	5.5
9)	Hotels, accommodation, etc.	4.3	5.9
10)	Property, rents, etc.	0.3	3.1
11)	Other professional services	8.9	8.2
		100.0%	100.0%

Source: Banco de Bilbao, 1967.

TABLE 14:2

Ranking of Saragossa Province in Terms of per capita National Income.

Year		Rank Position
1955	-	10
1957	-	11
1960	-	12
1962	-	13
1964	-	14
1967	-	11
1969	-	12
1971	-	14

Source: Banco de Bilbao, 1973.

TABLE 14:3

Size of Farm Holdings in Saragossa Province.

	% Total no. of farms	% Total area of farms
Less than 1 ha.	17.5	0.3
1 - 5 ha.	36.5	4.5
5 - 50 ha.	41.4	28.3
50 - 200 ha.	3.4	14.4
200 - 1,000 ha.	1.0	20.0
More than 1,000 ha.	0.2	32.5
	100.0%	100.0%

Source: Censo Agrario, 1962.

i) Agriculture and Forestry

The central valley of the Ebro is one of the most arid regions of Spain. It contains large areas such as parts of the Monegros which have been classified as desert and which remain uncultivated. Over the rest of the region there are semi-desert conditions with soils similar to those found on the fringe of the Sahara[1]. In these circumstances it is surprising to find that agriculture is able to contribute a larger proportion of total provincial production than the national average of 18.2% (Table 14:1). This situation is due to the areas of rich irrigated farm land which have been developed in the province, particularly in the period since 1950.

In the secano or dry farming areas the principal crops are cereals, especially wheat, olives and the vine, although this latter is found in the irrigated areas as well. Much of this land is farmed under the año y vez system to avoid undue depletion of the soils. J.M. Casas Torres and A. Floristán Samanes have estimated that farms in the secano areas require at least 60 - 70 has. of land in order to be economically viable and large enough to use modern farming methods[2]. However, in Saragossa province farms of less than 50 has. cover 33% of the total cultivated area. (Casa Torres and Floristán Samanes give a higher estimate. They state that farms of less than 10 ha. cover 56% of the secano area)[3].

The one obvious solution to most of the problems of the secano areas of Aragón is irrigation. It is probably for this reason that many of the Spanish pioneers in irrigation policy and practice - I.J. de Asso, R. de Pignatelli, Joaquín Costa and M.Lorenzo Pardo - have been Aragonese. The practice of irrigation in this area is very old and certainly dates back to pre-Roman times, and also includes important antecedents such as the Imperial Canal of Aragón[4] which today irrigates over 30,000 has. of land[5]. However the construction of large dams and the placing of large areas under irrigation is a modern phenomenon dating especially from 1925 and the work of M.Lorenzo Pardo and the Confederación Hidrográfica del Ebro[6].

A wide variety of crops is grown on the irrigated lands including vegetables, wheat and vines, but the area is dominated by three crops which

Plate 14:1 Irrigated land close to the city of Saragossa.

A. Higueras Arnal has described as 'revolutionary' : maize, sugar beet and alfalfa[7]. Maize traditionally has been grown in the irrigated areas as a cheap food for the very poor, but since the 1950's it has been used as an important ingredient in artificial feedstuffs. The cultivation of sugar beet dates back to 1898 and the loss of Cuba and with it supplies of cheap cane sugar. Sugar beet formed a very profitable crop in the early twentieth century, although since the 1950's the bulk of Spain's production of beet sugar has come from the Duero valley with a consequent reduction of production in Saragossa. Alfalfa is of more recent origin and is grown as a feedstuff for livestock.

Since 1925 the Confederación Hidrográfica del Ebro has been putting into operation the Plan Aragón. This plan, based largely on M.Lorenzo Pardo's proposals and incorporating a variety of uncompleted dams and irrigation canals[8], will ultimately irrigate 276,030 has. in the provinces of Navarre, Saragossa and Huesca. By January 1965 73,855 has. of this plan were completed[9]. When completed the Plan Aragón will be the largest irrigation scheme in Western Europe and will make Saragossa a major agricultural province.

ii) Industry

The main industrial development of Saragossa dates back to the last quarter of the nineteenth century. Prior to this period the only manufactures consisted of a few flour mills, clothing and silk works. Industrial development was stimulated by three important events, the first of which was the completion of the Madrid - Saragossa - Barcelona railway in 1864 and which connected Saragossa to the main markets and sources of raw materials in Spain. The second event was the establishment of various public utilities, notably gas, electricity and public transport in the period 1860 - 1910. These utilities were dominated by foreign companies, especially French, Belgian and Swiss firms, which provided both the capital and expertise to run them. The last of these events was the rapid increase in the cultivation of sugar beet in the early twentieth century, which was

followed by the rapid expansion of the sugar refining industry. In 1907 Saragossa provided one third of the refined sugar consumed in Spain[10].

Sugar refining has played a key role in the industrial development of Saragossa. It was the first industry to be promoted by Aragonese businessmen using local capital. Sugar refining led to the establishment of complementary industries notably, the distillation of alcohol and derivitives, metallurgy and machinery production and sweets and confectionery. All of these are now important industries whilst sugar refining has almost ceased in Saragossa.

During the First World War and the Spanish Civil War Saragossa's industries prospered, producing large quantities of war material especially vehicles, textiles, shoes and footwear, and foodstuffs. Since 1939 there has been a considerable expansion of the engineering sector, particularly of firms supplying component parts to the motor vehicle industry. The most recent development has been the establishment in Saragossa of the artificial fibres firm Fibras-Esso in 1966. This firm is not part of the growth pole but was guided to the city by strong political pressure from the central government. This plant uses caprolactum from the Esso refinery in Castellón and sells artificial fibre to the textile industry of Catalonia. When in full operation the Fibras-Esso plant employs 1,200 persons[11].

iii) Services

Saragossa city is an important service centre for the whole of Aragón. It is the main army and air force base of eastern Spain and controls the defence of the Pyrenean frontier. Saragossa is an important religious centre with the Pilar basilica and the cathedral of La Seo. Saragossa is also an important market town and financial centre for the region. All these factors are reflected in the structure of economic production within the province (Table 14:1) with all sectors except hotels, accommodation, etc., and property, rents, etc., being above the national average.

The City of Saragossa

The city of Saragossa is situated on the south-west bank of the Río Ebro at the point where the rivers Huerva and Gállego meet the Ebro. This site

TABLE 14:4

The Population of Saragossa City and Province 1900-1970.

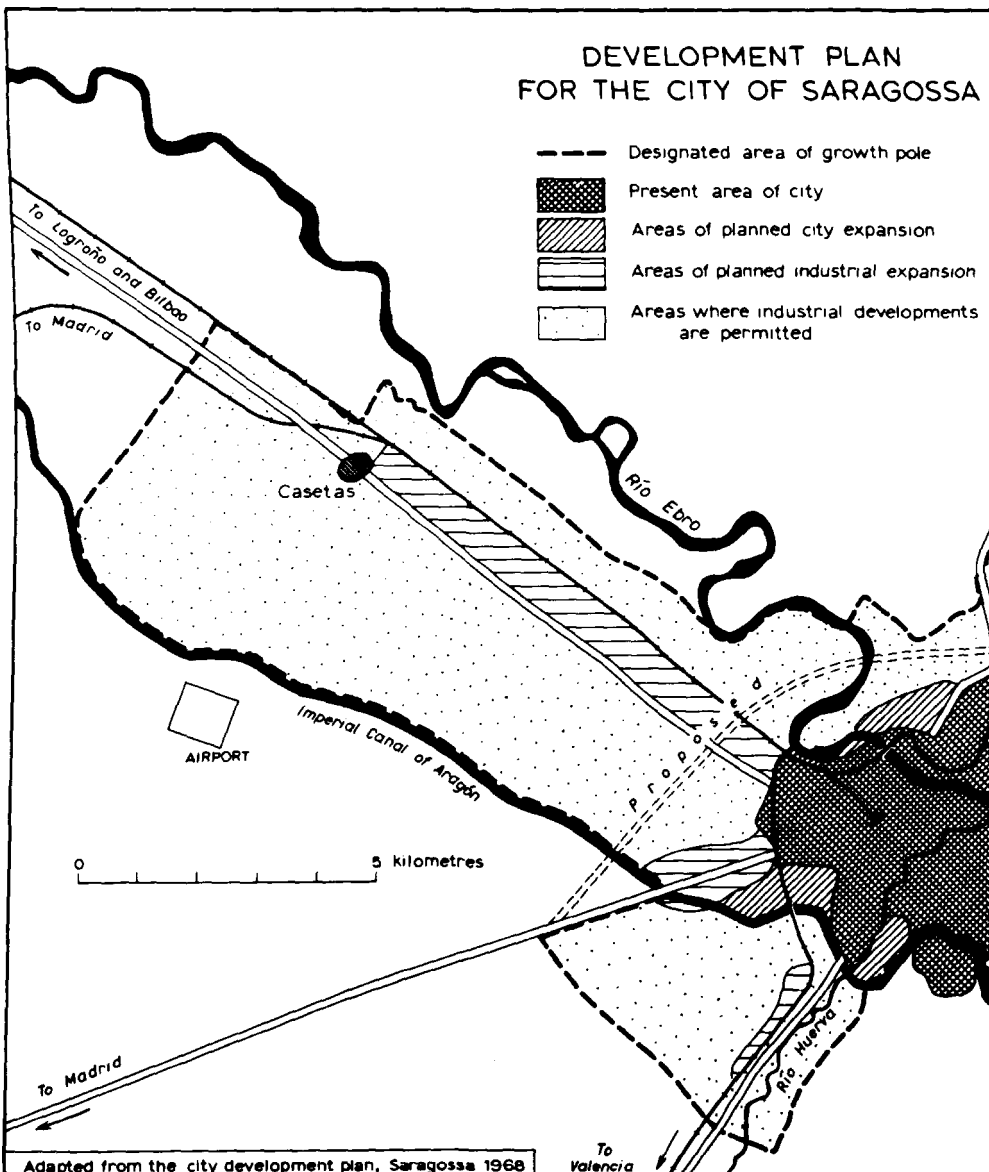
	City	Province
1900	99,118	421,843
1910	111,704	448,995
1920	141,350	494,550
1930	173,987	535,816
1940	238,601	595,095
1950	264,256	621,768
1960	326,316	656,772
1970	469,366	760,186

Source: Censo de la Población, 1970.

lies at the centre of the natural region formed by the middle valley of the Ebro. On a national scale, Saragossa's location at the centre of the quadrilateral formed by Spain's four main cities: Madrid, Barcelona, Bilbao and Valencia, has allowed Saragossa not only to dominate the surrounding region, but also to play an important role in the political and economic development of the nation.

The origins of Saragossa date back a long way into prehistory and by Roman times there existed an important Iberian settlement on this site. The Romans rebuilt and expanded the city and were to give it its' present name of Caesaraugusta or Zaragoza[12]. Saragossa continued to flourish throughout the Visigothic, Moorish and early Medieval periods. After its reconquest in 1118 the city soon became capital of the kingdom of Aragón and for a long while it was the largest and most important city of Christian Spain. This period of ascendancy came to an end in the fifteenth century when various plagues are known to have decimated the population. This demographic loss was accelerated by various expulsions of the Jewish and Moslem population in the sixteenth and early seventeenth centuries[13]. Although the total numbers involved are not known they are believed to be large, and more importantly are known to have included many of the skilled craftsmen, merchants and farmers of Saragossa and the surrounding region[14]. Lastly, with the unification of Spain in 1492 there was a marked tendency towards the centralization of political activity in Madrid. This reduced Saragossa from the status of a capital city to the level of a regional centre.

During the seventeenth and early eighteenth centuries the economy of Saragossa languished, and it was to take from 1495 to 1787 for the population to increase from 19,840 to 42,000[15]. During the latter part of the eighteenth century there occurred an economic revival in Saragossa, centred around the Sociedad Económica Aragonesa de Amigos del País, one result of which was the completion of the Imperial Canal of Aragón in 1789. This period of prosperity came to an abrupt halt in 1808 and 1809 when the city was twice besieged by French armies. As a result the city was almost



Adapted from the city development plan, Saragossa 1968

FIGURE 14:1

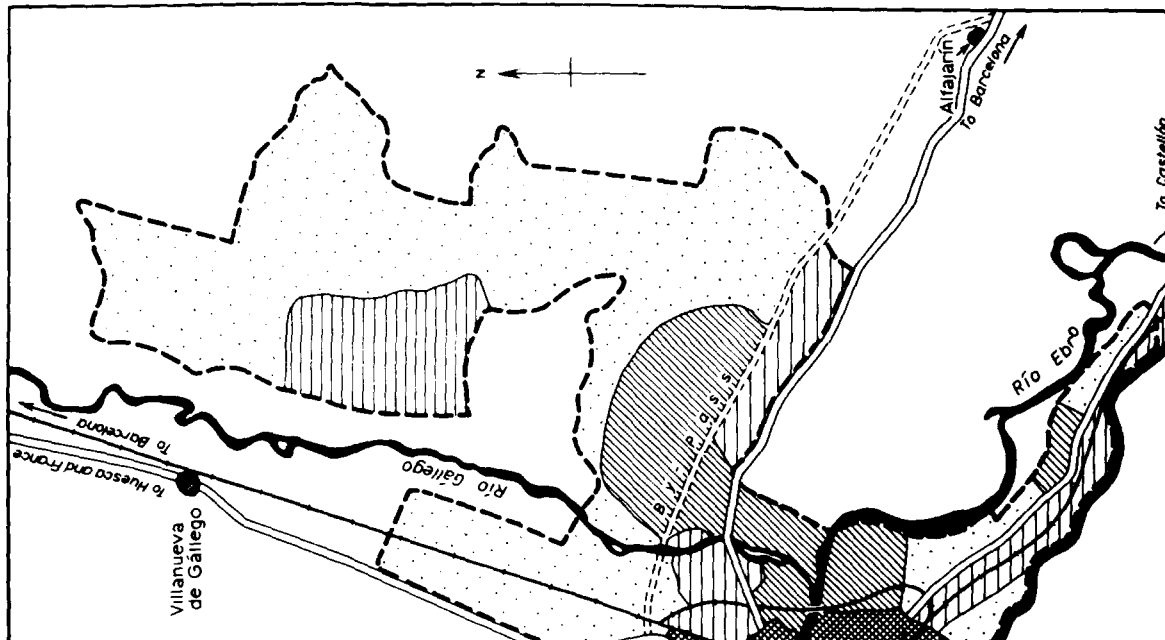

N
Villanueva de Gallego
To Huesca and France
To Barcelona
Río Gallego
Río Ebro
Alfajarín
To Barcelona
To Castellón

Plate 14:2 The Piedra bridge over the Río Ebro at Saragossa.

completely destroyed and the population reduced to 10,000 persons[16].

Reconstruction work continued throughout the nineteenth century so that by 1900 the city had reached a population of 99,000 and was in a position to play an important part in the industrialization of Spain in the twentieth century. By 1970 the population had reached 469,000 (Table 14:4), although informed opinion suggests that a large number of immigrants are not recorded as living in the city so that the total population could be above 600,000[17].

As a result of its recent growth most of the city is of nineteenth and twentieth century construction. The city has expanded outwards in a fairly concentric pattern from the Roman and Medieval core area, modified by a slight tendency to develop along the main roads to Madrid, Bilbao, Valencia and Barcelona[18]. There has also been an expansion of the city north of the Ebro especially on the higher land at Arrabal, and it is planned to develop further this area both for residential and industrial purposes (Figure 14:1). This pattern of urban development has meant that the oldest part of the city with its very narrow and winding streets is closest to the two road bridges, the Puente de Piedra and the Puente del Pilar (Figure 14:2). As traffic has built up on the five main roads leading through the city and over the bridges, so traffic congestion has increased within the city centre. To overcome this problem work was begun in the early 1960's on the construction of a new bridge, the Puente de Santiago (Figure 14:2). Eventually it is planned to build a new bridge over the Ebro to the north of the city which would carry a by-pass of motorway standard. This by-pass would run from the Madrid road west and north of the city to join the Barcelona road east of Alfajarín.

Developments in the Infrastructure of Saragossa

The 1968 regional planning report stated that the following basic improvements to the infrastructure of Saragossa should be made: the construction of a new industrial estate, an increase in the water supply and improvements made to the access roads into the city.

Prior to the establishment of the growth pole the Ministry of Housing had planned an industrial estate of 57 hectares at Cogullada. During the

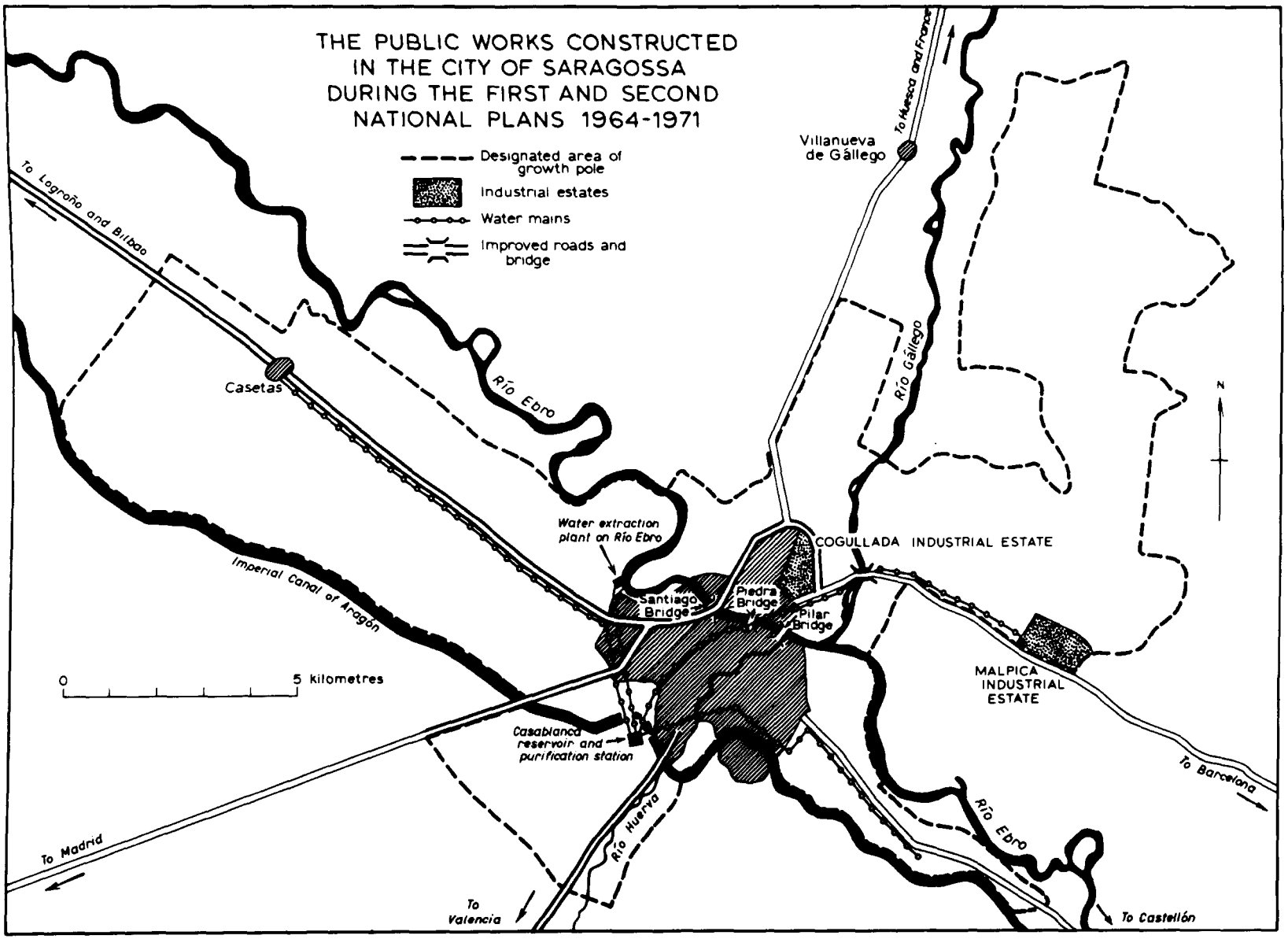

THE PUBLIC WORKS CONSTRUCTED
IN THE CITY OF SARAGOSSA
DURING THE FIRST AND SECOND
NATIONAL PLANS 1964-1971
Designated area of growth pole
Industrial estates
Water mains
Improved roads and bridge
To Logroño and Bilbao
Casetas
Río Ebro
Imperial Canal of Aragón
Water extraction plant on Río Ebro
Santiago Bridge
Piedra Bridge
Pilar Bridge
COGULLADA INDUSTRIAL ESTATE
Villanueva de Gállego
To Huesca and France
Río Gállego
MALPICA INDUSTRIAL ESTATE
To Barcelona
Río Ebro
To Castellón
Casablanca reservoir and purification station
Río Huerva
To Madrid
To Valencia
0
5 kilometres
N

FIGURE 14:2

TABLE 14:5

Public Investment in the Infrastructure of the Saragossa Growth Pole 1964-1971.

	1964-1967	1968-1971	Totals: Saragossa	Totals: All growth poles	Totals: %
Preparation of Industrial Land					
Industrial estate at Malpica	120	150			
Total	120	150	270	1,451	18.6
Water Supply and Drainage					
Extension of water purification plant	64	0			
Pipeline to Cogullada and Malpica	61	0			
Extraction scheme on río Ebro	0	25			
Pipeline along Logroño road	0	62			
Pipeline along Castellón road	0	20			
Total	125	107	232	3,625	6.4
Roads					
Improvements to road at Casetas	5	2			
Santiago bridge to Huesca road	77	13			
Santiago bridge to Barcelona road	1	11			
Santiago bridge to Valdefierro	0	73			
Improvements to Valencia road	0	57			
Improvements to Gállego bridge	0	32			
Total	83	188	271	1,610	16.8

TABLE 14:5 cont.

		1964-1967	1968-1971	Totals: Saragossa	Totals: All growth poles	Totals: %
Other Infrastructure Works in the Growth Pole						
Industrial estate at Cogullada		115	0			
	Total	115	0	115	5,248	2.2
	Totals	443	445	888	11,934	7.4

Note: all figures given in millions of pesetas, 1968.

Source: Planning Commission, Desarrollo Regional, Madrid (1968).

period of the first plan work on this estate was completed, all the plots sold and a number of firms had started production. The estate is run by the Asociación del Polígono Industrial de Cogullada, which is composed of owners of the plots and which works in collaboration with the Ministry of Housing and other authorities to ensure the installation of services, etc., to the estate[19]. The price of the land is fixed at between 299.12 pesetas per square metre and 361.93 pesetas per square metre[20].

The Cogullada estate has proved to be too small to accommodate all new industrial developments and during the I Plan the Ministry of Housing began preparation of a second estate at Malpica. This new estate will cover 126 hectares and is being supported by the Planning Commission (Table 14:5). All the basic services, electricity, water, telephone, etc., will be provided and the price of the land has been fixed at 170 pesetas per square metre. Apart from these two estates factories may be constructed in the areas of permitted industrial expansion (Figure 14:1). Here the land is cheaper and there is often plenty of land available for future extensions, but the condition of the infrastructure can be very variable and in some cases can be extremely deficient.

Before the establishment of the growth pole Saragossa's main source of water supply was the Imperial Canal of Aragón. Under normal circumstances this source is quite capable of supplying all Saragossa's needs. Its one deficiency is that at regular intervals the canal has to be closed for cleaning and other purposes, with a consequent reduction in the water supply[21]. To overcome this problem an extraction plant was constructed to take water from the Río Ebro at the rate of 1.5 cubic metres per second, which is insufficient to meet all Saragossa's needs.

Under the growth-pole scheme the capacity of the water purification plant at Casablanca has been doubled and that of the water extraction plant on the Ebro increased to meet the full demands of the city (Table 14:5). Improvements have also been made to the distribution system with major pipelines being constructed to the industrial estates at Cogullada and Malpica, and to the new industrial areas along the Logroño and Castellón

TABLE 14:6

Firms in the Saragossa Growth Pole and Interviewed in 1968.

Number*	Firms arranged by main industrial groups	Product of firms
	Food	
1)	Cía. Industrias Agrícolas, S.A.	compound feedstuffs
2)	Pygasa	chicken slaughter-house
3)	Campo Ebro Industrial	maize products
	Wood and Furniture	
4)	Alfonso Solans Serrano	beds and mattresses
5)	Internacional Meuble, S.A.	furniture
	Paper and Printing	
6)	Saica, S.A.	packing paper
7)	Fibrana industrial, S.A.	packing paper
8)	Heraldo de Aragón, S.A.	newspaper and printing
9)	Cartonajes Barco, S.A.	cardboard boxes
10)	Pulptex Ibérica, S.A.	sanitory paper
11)	Papelera General	cardboard boxes
	Chemicals	
12)	Sociedad española del acumulador Tudor, S.A.	vehicle batteries
13)	Manufacturas Rodex, S.A.	floor cleaning equipment
14)	Celulosa Fabril	plastic goods
15)	La Industrial Química de Zaragoza, S.A.	artificial fertilizers
	Construction, Glass and Ceramics	
16)	Cerámicas Salduba, S.A.	bricks and ceramics
17)	Industrias Cerámicas Aragonesas, S.A.	refractory materials

TABLE 14:6 cont.

Number*	Firms arranged by main industrial groups	Product of firms
	Metallurgical and Engineering	
18)	Talleres García Julián, S.A.	electrical mechinery
19)	Mecánicas Ebro, S.A.	motor vehicle parts
20)	Talleres Auxiliares de la Industria Minera, S.A.	mining machinery
21)	Rodamientos Cónicos, S.A.	bearings
22)	Amado Laguna de Rius, S.A.	motor vehicle parts
23)	Talleres Unidos, S.A.	earth moving machinery
24)	Diestre Construcciones Diesca, S.A.	transformers
25)	Radiadores Puma Chausson, S.A.	vehicle radiators
26)	La Maquinista Aragonesa, S.A.	quarrying machinery
27)	Talleres Diesel, S.A.	diesel engines parts
28)	Emasa	metal construction parts
29)	Talleres Cataluña, S.A.	air brakes
30)	Compañía Mercantil Pieralisi, S.A.	olive oil mills
31)	S y B Española, S.A.	electrical equipment
32)	Siderúrgica Ebroacero, S.A.	molded steel
33)	Industrias Lafuente, S.A.	textile and agricultural machinery
34)	Enarco, S.A.	machinery for construction industry
35)	Carrocerías Ciscar, S.A.	coach builders
36)	Talleres Villar, S.A.	hydraulic brakes
37)	Carrocerías Zane, S.A.	coach builders
38)	F. Cáncer y Cebrián, S.A.	vehicle repairs
39)	Forjas de Elgoibar, S.A.	forged parts for vehicles
40)	Industrias Aragonesas del Aluminio, S.A.	aluminium window frames
41)	Fundiciones Especiales Zaragoza, S.A.	molded steel parts

TABLE 14:6 cont.

Number*	Firms arranged by main industrial groups	Product of firms
42)	Frater, S.A.	electricity transformers
43)	Comoplesa	construction machinery
44)	Mariano Leciñena Garicano	lorry trailers
45)	Fundiciones Montañes, S.A.	foundry parts for vehicles
46)	S.A. de Tratamientos Térmicos	finishing of metal parts
	Others	
47)	Argyor, S.A.	jewelry making

* These numbers are used in Fig 14:3 to show the location of these firms.

TABLE 14:7

Investment and Employment to be created by the Growth-Pole Firms.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
1)	51,209,000	33	A
2)	13,570,000	82	B
3)	120,322,000	93	B, C
4)	97,000,000	204	C, C
5)	16,025,000	47	A
6)	345,679,000	170	C
7)	18,400,000	51	B
8)	60,000,000	30	B
9)	7,044,600	31	C
10)	47,800,000	52	A
11)	93,668,050	66	B
12)	31,316,500	69	C, C
13)	11,783,000	32	C
14)	20,000,000	51	B
15)	50,000,000	54	B
16)	32,387,990	31	B
17)	11,960,000	31	B
18)	7,500,000	33	B
19)	32,625,000	85	B
20)	50,000,000	92	A
21)	12,435,000	75	C
22)	10,000,000	30	B
23)	140,000,000	564	B, D
24)	40,000,000	25	B
25)	50,663,000	54	B
26)	12,245,500	77	C

TABLE 14:7 cont.

Number	Investment	Number of jobs to be created	Type of benefit(s) received
27)	28,630,000	45	B
28)	11,790,000	45	C
29)	143,225,720	595	A, A, B
30)	7,458,000	36	A
31)	10,553,000	45	A
32)	25,000,000	98	C
33)	141,635,000	317	C
34)	5,150,000	40	C
35)	10,779,000	30	D
36)	7,000,000	30	B
37)	21,751,000	91	C
38)	19,845,000	100	C
39)	24,840,000	81	B
40)	36,619,900	56	B
41)	37,500,000	35	B
42)	19,400,000	49	B
43)	8,500,000	68	C
44)	6,502,000	40	C
45)	7,000,000	32	B
46)	11,951,000	31	A
47)	10,000,000	30	B

Note: the investment figures are given in millions of pesetes, 1968.

Source: Planning Commission, Relación de las empresas acogidas a los programas de desarrollo regional. Madrid (1968).

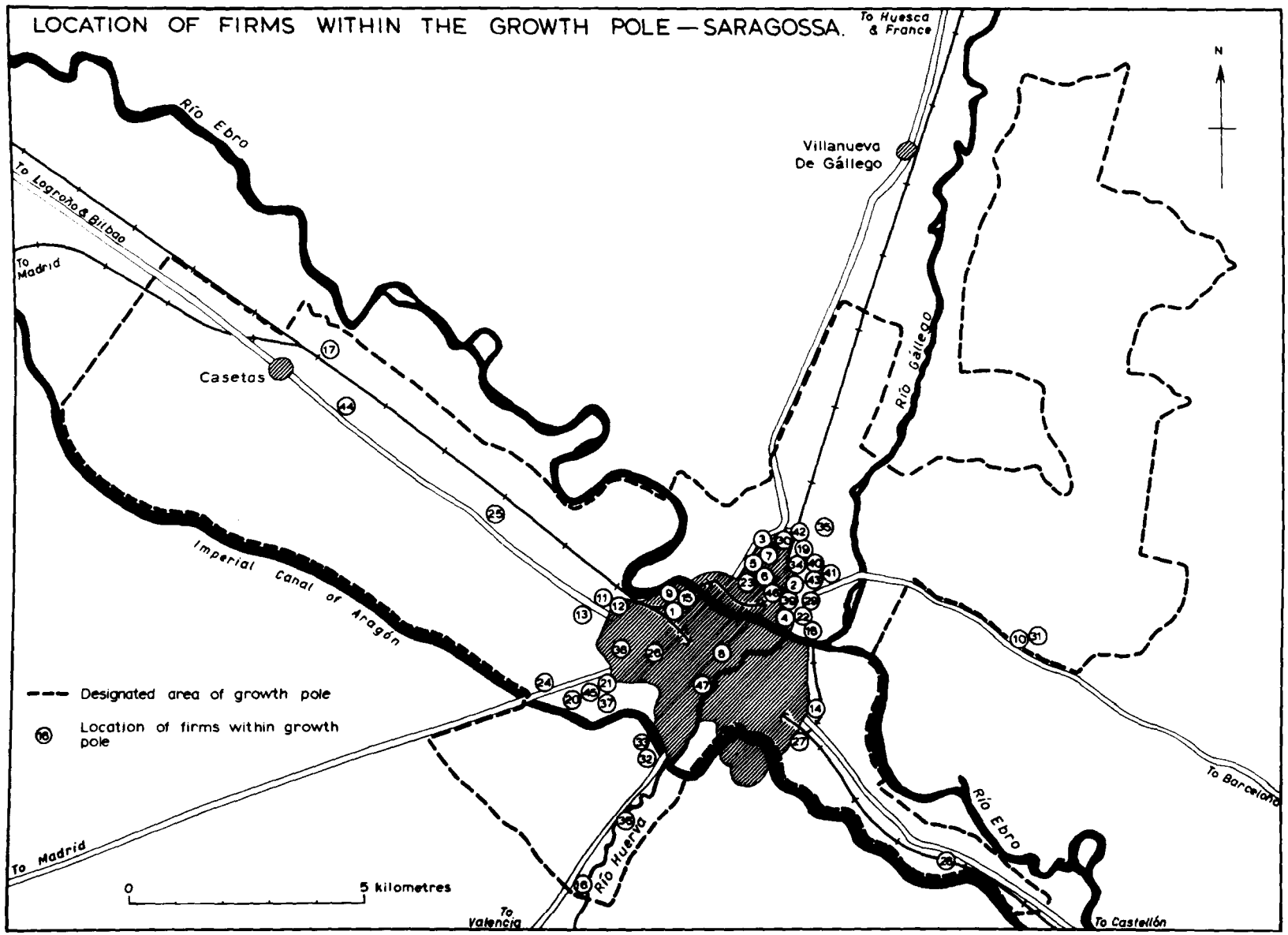

LOCATION OF FIRMS WITHIN THE GROWTH POLE — SARAGOSSA.
To Huesca & France
N
Río Ebro
Villanueva De Gállego
To Logroño & Bilbao
To Madrid
Casetas
Río Gállego
Imperial Canal of Aragón
Designated area of growth pole
Location of firms within growth pole
To Madrid
0
5 kilometres
To Valencia
Río Huerva
Río Ebro
To Barcelona
To Castellón

FIGURE 14:3

roads (figure 14:2).

The road improvement scheme for Saragossa has been designed to achieve two aims, to improve the condition of the main roads into the city and to improve access to the new Santiago bridge. In particular, improvements are being made to the Valencia, Logroño and Madrid roads, and to the bridge over the Río Gállego which carries the main Barcelona road. Within the city access to the Santiago bridge has been improved by the construction of a new road of motorway standard from the bridge north to the Huesca road. A new short road, again of motorway standard, has been built to link up the Barcelona road with the new bridge, and improvements made to the Madrid road from the bridge to Valdefierro (figure 14:2).

Analysis of the Firms within the Growth Pole at Saragossa

In May 1968 a total of 167 enterprises had received benefits under the growth-pole scheme. Out of this total there were 60 firms in directly productive activities in operation by July 1968, of which 47 were interviewed. Details of these 47 firms are given in Tables 14:6 and 14:7. The growth pole at Saragossa is dominated by the metallurgical and engineering sector which consists mainly of medium-sized firms. The next largest sector, in terms of investment and the creation of employment, is paper and printing (Table 14:7).

i) Factory sites of the growth-pole firms

The majority of firms interviewed were fully satisfied with the size and nature of their factory sites. The firms which expressed dissatisfaction were generally those which had congested city sites. In the case of La Industrial Química de Zaragoza, S.A., which had seen the city grow around their site, there was a problem of noxious fumes affecting nearby housing areas. The firms Alfonso Solans Serrano and Talleres Cataluña, S.A. were both about to leave their congested city sites for new open sites along the Logroño road (figure 14:3).

There was less contentment with the water supply situation in Saragossa. 24 firms had their own wells and several other firms owned filtration plants and took water direct from the Imperial Canal. One firm was supplied by a

Plate 14:3 The new industrial estate at Cogullada.

Plate 14:4 New factories on the Cogullada industrial estate.

TABLE 14:8

Firm's Attitudes Towards the Factory Sites and Elements of the Basic Infrastructure of Saragossa.

	Good	Indifferent	Bad	Not applicable	Total
Size of factory site	39	4	4	-	47
Nature of factory site	42	1	4	-	47
Water supply	28	8	10	1	47
Waste disposal	5	3	4	35	47
Telephone	26	12	9	-	47

Source: questionnaires

TABLE 14:9

Location of Services used by Growth-Pole Firms at Saragossa.

	City	Province	Region	Nation	Abroad	Within firm at Saragossa
Commercial	22	0	0	4	0	21
Technical	22	0	0	4	0	21
Advertising	25	0	0	3	0	19
Marketing	21	0	0	4	0	22
Legal	28	0	0	4	0	15
Maintenance of mechanical equipment	5	0	0	0	0	42
Maintenance of electrical equipment	5	0	0	0	0	42
Transport	37	0	0	0	0	10

Source: questionnaires.

TABLE 14:10

Attitude of the Growth-Pole Firms to the Transport Facilities at Saragossa.

		Good	Indifferent	Bad	Total
Transport Services	Road	34	3	0	37
	Rail	0	2	1	3
Transport Costs	Road	32	2	3	37
	Rail	1	2	0	3

Note: information gained from the 37 firms that used Saragossa's transport facilities (Table 14:9). Three firms used more than one facility.

Source: questionnaires

local syndicate of irrigators who frequently cut off supplies during the periods of intense irrigation.

A large number of firms, especially those in the engineering sector, sold their waste metal, etc., for scrap and therefore had no waste disposal problems. The telephone service presented more problems with some firms still waiting for a telephone to be installed and with almost half the firms expressing dissatisfaction with the service they received (Table 14:8). On the other hand the firm Argyor, S.A. stressed that the service had improved greatly during the last two years and that the telephone company had given much help with installing telephones in their new factory.

ii) Services used by the Growth-Pole firms

The location of the services used by the growth-pole firms is shown in Table 14:9. The figures show an almost even split between those firms, generally the smaller ones, that used the services provided in the city of Saragossa, and the larger firms which supplied their own services. Several of the smaller firms mentioned that although they used Saragossa's services, they did so as little as possible. There was a clear desire by most firms to be self-sufficient in professional, etc., services.

Of the 37 firms which used the local transport facilities the majority were satisfied both with the service and the costs of transport (Table 14:10). The local road transport agencies appeared to be well organised and to supply a good service, although this latter may have been aided by Saragossa's central location. The large firms such as Tudor, S.A, by offering long-term contracts had been able to insist on cheap rates and prompt service. The railway was used by only three of the firms interviewed. Generally the railway provided a less satisfactory service. As one firm stated, the railway was cheaper but a lot slower.

iii) Employment and Labour in the Growth-Pole Firms

In July 1968 the 47 firms interviewed employed a total of 7,809 persons of which a large proportion (88%) were male (Table 14:11). Only in the case of Manufacturas Rodex, S.A. did women form a majority of the workforce. Administrative and technical jobs requiring formal qualifications together

TABLE 14:11

Employment in the Growth-Pole Firms Interviewed in 1968: Saragossa.

Firms	Male	Female	Administrative	Technical	Production	Total
			Food			
1)	115	5	20	8	92	120
2)	60	40	6	1	93	100
3)	57	2	14	5	40	59
					Total	279
			Wood and Furniture			
4)	450	150	80	20	500	600
5)	40	10	5	4	41	50
					Total	650
			Paper and Printing			
6)	175	8	22	13	148	183
7)	35	2	5	0	32	37
8)	159	13	60	0	112	172
9)	20	8	5	2	21	28
10)	45	9	7	3	44	54
11)	60	20	15	3	62	80
					Total	554
			Chemicals			
12)	880	220	71	30	999	1,100
13)	23	27	10	3	37	50
14)	100	60	14	4	142	160
15)	197	3	15	5	180	200
					Total	1,510

TABLE 14:11 cont.

Firms	Male	Female	Administrative	Technical	Production	Total
			Construction, Glass and Ceramics			
16)	40	0	3	2	35	40
17)	114	1	6	3	106	115
					Total	155
			Metallurgical and Engineering			
18)	38	2	3	3	34	40
19)	67	3	7	5	58	70
20)	97	3	8	5	87	100
21)	53	15	4	2	62	68
22)	260	120	24	5	351	380
23)	585	15	30	40	530	600
24)	114	16	6	3	121	130
25)	199	6	30	14	161	205
26)	64	1	4	2	59	65
27)	280	20	60	9	231	300
28)	30	2	3	2	27	32
29)	830	20	55	20	775	850
30)	34	1	5	4	26	35
31)	60	20	5	4	71	80
32)	78	2	6	5	69	80
33)	393	7	20	20	360	400
34)	29	2	7	4	20	31
35)	70	0	5	0	65	70
36)	66	1	5	4	58	67
37)	117	3	11	6	103	120
38)	188	12	64	6	130	200
39)	80	5	10	5	70	85
40)	134	6	25	0	115	140
41)	206	4	10	5	195	210
42)	90	30	14	4	102	120
43)	47	3	6	2	42	50
44)	20	0	1	0	19	20

TABLE 14:11 cont.

Firms	Male	Female	Administrative	Technical	Production	Total
45)	43	0	3	3	37	43
46)	11	0	1	0	10	11
					Total	4,602
			Others			
47)	44	15	6	0	53	59
					Total	59
Totals	6,897	912	796	288	6,725	7,809
Percent-ages	88	12	10	4	86	100

Source: questionnaires

TABLE 14:12

Origin of Work Force Employed in Growth-Pole Firms Interviewed in 1968: Saragossa.

Firms	Local	Province	Elsewhere
1)	120	0	0
2)	100	0	0
3)	59	0	0
4)	600	0	0
5)	50	0	0
6)	183	0	0
7)	37	0	0
8)	172	0	0
9)	28	0	0
10)	49	0	5
11)	60	17	3
12)	1020	78	2
13)	50	0	0
14)	160	0	0
15)	200	0	0
16)	25	15	0
17)	75	34	6
18)	40	0	0
19)	63	7	0
20)	100	0	0
21)	68	0	0
22)	343	37	0
23)	500	100	0
24)	116	14	0
25)	205	0	0
26)	65	0	0
27)	300	0	0
28)	28	4	0

TABLE 14:12 cont.

Firms	Local	Province	Elsewhere
29)	795	55	
30)	29	6	
31)	64	11	5
32)	80		
33)	378	21	1
34)	30		1
35)	70		
36)	67		
37)	120		
38)	152	9	39
39)	79		6
40)	140		
41)	206		4
42)	120		
43)	42		8
44)	20		
45)	35		8
46)	11		
47)	57		2
Totals	7,311	408	90
Percent-ages	94	5	1

Source: questionnaires

account for 14% of total employment with 86% of the jobs occurring in production, a situation similar to that in the other growth poles.

Most of the employment (94%) in the growth pole was taken up by people from the city of Saragossa and the immediate surrounding area (Table 14:12). The firms Talleres Cataluña, S.A. and Industrias Lafuente, S.A. were able to attract labour from distances up to 20 km. away. The only firm to employ a significant proportion of labour from outside the province was F. Cáncer y Cebrián, S.A. However many of the people involved in this case were agents and salesmen who only spent a small part of their time in Saragossa.

In contrast with most of the other growth poles only a very small number of firms brought in skilled labour or management from outside the province. A number of firms, particularly those in the large metallurgical and engineering sector, were able to 'poach' skilled workers from other companies. Most firms stated that they had no trouble in obtaining either unskilled or specialist labour. This situation was aided in 1968 by the closure of several factories in the Saragossa area which had released a considerable number of skilled personnel onto the labour market. Nevertheless, even under normal conditions Saragossa would appear to have a large pool of industrial skills and expertise, a factor of considerable importance for the future industrial development of the city.

Conclusions

To the visitor the city of Saragossa gives the appearance of being a bustling industrial town rapidly growing under its' own energies and initiative. The figures obtained from the growth pole confirm this impression. The majority of firms within the growth-pole scheme are medium sized, with approximately 100 workers, many of them within the metallurgical and engineering sector, and almost all promoted by local initiative.

Saragossa's success as an industrial centre has been due in part to its location. At a critical stage in its development Saragossa was able to attract investment from nearby France and other European countries. Since 1950 Saragossa has benefitted from the rapid development of Spain's four main industrial cities, Bilbao, Madrid, Valencia and Barcelona. Saragossa's

factories supply components to industries in all four of these cities.

Despite this considerable success, industrial development in Saragossa still faces many problems. A study by the Saragossa branch of the Sindicatos in 1967 reported that there was still an enormous shortage of industrial land and a scandalous speculation in that industrial land which does exist[22]. The report also mentioned the lengthy, complex and costly procedures which firms had to undergo when installing new factories.

However, the most disturbing aspect of Saragossa's industrial development has been the disproportionately high number of firms that have ceased to function, so much so that the area has been christened by local wits the 'Valle de los Caidos' ('The Valley of the Fallen') a title taken from the Civil War memorial near Madrid. For a number of firms the problem was simply one of lack of financial credit and many were likely to function again once credit became available. There has also been a problem of over-competition in certain industrial sectors. This problem is common to all parts of Spain and it is because Spanish businessmen are great imitators. One businessman seeing another making a good profit in a certain industrial activity will believe that he too can make a similar profit not realising that extra competition is going to slash profit margins with the result that both firms may go under.

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Chapter 15

A Comparison of the Seven Growth Poles

The analysis of the seven growth poles in the preceding chapters has revealed a wide variety of industrial activities operating in a wide range of conditions. In this chapter, the experiences of the seven growth poles are compared and an assessment is made of the efficacy of the growth-pole scheme as a measure for promoting industrial development. Finally, conclusions are drawn which have implications for regional planning policy in Spain.

Public Investment in the Infrastructure of the Growth Poles

Table 15:1 shows that there has been a marked bias in the allocation of government funds for public works in the seven growth-pole cities. Over 77% of the total public works budget was invested in the cities of Huelva and Burgos alone. In general, this is in accordance with the policy of giving most help to the polos de promoción which, prior to 1964, were the towns with the least industrial development and therefore in need of the greatest assistance. In the case of Huelva over half of the budget was spent on the new water supply scheme (Table 8:9), without which no new industrial developments could have taken place. A large proportion of the budget allocated to Burgos was invested in the completion of the Madrid-Burgos railway line (Table 9:5). This expenditure can be defended on the grounds that the completion of the line permitted a return to be made on the total amount of capital invested in the project. However, this expenditure absorbed a large portion of the public works' budget which could have been usefully spent elsewhere. Furthermore, the Madrid-Burgos railway does not satisfy the main transport needs of Burgos, for the growth-pole survey showed that very few firms in Burgos actually used the railway for the transport of goods, whereas all the firms used the roads. It might have been better to have invested this portion of the budget in road improvements in and around Burgos, and especially in the provision of a by-pass for the city (see above, Chapter 9).

TABLE 15:1

Public Investment in the Infrastructure of the Growth Poles 1964-1971.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Preparation of industrial land	23	0	9	21	7	22	18	100%
Water supply and drainage	54	21	3	6	3	7	6	100%
Roads	21	15	7	16	13	11	17	100%
Other works	19	41	0	32	3	3	2	100%
Proportion of total budget	30%	26%	3%	21%	5%	8%	7%	100%

Note: all figures given in percentages

Source: Tables 8:9, 9:5, 10:6, 11:6, 12:5, 13:6, 14:5.

TABLE 15:2

Total Private Investment in the Growth Poles, by Industrial Sectors.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Food	60,365	726,206	306,303	281,901	792,722	494,283	185,101	2,846,881
Textiles and Clothing	38,592	197,502	0	1,179,385	41,877	7,803	0	1,465,159
Wood and Furniture	222,468	280,200	45,137	0	50,000	0	113,025	710,830
Paper and Printing	104,300	213,810	64,491	60,773	299,208	127,877	572,591	1,443,050
Chemicals	2,934,285	835,929	104,662	175,159	54,748	69,805	113,099	4,287,687
Construction, Glass and Ceramics	94,018	343,407	42,583	1,611,380	578,984	1,695,548	44,347	4,410,267
Metallurgical and Engineering	1,812,484	836,995	577,497	876,398	1,591,595	622,000	940,596	7,257,565
Various	1,450,613	0	0	162,990	13,674	179,637	10,000	1,816,914
Totals	6,717,125	3,434,049	1,140,673	4,347,986	3,422,808	3,196,953	1,978,759	24,238,353

Note: all figures given in ,000 pesetas (1968).

Source: Tables 8:11, 9:7, 10:8, 11:8, 12:7, 13:8, 14:7.

Of the polos de desarrollo only Seville had a large public works budget (Table 15:1), most of which was spent on improving the access roads and rail lines into the city (Table 11:6). Small budgets may be adequate for the growth poles at Saragossa and Valladolid, both of which are well-established industrial towns and contain a sufficiently wide range of services to support an increase in industrial activity. There is less reason for allocating such a small share of the budget to Vigo and Corunna, particularly as they are both located in the poorest region of Spain and consequently require greater assistance than the other growth poles.

Industrial Investment and Employment in the Growth Poles

The relative success of the seven growth poles can be measured by the number of firms that they each contain. On this basis the most successful growth poles have been Saragossa, Burgos, Seville and Valladolid and the least successful Vigo, Huelva and Corunna. However, a straightforward count of firms makes no allowance for the differing size and importance of industrial enterprises and a better measure is given by the figures for industrial investment and for new employment.

In terms of total investment Huelva has been the most successful of the seven growth poles (Table 15:2). This result is almost entirely due to the very large sums invested by the Río Tinto group of companies in the chemical and metallurgical and engineering sectors, there being much lower levels of investment in the other industrial sectors. Seville, Burgos, Valladolid and Vigo were also able to attract relatively large sums of industrial investment (Table 15:2). In the case of Seville, Valladolid and Vigo a large proportion of total investment came from the motor vehicle and construction industries, whereas in Burgos investment was fairly high in all the main industrial sectors. The growth poles with the smallest total investment were Corunna and Saragossa. In Corunna this was due to the small number of firms within the growth-pole scheme whereas in Saragossa, which had the largest number of firms within the scheme, it was due to a large number of small and medium-sized firms engaged in labour-intensive activities (see below).

TABLE 15:3

The Creation of New Employment in the Growth Poles, by Industrial Sectors.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Food	20	725	231	604	778	931	208	3,497
Textiles and Clothing	156	1,100	0	2,066	195	169	0	3,686
Wood and Furniture	351	632	51	0	50	0	251	1,335
Paper and Printing	67	215	31	89	286	80	400	1,168
Chemicals	546	826	31	185	136	109	206	2,039
Construction, Glass and Ceramics	199	643	52	2,061	675	3,622	62	7,314
Metallurgical and Engineering	641	1,490	537	1,053	4,848	3,159	2,899	14,627
Various	226	0	0	413	33	31	30	733
Totals	2,206	5,631	933	6,471	7,001	8,101	4,056	34,399

Source: Tables 8:11, 9:7, 10:8, 11:8, 12:7, 13:8, 14:7.

TABLE 15:4

Average Investment for Each New Place of Employment Created.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Average of Totals
Food	3,018	1,002	1,326	467	1,019	531	890	814
Textiles and Clothing	247	180	0	571	215	46	0	397
Wood and Furniture	634	443	885	0	1,000	0	450	532
Paper and Printing	1,557	994	2,080	683	1,046	1,598	1,431	1,235
Chemicals	5,374	1,012	3,376	947	403	640	549	2,103
Construction, Glass and Ceramics	472	534	819	782	858	468	715	603
Metallurgical and Engineering	2,828	562	1,075	1,632	328	197	324	496
Various	6,419	0	0	395	414	5,795	333	2,479
Average of Totals	3,045	610	1,223	672	489	395	488	705

Note: all figures given in ,000 pesetas (1968).

Source: Tables 15:2 and 15:3

Probably the best method for measuring the relative success of the growth poles is through the use of employment figures, especially as it was noted in Chapter 6 above that the creation of new jobs was one of the main aims of the growth-pole scheme. The growth poles with the largest totals of new employment in 1968 were Vigo, Valladolid and Seville, (Table 15:3) and these three may be regarded as the most successful of the growth poles. In all three cases the high employment figures were the result of large expansion schemes in the motor vehicle industry. In Seville and Vigo firms in the construction, glass and ceramics sector were also important (Table 15:3). The growth poles at Burgos and Saragossa had the next highest employment totals. In both cases this was due to a relatively strong metallurgical and engineering sector. Finally, the least successful growth poles were at Huelva and Corunna. In Huelva this was due not so much to a general lack of industrial activity but rather to the capital - intensive nature of many of the industrial projects in the city. In the case of Corunna it was due to an almost complete lack of industrial activity outside the food and metallurgical sectors (Table 15:3).

In a country such as Spain where shortage of capital has been one of the main stumbling blocks to development, the ability to create new employment at a low capital cost is of prime importance. Table 15:4 shows the relative efficiency of the industrial sectors and the growth poles at creating new employment, the figures representing the value of pesetas invested for each new place of work created. Taking the figures for all seven growth poles together the sectors which were most efficient at creating new employment were textiles and clothing, and metallurgical and engineering, whilst the capital-intensive firms were in the chemical, and paper and printing sectors. However, considerable variations occurred in this pattern of efficiency (Table 15:4). Three sectors, textiles and clothing, wood and furniture, and construction, glass and ceramics were consistently labour-intensive in all seven growth poles. In the metallurgical and engineering, and food sectors the amount of investment varied considerably for each new place of work created, whilst the paper and printing, and chemical sectors

TABLE 15:5

The Importance of the Growth-Pole Benefits to the Firms Making Industrial Investments.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Vital	2	17	0	1	5	0	1	26
Of Some Assistance	14	25	14	23	14	6	27	123
Of No Assistance	3	3	0	11	11	14	19	61
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

TABLE 15:6

The Importance of the Growth-Pole Benefits, Analysed by Industrial Sectors.

	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Vital	5	1	5	4	1	4	6	0	26
Of Some Assistance	18	10	5	15	16	17	39	3	123
Of No Assistance	12	2	2	1	3	11	26	4	61
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

were fairly consistently capital - intensive. The consistently labour - intensive sectors may be regarded as the most successful in the growth-pole scheme. In this context it is regrettable that the textile and clothing, and wood and furniture sectors have not been promoted in four of the growth poles (Table 6:2).

Amongst the seven growth poles there appears to be a general tendency for those growth poles in the more central locations and with the longest industrial tradition to be the most efficient at creating new employment. This is very marked in the cases of Saragossa and Valladolid. At the other extreme Huelva and Corunna both had a capital-intensive pattern of investment and were relatively inefficient at creating new employment (Table 15:4). This general tendency further underlines the difficulties involved in promoting industrial developments in backward regions.

The Effectiveness of the Growth-Pole Scheme in Promoting Industrial Development

An investigation of the effectiveness of the growth-pole scheme in promoting industrial development was made by asking a number of questions about the benefits available under the scheme. In Section 10 of the growth-pole survey[1] firms were asked whether the benefits had influenced their investment decisions. The responses to this question were divided into three categories: a) where the benefits were vital to the investment decision and without which the investment would not have taken place; b) where the benefits were of some assistance and without which the investment would have taken place but at a later date or on a smaller scale; and c) where the benefits were of no real help and without which the investments would have taken place at the same time and on the same scale. The results of these questions are shown in Tables 15:5 and 15:6.

From Table 15:5 it can be seen that the growth-pole benefits were of vital importance in the investment decision of only 26 (12%) of the firms interviewed. For 123 firms (59%) the benefits, although not vital, were of assistance; but for the remaining 61 firms (29%) the benefits were of no assistance at all. This last group included a number of firms that had

TABLE 15:7

Analysis of the Single Most Important Benefits for the Growth-Pole Firms.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Tax Reductions	2	7	0	3	4	3	9	28
Tariff reductions on imported machinery	1	6	1	8	6	5	8	35
Official Credit facilities	3	9	6	8	12	4	9	51
Investment subsidies	6	11	3	10	2	0	10	42
The availability of industrial land	0	8	0	0	1	4	1	14
All of the benefits	3	0	3	4	1	0	5	16
None of the benefits	4	4	1	2	4	4	5	24
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

recently decided to renounce the benefits which they regarded as insignificant and certainly not worth the investment and employment conditions they were expected to fulfill. From those results it is clear that the benefits have not been a major spur to new investment in the growth poles. They were, however, more successful in enlarging and advancing existing investment projects. The one exception to this general pattern was the growth pole at Burgos where a large proportion of the investments would not have occurred without government assistance. This suggests that the higher level of benefits available in the polos de promoción, combined with Burgos' central location, were sufficient to stimulate a considerable amount of new investment. The benefits available in the polos de desarrollo generally were sufficient only to promote existing investment decisions.

Table 15:6 shows that the usefulness of the benefits was approximately the same in each of the main industrial sectors.

In Section 10 of the questionnaire the firms were asked which of the various benefits had been of greatest help to investment. The notable feature of the answers received is their very even distribution between types of benefit and growth poles (Table 15:7). This is very surprising in the case of the investment grants, which are twice as large in the polos de promoción as in the polos de desarrollo, and yet appear to have been of no greater value to the firms in the polos de promoción.

A slight majority of firms mentioned the availability of long-term credit facilities as the single most important benefit received. This reflects not so much on the size of the credits available but rather on the non-availability of such credit from the private banking system (see below, Chapter 16). Sixteen of the firms interviewed stated that there was no single benefit of overriding importance but that it was the whole package of benefits which had been of value (Table 15:7). A further 24 firms claimed that none of the benefits had been of assistance to them. Most of these firms had gained benefits in the C or D category (see above, Chapter 6), and included those firms which had recently decided to renounce their growth-pole agreement.

TABLE 15:8

Analysis of Firms' Reactions to the Growth-Pole Scheme.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Very satisfied	2	2	0	0	1	0	1	6
Satisfied	10	34	10	24	25	9	23	135
Dissatisfied	7	9	4	11	4	11	23	69
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

The one exception to this general pattern was the large number of mentions of the availability of industrial sites and the right of land expropriation in Burgos and Vigo. Both growth poles are located in areas of extreme minifundismo where the process of buying many small plots to make up a single factory site is very slow and expensive. For example in Vigo one small firm had to negotiate with 60 proprietors in order to obtain sufficient land, and in another case a medium-sized firm had to buy land from over 400 proprietors.

The even spread of benefits shown in Table 15:7 indicates that all the benefits were of importance in all the growth poles. This suggests that the planners had chosen the right type of benefits for the growth-pole scheme, and that all the benefits were necessary to ensure the maximum participation of firms within the scheme.

In Section 10 of the questionnaire the firms were also asked whether they were satisfied with the level of benefits they had received. Only 6 firms stated that they were very satisfied with the benefits, 135 firms stated that they were completely dis-atisfied (Table 15:8). A major source of this dis-atisfaction came from firms who claimed that they had been promised more than they finally received. Blame for this situation appears to lie both with the planners, who appear to have suggested that more financial assistance was available than they were in fact able to provide, and with the industrialists for not carefully checking the details of the growth-pole agreements. A second group of firms also claimed to have been promised much, but after reading the fine print of the agreement had lowered the level of their expectations of the scheme.

Many of the firms in the growth-poles believed that the benefits were of little value for their own activities. One company owner in Saragossa stated that for all the firms that he knew in the growth-pole scheme the benefits had been "more spiritual than tangible". However, for a large number of firms it was the psychological impact of the growth-pole scheme that was its' strongest feature. These firms had decided that the growth-pole cities were assured of a reasonably prosperous future and that the government

TABLE 15:9

Analysis of the Starting Problems Encountered by the Growth-Pole Firms.

	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Problems of Infrastructure	10	8	1	15	3	7	7	51
Bureacratic delays	2	1	3	1	6	4	5	22
Financial Problems	0	4	2	0	1	1	1	9
Normal Problems	5	32	8	19	20	8	34	126
Other	2	0	0	0	0	0	0	2
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

could not afford to let them fail. It was for this reason rather than any economic benefits which had led them to make their new investments. This situation was very marked in the case of firms in the construction industry who foresaw that with a growth pole there was likely to be a construction boom. This situation was also very noticeable in the growth pole at Burgos where the designation of the polo de promoción had caused a radical change in attitudes and led many people to investigate the possibilities of new industrial projects.[2]

A strong psychological impact is one of the more useful features of the growth-pole scheme. It is probably of most value to the growth poles in the backward agricultural areas where a drastic change in attitudes is often a sine qua non of economic development. However, this psychological effect can also backfire and work to the detriment of the growth-pole scheme. This appeared to be happening in Saragossa where many firms had failed and others were dissatisfied with the level of benefits that they had received, so that many people were becoming disenchanted with the whole growth-pole scheme. This subsequent reaction was likely to negate any psychological benefits which previously had accrued to the growth pole.

In Section 12 of the questionnaire firms were asked what major difficulties they had encountered when implementing their investments within the growth-pole scheme. The results of these questions are shown in Table 15:9. In their replies 126 firms (60% of the total) stated that they had encountered only the problems normally associated with industrial investment. The remaining firms mentioned specific problems which can be grouped into three categories: problems of infrastructure, administration and bureaucracy, and finance (Table 15:9). Fifty-one firms (24% of the total) reported difficulties associated with deficiencies of infrastructure, particularly in Huelva and Seville. This suggests that in Andalusia the local authorities and public utilities were less efficient than in other parts of Spain. 22 firms (10% of the total) stated that their most serious problems had been associated with bureaucratic delays and administrative muddle. In the case of the two Galician growth poles it was simply a matter

of the local administrators being very slow in clearing their paperwork,[3] but with the result that three firms had to wait far more than two years before they had gained all the necessary approvals. In Valladolid and Saragossa the problem appeared to be caused by a lack of coordination between the local city authorities and the various government ministries and planning offices. In part this was due to local rivalries and in part due to different bodies pursuing different aims. Frequently problems arose because the planning officer was trying to promote as many new industrial developments as possible no matter where they were located, whilst the city authorities were refusing building permission if the proposed factories were not located in accordance with the city's development plan. Clearly there was a need for much greater co-ordination and control at the local level.

Finally a number of firms, especially in Burgos, had encountered financial difficulties before starting production. This suggests that although Burgos was successful in promoting many new firms,[4] quite a high proportion of these firms were in a precarious financial situation.

Conclusions

The most important aim of any regional development policy in Spain is to create as much new employment as possible. This has the effect of reducing local unemployment, making greater use of local resources and raising per capita incomes. By this criteria the most successful growth poles in 1968 were Vigo, Valladolid and Seville (Table 15:3). Burgos and Saragossa had the next highest employment totals, whereas the least successful growth poles were Huelva and Corunna. However, it should be borne in mind that this is an interim judgment and the final assessment can only be made with the completion of the growth-pole scheme in 1981.

The analysis contained in this chapter permits a number of conclusions to be drawn about industrial activity and the operation of the growth-pole scheme in Spain. First, the construction of expensive prestige projects such as the new petro-chemical complex at Huelva is a very inefficient method of creating new employment. Such complexes may be justified in terms of the growth of the national economy but they are far too expensive to be

justified solely in terms of regional development. A second finding of the growth-pole survey is that the textiles and clothing, the wood and furniture, and the paper and printing sectors were consistently labour intensive and form, therefore, the most efficient sectors for inclusion within the growth-pole scheme. Third, it was found that there was a natural tendency for the firms in the more central locations or in the towns with the oldest industrial tradition to be the most efficient at creating new employment. From this it may be argued that the firms in the backward areas require greater assistance than those in the relatively more advanced areas in order to achieve the same results. Fourth, the majority of firms stated that the benefits were not of great financial assistance. This suggests that the planners were not over-generous in the level of benefits that they awarded and possibly that a higher level of benefits might have had a proportionately greater impact on industrial growth. Fifth, the usefulness of each of the benefits appeared to be spread evenly amongst the firms, suggesting that although changes might be made to the scale of benefits, no change should be made to the types of benefits available. Sixth, it is clear that in the smaller growth-pole cities the growth-pole schame had an important psychological impact which helped to change attitudes towards development. However, it is also clear that this impact must be backed up with substantial achievements if a subsequent reaction is to be avoided. Finally there was a clear need for improvements to be made to the administration of the scheme in order to overcome lengthy bureaucratic delays and to increase the co-ordination of activities at the local level.

References

1) See above, Chapter 6 and Appendix C .

2) Instituto Nacional de Estadística, Reseña estadística de la provincia de Burgos, Madrid (1965) p. 322.

3) See above, Chapter 10.

4) See below, Chapter 16.

Chapter 16

ANALYSIS OF INDUSTRIAL ACTIVITY IN THE GROWTH POLES.

Introduction

The success of the Spanish growth-pole scheme depends on the generation of new industrial activity. However, little is known of the way in which investment decisions are taken in Spain or the circumstances under which new companies are formed and existing companies expanded. In this chapter an investigation is made of the conditions which led to the establishment and development of the growth-pole firms and the reasons for their location within the growth-pole towns.

In geography the traditional method for studying industrial activity has been industrial location analysis.[1] Most of this analysis has been concerned with the problem of finding the optimum location of a single plant. The early studies which culminated in the work of A.Weber considered the least cost location of an industrial plant.[2] Later analysis in the 1950's and 1960's examined the question of a maximum revenue location.[3] With the knowledge of the costs and revenues of a firm it is, in theory, possible to define the maximum profit location of a firm.[4] However, this type of approach has a number of limitations:-

i) the theoretical background is still insufficiently developed and mainly considers least cost rather than maximum profit locations,

ii) the amount of data required is enormous and most of it is not readily available,

iii) locational analysis will only give an optimum location for a given set of economic circumstances. Changing economic conditions may lead to quite different optimum locations,

iv) at best locational analysis will give an optimum solution, it will establish where firms <u>ought</u> to be located, but it will not explain the <u>actual</u> location of firms.

In recent years increasing attention has been given to the 'behavioural' approach in location studies.[5] This approach is in conformity with modern economic thinking in recognising that profit maximisation is not the only goal or even the main goal of a modern firm. It places emphasis on understanding the organisational framework of a firm, recognising that a

TABLE 16:1

The Date of the Founding of the Parent Companies: Analysed by Growth Poles.

Date	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
1964-1968	9	28	7	17	13	7	10	91
1960-1963	3	1	2	4	7	1	6	24
1950-1959	2	5	3	5	5	5	14	39
1940-1949	1	5	0	0	2	2	6	16
1930-1939	0	2	0	3	0	3	2	10
1920-1929	0	2	0	1	1	1	3	8
1910-1919	0	1	0	2	0	0	1	4
1900-1909	0	0	0	0	0	1	0	1
1850-1899	4	1	2	3	0	0	5	15
1800-1849	0	0	0	0	2	0	0	2
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

single-product single-plant firm may act in a very different manner to a branch firm of a large holding company. The behavioural approach also places great emphasis on understanding the way in which owners or managers make decisions concerning investment, production and the location of the firm. In the behavioural approach industrial location is seen as one branch of industrial decisions making.[6] The industrialist has to decide whether to start (or increase) production and whether to do so by setting up a new factory or by extending an existing factory. In this chapter the behavioural approach has been adopted and the location of the growth-pole firms is examined within the context of industrial decision making and the organizational framework of the firms.

The survey of growth-pole firms has a number of limitations. It is not a random or representative sample of Spanish firms for it includes only those firms with a minimum size of investment, that were located in certain cities, and which applied for and were accepted into the growth-pole scheme (see above Chapter 6). Despite these limitations it is still possible to gain some important insights into the process of industrial development in Spain. The survey of growth-pole firms also has an advantage over many other industrial surveys insofar as it includes firms that decided to increase production in an existing location as well as firms that decided to establish a new factory in a new location.

The Organisational Background To The Growth-Pole Firms

The level at which the most important industrial decisions are taken is the company rather than the factory. For this reason an analysis is made in this section of the parent companies of the growth-pole firms. The data is taken from Section 4 of the questionnaire.

The majority of the firms in the growth-pole scheme are of recent origin; indeed over a half of the companies interviewed had been founded after 1960 (Table 16:1). The overall picture shows a steady increase in the founding of firms closer to the present time. It should be borne in mind that the firms interviewed represent the 'survivors' and there may have been a high attrition rate amongst the earlier companies; nevertheless the

TABLE 16:2

The Date of the Founding of the Parent Companies: Analysed by Industrial Sectors.

Date	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
1964-1968	15	2	7	9	5	22	30	1	91
1960-1963	8	1	0	3	3	1	8	0	24
1950-1959	8	4	1	3	2	3	17	1	39
1940-1949	1	0	3	1	2	2	4	3	16
1930-1939	2	2	0	1	1	1	3	0	10
1920-1929	1	2	0	0	1	0	4	0	8
1910-1919	0	0	1	0	1	1	1	0	4
1900-1909	0	0	0	1	0	0	0	0	1
1850-1899	0	1	0	2	5	2	3	2	15
1800-1849	0	1	0	0	0	0	1	0	2
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

figures suggest that the periods with the highest levels in the establishment of new companies are associated with the periods of increased economic activity. For example, there was a large proportion of firms founded in the period 1850-1899 (in fact most of these were founded in the decade of the 1880's) which was a period of sustained economic growth in Spain. Similarly in the decade of the 1950's, when the economy had recovered from the devastation of the Civil War, there was a rapid increase in the establishment of new companies.

The seven growth-pole towns show fairly distinct patterns of industrial development (Table 16:1). Saragossa, which has enjoyed a larger and more sustained period of industrialization than the other growth poles had a relatively small proportion of companies founded after 1960, whereas towns with the least industrial tradition (Huelva, Burgos and Corunna) had a high proportion of recently founded companies within the growth-pole scheme. In the case of Burgos there appears to have been a long period of industrial development, but many of the older companies in Burgos were in fact founded in other parts of Spain, especially Catalonia, and came to the city after the Civil War in order to find better working conditions (see above Chapter 9).

The foundation dates of the parent companies when analysed for each of the main industrial sectors also show fairly distinct patterns (Table 16:2). The food; wood and furniture; construction, glass and ceramics industries, and to a lesser extent the paper and printing and metallurgical and engineering industries include a large number of companies founded in recent years. At the opposite extreme the textile and clothing and chemical industries have only a small proportion of companies established in recent years. This pattern appears to reflect the relative 'ease of entry' into these particular industries with new chemical or textile works requiring large initial sums of capital and high levels of technical expertise, whereas in the wood or construction industries companies can be started with very little capital and with the owner understanding all the basic techniques.

TABLE 16:3

The Place of Origin of the Parent Companies: Analysed by Growth Poles.

Place of Origin	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Growth Poles	4	18	12	18	20	13	37	122
Madrid	4	7	0	9	3	0	0	23
Barcelona	1	4	1	1	2	0	3	12
Bilbao	0	5	0	0	0	0	1	6
Seville	4	0	0	0	0	0	0	4
Valladolid	1	1	0	1	0	1	0	4
Guipúzcoa	0	0	1	0	1	0	1	3
Navarre	0	1	0	0	1	0	1	3
Valencia	1	0	0	1	0	0	0	2
Pontevedra	0	0	0	0	0	2	0	2
Foreign	2	7	0	4	2	1	2	18
Other	2	2	0	1	1	3	2	11
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

This suggests that as far as any planned growth in the textile and checmical industries is concerned there would probably have to be an expansion of existing companies, whereas in the other sectors there would be more scope for the establishment of new companies.

In Table 16:3 the place of origin of the parent companies is indicated. This information is taken from section I of the questionnaire. In quite a large number of companies the founders came from more than one city. In these cases the most important source of initiative for the firm was taken, in particular the home town of the main activist or promoter of the firm.

Factors which influence a city's ability to generate new industrial companies include the ability to teach a wide range of skills and trades either in institutes of higher education or on the shopfloor, the ability to provide capital for industrial development, and the ability to provide a wide range of business contacts particularly for purchases and sales. Table 16:3 gives a good indication of the ability of the growth-pole towns to generate new companies. The towns with the least industrial development, especially Huelva and Burgos, were not able to generate as large a proportion of companies as the towns with a longer industrial tradition such as Saragossa and Valladolid. The one anomoly is the city of Corunna which has a very high proportion of locally generated companies. However, this is due to Corunna's inability to attract companies from outside the locality rather than to city's ability to generate a large number of new enterprises.

Apart from the growth-poles, nine other towns and provinces also formed significant places of origin. These nine include the towns of Seville and Valladolid which were able to generate companies in the other growth poles. These nine towns could be regarded as natural growth poles generating new industrial activities on a national scale. Of these nine the most important place of origin was Madrid, followed by Barcelona, Bilbao, Seville, Valladolid and Guipúzcoa and Navarre provinces, which is in general accordance with the importance that these places have within the Spanish economy. There is also a marked tendency for the companies

TABLE 16:4

The Place of Origin of the Parent Companies: Analysed by Industrial Sectors.

Place of Origin	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Growth Poles	24	6	6	13	10	12	48	3	122
Madrid	2	1	0	3	3	5	7	2	23
Barcelona	2	4	1	0	1	3	1	0	12
Bilbao	0	0	1	0	1	0	4	0	6
Seville	0	0	1	0	0	2	0	1	4
Valladolid	0	0	0	3	0	0	1	0	4
Guipúzcoa	1	0	0	0	1	0	1	0	3
Navarre	1	1	0	0	0	0	1	0	3
Valencia	0	0	0	0	0	2	0	0	2
Pontevedra	1	0	0	0	0	1	0	0	2
Foreign	4	1	0	1	4	3	5	0	18
Other	0	0	3	0	0	4	3	1	11
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

TABLE 16:5

The Centre of Multi-Plant Companies: Analysed by Growth Poles.

The Centre of Multi-Plant Companies	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Growth Poles	1	4	0	5	6	6	9	31
Madrid	5	3	0	7	2	0	1	18
Barcelona	1	2	0	0	0	0	2	5
Bilbao	0	2	0	0	0	0	2	4
Valladolid	1	1	0	1	0	1	0	4
Seville	2	0	0	0	0	0	0	2
Navarre	0	0	0	0	1	0	0	1
Foreign	0	6	0	1	2	0	1	10
Other	1	1	0	0	1	4	0	7
Totals	11	19	0	14	12	11	15	82

Source: questionnaires

generated by the nine cities and provinces to be located in the nearest growth pole. For example, a large number of Burgos' companies were founded in Madrid and Bilbao (Table 16:3). Similarly Huelva has companies which originated in Seville, Valladolid has companies from Madrid, Vigo from Pontevedra and Saragossa from Barcelona. The growth poles which attracted the largest number of foreign companies were those which had good central locations, especially Burgos and Seville.

The growth-pole towns were able to generate a high proportion of companies in the food, wood and furniture, paper and printing and metallurgical and engineering industries (Table 16:4). Other notable features revealed in Table 16:4 include the ability of Barcelona to generate companies in the textile and clothing sector, of Bilbao to generate metallurgical and engineering companies and Valencia to generate ceramics companies. Clearly there has been a marked tendency for these cities to create the largest proportion of companies from their main industrial sectors. Foreign companies were important in a wide range of industries, especially the metallurgical and engineering, food, and chemical industries.

Of the 210 firms interviewed, 82 formed part of multi-plant companies. These companies are important for they represent a higher grade of industrial organisation than the single plant companies and their presence gives some indication of the level of industrial maturity which the growth poles have attained. However, in those cases where the centre of the multi-plant company is located outside the growth pole then economic decisions which may have a strong influence on the growth pole are taken outside the growth pole. Of the 82 multi-plant companies 31 had their centres in the growth-pole towns (Table 16:5). Generally the pattern is much as would be expected, with the more industrialized growth poles having the largest number of centres of multi-plant companies. The remaining 51 firms were branch factories with their head offices elsewhere, mainly in Madrid and the larger industrial towns. The multi-plant companies were fairly evenly spread between the growth poles with the exceptions of Burgos, which had the highest total, and Corunna, which had

TABLE 16:6

The Centre of Multi-Plant Companies: Analysed by Industrial Sectors.

The Centre of Multi-Plant Companies	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Growth Poles	5	7	1	4	3	4	5	2	31
Madrid	1	0	2	0	4	5	5	1	18
Barcelona	1	2	0	0	1	0	1	0	5
Bilbao	0	0	1	0	1	0	2	0	4
Valladolid	0	0	0	3	0	0	1	0	4
Seville	0	0	0	0	0	1	0	1	2
Navarre	1	0	0	0	0	0	0	0	1
Foreign	2	0	0	0	1	3	4	0	10
Other	1	1	1	0	0	3	0	1	7
Totals	11	10	5	7	10	16	18	5	82

Source: questionnaires

TABLE 16:7

The Creation of New Companies: Analysed by Growth Poles.

Origin of new companies	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Spanish companies	6	12	2	10	8	3	5	46
Foreign companies	0	6	0	3	0	0	1	10
Joint Spanish-Foreign Ventures	1	4	0	1	0	1	2	9
Workers from industry	2	0	4	2	1	2	1	12
Growth of family firms	0	0	0	0	2	0	0	2
Unification of small Ventures	0	5	1	0	1	1	0	8
Financial institutions	0	0	0	1	1	0	1	3
Other	0	1	0	0	0	0	0	1
Totals	9	28	7	17	13	7	10	91

Source: questionnaire

TABLE 16:8

The Creation of New Companies: Analysed by Industrial Sectors.

Origin of new Companies	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Spanish companies	3	1	2	4	3	13	19	1	46
Foreign companies	3	0	0	0	0	3	4	0	10
Joint Spanish-Foreign ventures	0	1	2	3	1	0	2	0	9
Workers from industry	3	0	1	0	1	3	4	0	12
Growth of family firms	0	0	0	1	0	0	1	0	2
Unification of small ventures	5	0	2	0	0	1	0	0	8
Financial institutions	1	0	0	0	0	2	0	0	3
Other	0	0	0	1	0	0	0	0	1
Totals	15	2	7	9	5	22	30	1	91

Source: questionnaires

no multi-plant companies at all (Table 16:5). This would appear to reinforce the view expressed above that Burgos was the most attractive growth pole in terms of available benefits and location; however, it is also the growth pole most vulnerable to decisions made by outside companies. Corunna's complete inability to generate its own multi-plant companies or to attract branch factories from outside highlights the weak industrial situation of this growth pole (Table 16:5).

The multi-plant companies were fairly evenly distributed between the main industrial sectors with the largest numbers occurring in the construction, glass and ceramics, and metallurgical and engineering sectors (Table 16:6). Multi-plant companies based on the growth poles formed significant proportions of the food, textiles and clothing, and paper and printing sectors, suggesting that it is easier for growth-pole companies to reach an advanced state or organisation in these three sectors.

The Creation of New Companies

Little is known about the circumstances under which new companies are created and no studies have yet appeared on the origin of Spanish companies. In Section 13 of the questionnaire the 91 companies founded since 1964 were asked to describe the circumstances that had lead to their foundation. Supplementary evidence was gained from Section I on the general background of the firm and from Section 4 on the history of the firm. The main findings of these questions are presented in Tables 16:7 and 16:8.

From Table 16:7 it can be seen that over half of all the new companies were founded by businessmen who owned other independent companies in Spain. Much of the reason for this very high proportion is that existing businessmen found it easier to make business contacts and secure financial loans. The experience of these 46 companies varied enormously but a large number were formed by companies which previously had business dealings in the area, who saw the possibilities for future growth and who preferred to increase production by establishing a new firm close to the regional market rather than by increasing production in the parent factory.

Ten of the new companies were created by foreign firms under much the

same circumstances as those created by the Spanish firms. A further nine companies were set up as joint ventures between Spanish and foreign firms. In most cases the Spanish firm had the business contacts and saw the possibilities for a new or improved product but lacked the capital resources or technical expertise to set up in production by themselves.

The remaining 26 firms were created by people who were, in varying degrees, newcomers to the industrial scene (Table 16:7). Twelve of these firms were established by people who had worked in industry and then saved enough money to be able to set up their own factory. Many of these people had been managers and so had knowledge of production techniques as well as the business contacts for supplies and markets. A further ten new companies were the result of the growth of small manufacturing ventures (Table 16:7). Two of these were small family concerns which were expanding production and at the same time were being reconstituted as fully fledged companies. The other eight were the result of the unification of smaller concerns. An example of this type of company is the Burgos bakery firm Panisa, which was formed from ten small bakeries. By uniting the bakeries were able to change from small scale 'back of the shop' methods to fully automated production with the potential for supplying a much larger market. Finally three firms were established by financial institutions including two commercial banks and one local savings bank. In each case the bank already had a number of industrial interests and was extending its range of activities.

Of the seven growth poles Burgos had the largest number of new companies (Table 16:7). Most of these were formed by firms from outside Burgos including ten foreign companies. This underlines the conclusion noted elsewhere that the Burgos growth pole was the most attractive for outside companies. The three most industrialized growth poles - Seville, Valladolid and Saragossa - had the next highest number of new companies. Unlike Burgos they were less reliant on foreign firms and able to generate a bigger proportion of their own new companies. The Galician growth poles, Vigo and Corunna, had the smallest total of new companies and were almost

entirely unable to attract new companies set up by firms from outside the region. In general the growth poles in the backward parts of Spain would appear to be reliant on their own resources for new industrial companies.

The metallurgical and engineering, construction, glass and ceramics and food sectors contained the largest number of new companies (Table 16:8). These three sectors included all the companies founded by foreign firms and most of the companies formed by persons who had previously worked in industry, indicating the wide variety of companies that could be established in these sectors. In contrast the sectors requiring larger capital investments and more advanced technical knowledge (textiles and clothing, paper and printing, and chemicals) were much smaller in number and were founded mainly by existing Spanish companies (Table 16:8).

The Financial Background to the Growth-Pole Firms

The financial constitution of a company plays a critical role in determining that company's future. The ability of a company to survive difficult economic conditions often depends more on the strength of the company's finances than on the ability of the firm to find the optimum location in terms of markets and raw materials. Similarly it is often the strength of the company's finances which determines the size of any new investment and with it the size of any increase in production and employment.

Section 3 of the questionnaire contained questions concerning the financial constitution of the firm and any financial problems the firm had encountered. The analysis of the answers showed that the vast majority of firms were constituted with private capital, very few were owned or part-owned by the commercial banks or other financial institutions. 75 of the firms interviewed stated that they had some form of financial problem. The incidence of firms encountering these problems varied considerably from 10% of firms interviewed in Huelva to over 50% in Saragossa (Table 16:9). In Chapter 14 above it was noted that quite a large proportion of firms in Saragossa had failed, which generally supports the figures given in Table 16:9. It would appear that amongst the large

number of new companies created in the bigger growth poles such as Saragossa and Valladolid are many which, for one reason or another are not sufficiently profitable.

The financial problems encountered by growth-pole firms were of two types: lack of trading capital and lack of cheap long-term capital for investment. The gap between the payment of bills and the receipt of income from sales often caused a severe liquidity shortage for the growth-pole firms and the commercial banks appeared reluctant to help with this type of problem.

The lack of suitable investment finance for industry revealed a fundamental gap in the Spanish banking system. The official credits available under the growth-pole scheme were both cheap and long-term in duration, but generally they were limited in size and were not available to all the firms within the growth-pole scheme. The credits available from the commercial banks were generally expensive and often restricted to short-term loans. A typical example was a Burgos firm which had 15 million pesetas of official credits through the growth-pole scheme at cheap rates and for a long-term period, and 50 million pesetas from the commercial banks which had to be renewed at three month intervals. In any severe credit squeeze this firm would be in severe financial difficulties. In another case a firm jointly promoted by a Spanish and a German parent company could obtain no long-term finance at reasonable rates from the Spanish banks, with the consequence that the firm was going to Germany for its finance and control of the firm was passing into German hands. As the manager of this firm bitterly stated "the Spanish banks are making the American and European challenges inevitable", a reference to the book by Servan-Schrieber which was popular at that time.[7]

Rightly or wrongly many of the firms interviewed regarded the banks with a great deal of suspicion. Whether this was justified or simply another example of the antipathy towards banks which is often found in firms,[8] the effect was to encourage many firms to rely as much as possible on autofinancing. Although a few firms appeared to be making unrealistic

TABLE 16:10

The Main Categories of Industrial Investment: analysed by Growth Poles.

Categories of industrial investment	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Extension to factory	2	5	5	9	11	7	19	58
Relocation of factory	1	4	2	3	3	2	16	31
New factory set up by a growth-pole company	1	13	6	11	10	6	9	56
New factory set up by a company with connections with the growth-pole	7	3	0	0	1	3	0	14
New factory set up by a company with no previous connections with the growth-pole	8	20	1	12	5	2	3	51
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

TABLE 16:11

The Main Categories of Industrial Investment: Analysed by Industrial Sectors.

Categories of Industrial Investment	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Extension to factory	11	3	3	7	7	5	19	3	58
Relocation of factory	2	5	0	1	1	0	20	2	31
New factory set up by growth pole company	15	1	5	5	5	9	16	0	56
New factory set up by a company with connections with the growth pole	1	1	3	0	3	3	3	0	14
New factory set up by a company with no connections with the growth pole	6	3	1	7	4	15	13	2	51
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

demands on the banking system there can be no doubt that for a large proportion of firms, particularly the younger and smaller enterprises, there was a serious shortage of reasonably-priced long-term capital.

The Categories of Industrial Investment Within the Growth Poles

The information contained in Tables 16:10 and 16:11 is taken from Sections 1, 3 and 4 of the questionnaire. In these two tables the investment by the 210 firms in the growth-pole scheme is divided into five categories consisting of:-

i) extensions to factories already in existence in the growth pole,
ii) the relocation of an existing factory within the growth pole, most of these cases involving a movement of a factory from a congested city centre to a location on the outskirts of the city or on a new industrial estate,
iii) the establishment of a new factory by a growth-pole firm,
iv) the establishment of a new factory by a firm with previous connections with the growth pole, these connections being in the form of the firm having an existing factory in the growth pole, one of the founders of the new firm living in the growth pole, etc.,
v) the establishment of a new factory by a firm with no previous connections with the growth pole, these often forming the 'footloose' firms which decided to be located in a growth pole for entirely economic reasons and not because of any previous connection with the area.

From Table 16:10 it can be seen that for 89 firms (43% of the total) the investment decision involved the extension or relocation of an existing factory. In almost all of these cases the question of alternative locations did not arise as the proposed investment was easily accommodated at the existing site. For the other 121 firms (57% of the total) the investment decision led on to the establishment of a new factory, but in the case of 70 of these firms (33% of the total) the factory was located in the home town of the owner and for most of this latter group of firms the question of alternative locations did not arise.

The question of a suitable factory location was fully considered only by the 51 firms that had no previous connection with the growth poles. That is to say for only 24% of the firms within the growth-pole scheme was the question of an optimum location considered, for most of the other 76% firms

the location was given and the question considered was whether the proposed investment would be profitable at that location.

From Table 16:10 it can be seen that quite distinct patterns of investment occurred within the different growth poles. In the case of Huelva very little of the investment was by growth-pole firms, most of the investment coming from the two categories of outside firms. The other polo de promoción, Burgos, showed a similar pattern of investment but with the important difference that a large proportion of its new factories have been established by local companies. Of the seven growth poles Burgos was able to attract the highest number of 'outside' firms. In the five polos de desarrollo a very high proportion of the new investments were made by companies from the growth-pole cities. This is most marked in the case of Saragossa with 19 firms making extensions to existing factories and 16 firms relocating their factories within the growth pole. This high number of relocations is due in part to the rapid growth of the city so that many firms previously on the outskirts found themselves within the congested city centre (see above Chapter 14). The other more industrialized towns, Seville, Valladolid and Vigo show a similar pattern of investments to Saragossa but with a much smaller number of relocations. Lastly Corunna has a quite unique pattern of investment being almost entirely reliant on local firms for new industrial activity (Table 16:10).

The analysis of the investments by industrial sectors (Table 16:11) reveals a less distinctive pattern. In the metallurgical and engineering, and the textile and clothing sectors a larger number of investments were made through the expansion and relocation of existing firms than through the establishment of new factories, whereas the opposite tendency was apparent in all the other sectors and was quite marked in the case of the construction, glass and ceramics sector.

The Location of New Factories

Section 14 of the questionnaire was directed at the 121 firms that had established new factories within the growth-pole scheme. Each of these firms were asked which locational factors had led them to choose

TABLE 16:12

The Most Important Location Factors: Analysed by Growth Poles.

Location Factors	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Proximity to raw materials	4	1	3	3	3	3	0	17
Proximity to a main market	7	10	2	17	7	4	2	49
Available labour	0	0	0	0	0	0	0	0
Available factory site	0	0	0	0	0	0	0	0
Other factories in the same industry	0	0	0	0	0	0	0	0
Home of the company's owner	0	5	2	2	4	4	7	24
Growth-pole benefits	5	19	0	1	2	0	3	30
Other	0	1	0	0	0	0	0	1
Totals	16	36	7	23	16	11	12	121

Source: questionnaires

TABLE 16:13

The Most Important Location Factors: Analysed by Industrial Sectors.

Location factors	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Proximity to raw materials	10	0	2	1	3	0	1	0	17
Proximity to main market	7	2	1	4	1	23	11	0	49
Available labour	0	0	0	0	0	0	0	0	0
Available factory site	0	0	0	0	0	0	0	0	0
Other factories in the same industry	0	0	0	0	0	0	0	0	0
Home of the company's owner	5	0	0	2	4	2	11	0	24
Growth-pole benefits	0	3	6	5	3	2	9	2	30
Other	0	0	0	0	0	1	0	0	1
Totals	22	5	9	12	12	27	32	2	121

Source: questionnaires

their new factory site and if possible to rank these locational factors in order of importance. For some firms this second part of the question was fairly arbitrary for they emphasised that their choice of location was the result of a particular 'mix' of locational factors in which all the constituents were of importance. Nevertheless the firms were asked to give some assessment of what they thought to be the most important elements of their locational mix.

Tables 16:12 and 16:13 contain an analysis of the single most important location factor mentioned by the 121 firms. From Table 16:12 it can be seen that proximity to an important market was the location factor most frequently mentioned by the firms followed by the growth-pole benefits, proximity to the home of the company's owner and proximity to a source of raw materials.

Three of the location factors, the availability of labour, the availability of an industrial site and the existence of other factories in the same industry received no mentions at all. In an advanced economy such as in the United Kingdom, with comparatively low levels of unemployment and concealed unemployment, availability of labour has been an important location factor[9]. However, in Spain where there is an ample supply of unskilled labour in most parts of the country and where there are few pools of skilled industrial labour to be tapped, there is little advantage to be gained from locating a factory close to a particular supply of labour.

The lack of any mention of available factory sites is surprising, especially when so many firms stressed the importance of an improved infrastructure to functioning of their factories (above Chapters 8 - 14). This may be because location decisions are taken according to economic criteria such as proximity to a main market whereas the availability of services and a good factory site are more important to the running of the factory.

The importance of the different location factors varied widely between the seven growth poles (Table 16:12). In Huelva the raw materials of the area, notably fish and pyrites, were relatively important in attracting

TABLE 16:14

The Secondary Location Factors: analysed by Growth Poles.

Location factors	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Proximity to raw materials	3	10	0	5	4	0	1	23
Proximity to main market	2	13	2	2	1	2	5	27
Available labour	0	0	0	1	0	0	0	1
Available factory site	0	1	1	6	0	0	0	8
Other factories in the same industry	5	0	0	2	0	0	1	8
Home of the company's owner	4	8	4	0	7	2	2	27
Growth-pole benefits	9	11	3	9	6	5	2	45
Other	1	0	0	0	0	0	0	1
Totals	24	43	10	25	18	9	11	140

Note: not all the 121 firms thought a second or third location factor was significant, and so are not represented here. Other firms stated that both the second and third factors were significant and so both are represented here.

Source: questionnaires

TABLE 16:15

The Secondary Location Factors: Analysed by Industrial Sectors.

Location factors	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Proximity to raw materials	6	0	1	0	3	6	7	0	23
Proximity to a main market	4	1	1	1	3	3	14	0	27
Available labour	0	0	0	0	0	1	0	0	1
Available factory site	1	1	0	2	0	2	1	1	8
Other factories in the same industry	1	0	0	2	3	0	2	0	8
Home of the company owner	8	1	6	1	1	6	4	0	27
Growth-pole benefits	5	1	3	5	3	15	13	0	45
Other	0	0	0	0	0	0	1	0	1
Totals	25	4	11	11	13	33	42	1	140

Source: questionnaires

firms to the city. The growth-pole benefits were also important, but as may be expected in an area lacking an existing industrial base, proximity to the home of the company's owner was not mentioned. In Burgos the growth-pole benefits were of overwhelming importance, underlining the advantage the polos de promoción enjoyed over the other growth poles. Proximity to a main market was also important reflecting Burgos' role as a regional centre.

The Galician growth poles, Vigo and Corunna, have a similar pattern of location factors. Both have a high proportion of mentions for raw materials but no mentions at all for the growth-pole benefits, indicating that it has been the region's resources rather than government benefits which have been the greater spur to new industrial developments. In Seville and Valladolid proximity to an important market was the main location factor, reflecting the fact that both growth-pole towns are important regional centres. In Saragossa proximity to the home of the company's owner was the main location factor, indicating that Saragossa's industrial development is the result of the initiative of its population rather than as a result of local raw materials or a large regional market.

The analysis by industrial sectors shows that only the food industry was strongly orientated towards the supply of raw materials (Table 16:13). In three sectors, textiles and clothing, wood and furniture, and paper and printing, the growth-pole benefits were the most important location factor, suggesting that these three sectors are less rigid in their location requirements and come closest to the 'footloose' industries which the planners hoped to attract to the growth poles. The construction, glass and ceramics sector, which was dominated by the construction industry, was very strongly orientated towards local markets (Table 16:13). Finally, the chemical and the metallurgical and engineering sectors each appeared to be orientated in equal amounts by three location factors indicating that no one factor was of overiding importance to these sectors.

The location factors ranked second and third in importance by the 121 firms are analysed in Tables 16:14 and 16:15. Not all of the firms

mentioned more than one location factor and so are not represented in these tables whilst for other firms the second and third location factors were of equal importance to the first location factor. Tables 16:14 and 16:15 therefore provide important supplementary evidence on location influences in Spanish industry.

From Table 16:14 it can be seen that the growth-pole benefits was the location factor most frequently mentioned, followed by the home of the company's owner, proximity to a large market and proximity to raw materials. The three remaining location factors all received mentions, although clearly these factors were not very significant for the growth-pole firms.

The importance of the secondary location factors in the seven growth poles (Table 16:14) is very similar to that shown by the main location factors, (Table 16:12) with only two major differences. In Huelva the major difference is the mention by five firms of the proximity to other factories in the same industry (Table 16:14). This is due to the petro-chemical and metallurgical complex that is being built up in the city where the close proximity of factories supplying each other with raw materials, fuel and feedstock is of vital importance. The other major difference was the mention by six firms in Seville of the availability of industrial sites. A number of firms stated that in Andalusia the local authorities did not fully understand the needs of industry, consequently it was difficult to find good industrial sites with the full range of services that modern industries require. The growth pole at Seville was one of the few places in the region where these services could be obtained. The analysis of the secondary location factors by industrial sectors (Table 16:15) also shows a very similar pattern to that shown by the main location factors (Table 16:13), but with more importance being attached to the growth-pole benefits.

The marked similarity between the main and secondary location factors indicates a basic stability in the location pattern of the growth-pole firms. Only four of the location factors are of importance consisting of proximity to raw materials, proximity to a large market, home of the company's owner and the growth-pole benefits. The basic pattern created

TABLE 16:16

The Cost of Transporting Inports: Analysed by Industrial Sectors.

Transport Costs	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Below 1%	10	1	0	0	1	5	5	2	24
1 - 4%	7	9	7	9	8	1	23	0	64
5 - 9%	4	0	1	3	2	1	4	0	15
10 - 19%	0	0	2	1	0	3	1	0	7
20 - 49%	0	0	1	2	3	7	1	0	14
Above 50%	0	0	0	0	0	2	0	0	2
Sub-Totals	21	10	11	15	14	19	34	2	126
Bought in factory	8	0	1	2	2	6	14	0	33
Not applicable	5	0	0	0	0	0	7	3	15
No response	1	3	0	3	4	7	16	2	36
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

by these factors can be summarised as follows:-

i) proximity to raw materials is important to the food industry and to a lesser extent to the chemical industry,

ii) proximity to raw materials is very important to the construction, glass and ceramics industry and the metallurgical and engineering industry, and to a lesser extent to the paper and printing industry,

iii) the home of the company's owner is important to a wide range of industries including the food, metallurgical and engineering and chemical sectors,

iv) similarly the growth-pole benefits are important to a wide range of industries including textiles and clothing, wood and furniture and the paper and printing industries.

Transport Costs

Classical location theory has placed great emphasis on the role played by transport costs in determining the location of industry[10]. In Sections 5 and 6 of the questionnaire the growth-pole firms were asked to give details of the transport costs of each of their various inputs and products. In order to ensure comparability of results the transport costs were given as a percentage of the cost of the input, and as a percentage of the delivered selling price of the product. These percentages show the relative importance of transport costs to total production costs and indicates those firms which are likely to seek a minimum transport location.

A number of factors will influence the size of the transport costs of a firm including the distance from the factory to the place (or places) of supply, the distance to the place (or places) of sale, the gain or loss in weight that occurs during manufacture and the need for extra packaging or special handling equipment. The percentage figures give an overall picture of transport costs but do not take into account any of these particular circumstances.

Not all the firms were able to supply details of their transport costs. For some firms the goods were bought on the factory site and the transport costs were borne by the suppliers or buyers. In some cases the concept of transport costs was not applicable, as in the case of the electricity supply

TABLE 16:17

The Cost of Transporting Products: Analysed by Industrial Sectors.

Transport Costs	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
Below 1%	2	2	1	1	2	1	5	1	15
1 - 4%	12	5	5	8	9	2	24	1	66
5 - 9%	5	0	4	4	1	5	4	0	23
10 - 19%	3	0	0	3	0	11	0	0	17
20 - 49%	0	0	1	0	0	3	0	0	4
Above 50%	0	0	0	0	0	0	0	0	0
Sub-Totals	22	7	11	16	12	22	33	2	125
Bought in factory	7	3	1	1	4	3	11	0	30
Not applicable	5	0	0	0	0	0	12	3	20
No response	1	3	0	3	4	7	15	2	35
Totals	35	13	12	20	20	32	71	7	210

Source: Questionnaires

industry or in the coach building industry. Finally there were a number of 'no responses' which consisted of firms which had only recently started production and had no clear indication of either transport or production costs, and a number of firms where details of transport costs were kept in the company's head office outside the growth-pole.

The information in Tables 16:16 and 16:17 shows the transport costs for the amalgam of the inputs and the amalgam of the products, or where this was not feasible or led to gross distortions, for the single most important input and the single most important product. Information on the costs of transporting inputs was gained from 126 firms (Table 16:16). Of these 126 firms 88 (70%) had costs below 5% indicating that for most firms transport was not a critical factor of production.

In the food sector a majority of firms had costs below 1%, but most of this is accounted for by the fish processing firms which bought fish at the dockside; the rest of the firms had costs between 1 and 10%. In the textile sector transport costs were almost entirely within the 1 - 4% range indicating that relatively low costs and uniform transport conditions existed within the industry. The wood and furniture, paper and printing and chemical sectors show a much wider range of transport conditions with costs varying between 1 - 50%, although in each sector the largest number of firms occurred in the 1 - 4% range. In the construction, glass and ceramics industries two tendencies can be seen, either to have very low or very high transport costs. The firms with very low costs were either building firms who bought their materials from local suppliers or brick and tile works which had clay pits at the factory site. The firms with relatively high costs were brick and ceramic works which brought in raw materials over a long distance and manufactured a low-priced product. Finally the metallurgical and engineering sector had a low level of costs, mainly in the 1 - 4% range.

Information on the costs of transporting products was obtained from 125 firms (Table 16:17), of whom 81 (65%) had costs below 5%. In general the distribution of these costs is very similar to that for inputs

(Table 16:16) but with a tendency for the general level of costs to be lower, for example there is a smaller proportion of firms with transport costs above 20%. This tendency can be explained in part by the fact that a large proportion of firms preferred to be located closer to their markets than to their raw materials (Tables 16:13 and 16:15).

Firms in the textile and clothing, and metallurgical and engineering sectors had very low costs, both for inputs and products, indicating that transport is not an important location factor in these sectors. At the other extreme costs were high in the construction, glass and ceramics sector suggesting that an optimum transport location is important and this would help to explain the strong preference shown by firms in this sector for a location close to a major market (Tables 16:13 and 16:15). In the other sectors transport costs varied considerably in size but with most firms they were in the 1 - 4% range, suggesting that transport has not been a major location factor.

Linkage Analysis

It was noted above in Chapter 5 that members of both the French and American schools of growth-pole theorists believed that the main process of economic development occurred through the growth of inter-industry linkages. The clearest discussion of linkages is given by Hirschman who states that new industrial developments can be built up from a series of forward and backward linkages, where backward linkage is defined as the purchase of inputs and forward linkage the sale of products by firms.[11] Hirschman goes on to state that it is the 'total linkage effect' which may lead to new industrial developments and suggests the use of input-output tables to measure this effect.[12] Apart from the general limitations associated with the use of input-output tables Bharadwaj has noted that the estimation of industrial linkages on the basis of input-output coefficients raises a number of specific and quite fundamental problems.[13] Later writers have overcome some of these problems, for example Richter has suggested using an index which combines input-output coefficients with some measure of spatial linkage thus providing a better overall measure of local linkage,[14]

and Karaska has used coefficients from the Philadelphia regional input-output table, thereby gaining a less aggregated measure of industrial linkage in the Philadelphia area.[15]

All the studies mentioned so far have examined the relationships between industrial sectors on the basis of input-output studies. A second group of linkage studies has investigated the relationships between individual firms within an industry on the basis of questionnaire surveys. This second group is associated with the work of Florence in the West Midlands[16] and subsequent studies such as those by Britton,[17] Livesey[18] and Keeble.[19] In addition the question of linkage and industrial location has been discussed at length in recent issues of the journal Area.[20] Whilst this discussion has been interesting and informative Bater and Walker,[21] in their summing up of the debate, suggest that it has not concentrated on the central issue which is to predict which industries may be located in an area.

> "The main value of linkage analysis will possibly be in the provision of empirical data to aid the prediction of linkage effects, that is, the degree to which linked industries may be attracted to an area."[22]

In this section the empirical data provided by the pattern of industrial linkages of the growth-pole firms is analysed and discussed. The term 'linkage' has been used by different authors to refer to a wide variety of economic relationships between firms, organisations and individuals, these relationships including the transference of money, goods, services and information.[23] In the present study it is the transference of goods which has been examined. Each of the 210 firms interviewed has been classified by its forward and backward linkage effects, according to whether the linkage is with local or non-local firms. Local is defined as within 80 km. of the firm, which in most cases means the local province. On the basis of this classification the growth-pole firms can be grouped into four main categories:-

A) Backward linkage local
Forward linkage non-local

In this category the firm buys over 50% of its' inputs within the

surrounding province and sells over 50% of its' products in the regional or national markets. This group of firms may be considered as orientated towards raw materials. Generally this is a very good type of firm to attract to a growth-pole, for it stimulates local production through its inputs and yet does not depend for its sales on the smaller and less reliable local market.

B) Backward linkage local
Forward linkage local

In this group the firm depends on the local area for both its' inputs and its' sales. This is another good type of firm to attract to a growth pole for it maximises the amount of linkage made with the local area. Furthermore by both buying and selling locally it is possible to reduce costs, make operations more flexible and generally increase a firm's profitability. On the other hand these firms are dependant for their sales on the local area which, in a backward area, is often very poor.

C) Backward linkage non-local
Forward linkage non-local

Firms in this group have no strong links with the local area either for inputs or sales, and many of these firms may be considered as 'footloose', having no strong locational preference. It is this type of firm - which is not likely to go to a growth-pole town because of any strong economic links with the area, and yet is fairly tolerant of location conditions - which the planners hope to attract to the growth poles. There is also the possibility that in the future these firms will exchange some of their non-local linkages for local linkages, thereby increasing development in the local area.

D) Backward linkage local
Forward linkage non-local

This group of firms are orientated towards the local market. From a regional development point of view these firms may provide the least benefits, for they purchase their inputs from outside the area and yet are dependant for sales, and therefore for growth, on the local market.

This classification has several limitations. It is based entirely on

TABLE 16:18

The Pattern of Industrial Linkages: analysed by Growth Poles.

Linkage Types	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
A	6	7	5	5	7	6	19	55
B	7	7	3	12	3	7	4	43
C	4	27	2	12	17	5	21	88
D	2	4	4	6	3	2	3	24
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

the weight of materials used and takes no account of cost. This is inevitable as few firms were willing to reveal details of their revenue and expenditure accounts. A second weakness is that the information obtained includes answers from a number of new firms that were still 'settling in' and who could change their linkage pattern in the near future. Despite these weaknesses it is thought that this classification provides a clear picture of the overall pattern of linkages of the growth-pole firms.

The largest number of firms, 88 (42%) had type C linkage patterns indicating that quite a high proportion of the growth-pole firms were relatively footloose in terms of location (Table 16:18). The next largest group of firms had type A linkages indicating a tendency for the growth-pole firms to obtain inputs from the local area. The locally orientated firms, type B, formed the next largest group whilst the market orientated firms (type D) formed the smallest group. This pattern of linkages forms a very distinct contrast to the results shown in Tables 16:12, 16:13, 16:14 and 16:15 in which a majority of the firms which had built new factories indicated that they had chosen a location close to a main market rather close to raw materials. Part of this discrepancy is due to the use of a different sample of firms; however this does not account for all of the difference. It would appear that there is an important distinction between the aims and intentions of many firms and their actual achievements. A majority of firms had stated a preference for a location close to a market, but in practice appeared to be footloose or located closer to sources of inputs.

The three growth poles in the most eccentric locations - Huelva, Corunna and Vigo - have similar patterns of linkage (Table 16:18) with a slight majority of firms in groups A and B, and fewer in groups C and D. This is largely explained by the industrial composition of these growth poles. In Huelva and Vigo most of the group B firms were in the construction, glass and ceramics sector, whilst in Vigo and Corunna most of the group A firms were in the food industry. The small number of group C

TABLE 16:19

The Pattern of Industrial Linkages: Analysed by Industrial Sectors.

Linkage Types	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass and Ceramics	Metallurgical and Engineering	Various	Totals
A	19	2	6	7	3	4	12	2	55
B	10	0	1	2	3	15	9	3	43
C	3	10	4	4	11	10	44	2	88
D	3	1	1	7	3	3	6	0	24
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

firms, the footloose industries, is explained by the location of these three growth poles at the periphery of Spain. Similarly the fact that Galicia and Western Andalusia are both low income areas (see above Chapters 4 and 7) helps to explain why there are so few market-orientated (group D) firms in these growth poles.

The two Castilian growth poles, Burgos and Valladolid, both have a high proportion of footloose (group C) firms, a result of their fairly central locations (Table 16:18). Both growth poles also have a fairly large proportion of raw-materials orientated firms (group A) mainly composed of agricultural-based industries.

Seville has a distinctive linkage pattern with a high proportion of firms in groups B and D (Table 16:18). These B and D firms occur in all of Seville's main industrial sectors indicating that this pattern is not the result of a particular industrial mix. The high proportion of group B firms suggests that Seville contains a large industrial economy where the whole range of industrial activities can find suppliers and outlets. The high proportion of market orientated (group D) firms is an indication of Seville's importance as the regional centre for a relatively prosperous area.

Saragossa has a high proportion of materials - orientated (group A) and footloose (group C) firms (Table 16:18). This is the result of Saragossa's industrial mix as most of the A and C firms are from the metallurgical and engineering sector.

Analysis of the industrial sectors show that two sectors, food and wood and furniture, both had a predominance of group A or raw materials orientated industries (Table 16:19). The paper and printing sector had a high proportion of firms in the A and D groups. The group A firms were in Saragossa and Valladolid and included those firms making paper and paper products from local materials whereas the group D firms were in each of the seven growth poles and consisted mainly of specialist packaging firms which required inputs from non-local sources whilst relying on the local market for sales. The construction, glass and ceramics sector, which is dominated by the construction industry, had a majority of firms in group B,

TABLE 16:20

Planned Future Extensions: analysed by Growth Poles.

Planned extensions	Huelva	Burgos	Corunna	Seville	Valladolid	Vigo	Saragossa	Totals
Horizontal	11	28	6	29	17	11	27	129
Backward	1	2	1	0	0	1	0	5
Forward	3	0	1	4	1	1	0	10
Other	1	9	0	1	4	5	8	28
None	3	6	6	1	8	2	12	38
Totals	19	45	14	35	30	20	47	210

Source: questionnaires

TABLE 16:21

Planned Future Extensions: Analysed by Industrial Sectors.

Planned Extensions	Food	Textiles and Clothing	Wood and Furniture	Paper and Printing	Chemicals	Construction Glass, and Ceramics	Metallurgical and Engineering	Various	Totals
Horizontal	18	9	6	12	11	24	42	7	129
Backward	1	1	0	0	0	1	2	0	5
Forward	4	0	1	0	2	2	1	0	10
Other	4	0	1	1	3	4	15	0	28
None	8	3	4	7	4	1	11	0	38
Totals	35	13	12	20	20	32	71	7	210

Source: questionnaires

emphasising the highly localised nature of such activities.

In general the industries which gave the greatest stimulus to the local economy through linkages were food, wood and furniture, and construction, glass and ceramics. The footloose industries were in the textile and clothing, chemicals and metallurgical sectors. The linkage patterns suggest that these sectors could be used to build up new industrial developments in the less developed areas, but that greater incentives would be necessary to divert these industries away from central locations such as Burgos, Valladolid and Saragossa which they prefer at present.

Future Extensions of the Growth-Pole Firms

In Section 11 of the questionnaire the growth-pole firms were asked whether they had plans for any future extensions, and if so whether these extensions were to be horizontal (involving the increased production of the same goods), backward (the production of inputs for their present manufacturing activities), forward (the further processing of their present products), or the production of some completely new product. The results of these questions are shown in Tables 16:20 and 16:21.

Of the 210 firms interviewed 38 (18%) had no plans for any future extensions. Out of the remaining firms 129 (75%) had plans for horizontal extensions, 28 firms (16%) wished to manufacture completely new products and only 15 firms (9%) had plans for forward or backward extensions (Table 16:20). These figures stand in strong contrast to the views of economists such as Hirschman who claim that it is through forward and backward linkages that new industrial developments are induced. In the growth poles it would appear that most industrialists prefer to expand production than undertake new ventures. If these findings are true of the rest of Spain then it implies that the process of industrial development is very dependent on the growth of the domestic market rather than the ability of firms to move into new fields and create their own market for a new good.

Analysis of the planned extensions by growth poles (Table 16:20) and by industrial sectors (Table 16:21) reveals a fairly even distribution of firms

amongst each category. One of the few distinctive features of this pattern is the high proportion of firms from the food sector with plans to make forward extensions. Most of the firms involved already refine or process basic agricultural products and for these firms a forward extension is more feasible than a backward move. The other distinctive feature is the fairly large number of firms from the metallurgical and engineering sector that planned to move into completely new products. The reason for this probably lies in the nature of the firms in this sector. From the interviews the impression was gained that the engineering sector contained many of the liveliest and most active firms within the growth-pole scheme and these firms were prepared to start production in any new field if there was a chance of making a reasonable profit.

Conclusions

It has been noted by Hirschman and others that there is a need for considerably more basic information concerning the circumstances under which new industrial activities are created and developed.[24] This chapter has attempted to outline the main circumstances which led to the establishment and location of the growth-pole firms in Spain.

From this survey a number of conclusions can be drawn about industrial activity in the less developed parts of Spain. The first point to note is that although the majority of firms in the growth-pole scheme are of recent origin, there tended to be a much higher proportion of new firms in sectors such as food, wood and furniture, and construction, glass and ceramics than in the textiles and clothing, and chemical sectors. Any attempt to develop the chemical industry should be directed towards attracting existing companies to the growth poles, whilst the development of the food industry could occur through a policy of stimulating the creation of new companies.

A second important point to note is that over half of the new companies were founded by existing Spanish businessmen. If this proportion is true of the rest of the country then it would explain why the existing industrial areas have been able to generate so much new industrial activity, and why

it has been so difficult to stimulate new industrial developments in the backward agricultural regions,

A third finding of the survey is that for only 24% of the firms did the decision to invest lead on to the question of alternative locations; for the other 76% of the firms the location was given and the question of finding an optimum location did not arise. The proportions conform closely to Kuklinski's estimates that between 60 and 80% of new manufacturing capacity occurs through the expansion of existing plant and less than 40% through the construction of new plant.[25] These findings suggest that industrial location analysis has given too much emphasis to the problem of finding a firm's optimum location. For most firms in the growth-pole scheme the location problem was not, given the production of a particular good what is the optimum location for this activity but rather, given the location will the proposed investment be profitable? In terms of regional economic development these findings further emphasise the difficulties that backward areas face when trying to promote new industrial developments. Investment decisions involving extensions to existing factories, relocations within the same city or locations in the home town of the owner occur mainly within existing industrial areas and only 24% of investment may be regarded as potentially footloose and therefore possible to attract to a location in a backward region.

For the majority of firms the cost of transport for both inputs and raw materials was below 5%, indicating that transport was not an important factor of production and not likely to influence the location of a firm. The only exception was the construction industry which had high transport costs and was strongly orientated towards the local market.

The analysis of the firms' locations by stated preference and by linkage patterns revealed an interesting divergence. A majority of firms based their location decisions on the need to be located close to a major market, whereas in practice many of them had a relatively footloose pattern of linkages. The effect of this divergence is that more firms sought a location close to a main market, which usually means the existing

industrial areas, than economic circumstances would warrant.

All the findings of the survey support the general 'cumulative causation' principle of Myrdal (see above Chapter 5). Once an area becomes industrialized it is more likely to be a place where new companies are formed and new investments occur than a backward agricultural region. Thus the process of industrial development is likely to widen the gap between the rich and the poor regions.

From the growth-pole survey it is also possible to identify those industries which are footloose and therefore most likely to be attracted to the backward areas of Spain. In terms of stated preference a large proportion of firms in the textiles and clothing, wood and furniture, and paper and printing sectors thought that the growth-pole benefits were the most important influence on location, indicating that these industries could be attracted to the poorer areas. However, in terms of transport costs the textile and clothing, and metallurgical and engineering sectors had very low costs both for inputs and products. These same two sectors also had the largest proportion of firms with type C linkages, indicating that they are the two industries most suitable for inclusion in development schemes in the backward regions. In general the wood and furniture, paper and printing and chemical sectors had less footloose patterns of location. The food industry appeared to be orientated towards raw materials and the construction industry towards local markets, indicating that neither were likely to be attracted to the backward areas of Spain on the basis of government incentives alone.

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25) Quoted in H. Stafford (1972) op. cit. p. 205.

Chapter 17

Conclusions

A final assessment of the Spanish growth-pole scheme must wait until its completion in 1981, but the progress so far achieved enables a number of interim judgments to be made. The Spanish experience also enables a number of more general comments to be made about the suitability of growth poles as a planning strategy for underdeveloped regions.

Growth-Pole Theory

In Chapter 5 it was pointed out that much of existing growth-pole theory is of little help as a guide to industrial behaviour. However, those parts of the theory which are operational did receive some degree of support from the results obtained in this research. For example the analysis in Chapter 7 confirmed that natural poles of economic growth do occur in Spain. On the other hand the analysis also confirmed the existence of a number of 'growth-sinks', where there is a very marked absence of economic development, a phenomenon so far not accounted for by theory. The analysis of the seven growth poles contained in Chapters 8-14 revealed that in some towns large propulsive industries played an important part in the industrial development of the town. In Huelva development was dominated by the Río Tinto group of companies, and the growth pole at Vigo was almost entirely dependant on the fortunes of four large companies: Citroën, Mar,S.A., the Alvarez group and Cooper-Zeltia, S.A. However, the larger growth-pole towns such as Seville and Saragossa were far less dependant on the fortunes of a single company. The analysis contained in Chapters 15 and 16 revealed patterns of industrial behaviour in close conformity with Myrdal's concept of cumulative causation. Thus the growth-pole towns in the more central locations such as Saragossa, Valladolid and Burgos, which had good communication links and were close to the main industrial centres of the nation, had considerably more success at promoting industrial development than the growth poles at the periphery of the country such as Corunna and Huelva. Perhaps the most revealing concept

contained in growth-pole theory is Schultz' dictum that it is near the urban-industrial matrix of a nation that economic organization works most efficiently. Evidence to support this statement is provided in the analysis of the national pattern of economic development contained in Chapters 4 and 7. Further evidence is provided by the questionnaire results, in particular the finding that new employment was created more efficiently in Saragossa, Valladolid and Burgos than in Huelva and Corunna. Despite these particular findings growth-pole theory did not provide a satisfactory explanation of industrial activity within the Spanish growth poles.

Spread Effects

One feature common to most growth-pole theorists is the belief that economic growth will spread from an established growth pole to the surrounding region. It is this feature which has helped to make the growth-pole concept so attractive to regional planners. Various methods of examining possible 'spread effects' in Spain were investigated. In order to examine whether the 'spread effects' existed at different scales within the economy these investigations were conducted both at the national and the provincial scale. At the national level various forms of multiple regression were used to see if the rate of economic activity declined with distance from the main urban-industrial centres of the country. At the provincial level various distance-decay and diffusion analysis methods were used to examine whether the 'spread effects' declined with distance away from the main city of the province. These investigations involved a considerable number of methodological problems and required a very detailed knowledge of the various product and factor markets in Spain, such that this line of enquiry soon stretched beyond the scope of a single thesis. Nevertheless the interim results showed that there was little evidence for 'spread effects' at the national level, whilst at the provincial level a 'spread effect' could be discerned, but that it rarely extended beyond 30 km. from a city. A further finding was that the 'spread effect' appeared to be strongest in the richer agricultural areas.

The Limited Success of the Spanish Growth-Pole Scheme

The results contained in this thesis indicate that, so far, the

growth-pole scheme has only been a limited success. The total number of new firms and the total amount of new industrial activity generated remains small (Table 16:11) and the benefits available under the scheme have not proved a major incentive to new industrial ventures (Tables 15:5 and 15:6). Similarly the total amount of new employment created under the scheme remains small, especially when considered against the total demand for employment in the less developed regions. A good indication of this total demand can be obtained from the figures for net out-migration, as most inter-provincial migration in Spain is caused by persons in search of employment. Thus, during the decade 1961-1970 the province of Huelva suffered a net out-migration loss of 28,739 persons, and the province of Seville a net loss of 62,736 persons,[1] whilst the amount of new employment created in the growth poles in Huelva and Seville was 2,206 and 6,471 respectively (Table 15:3). Of the seven growth pole provinces only Valladolid and Saragossa experienced net in-migration during the 1960's, suggesting that only these two areas were generating sufficient local employment at this time.

In general it can be stated that regional policy as a whole, including the growth-pole scheme, was unable to cope with the regional problems of Spain during the 1960's. The overall aim of regional policy has been to reduce the regional disparities of per capita income (see above, Chapter 6), and yet the gap between the rich and the poor regions was wider in 1970 than it was in 1950 (Figure 17:1). This discouraging feature is partly ameliorated by the tendency for the gap to lessen in the period since 1964 (Figure 17:1).

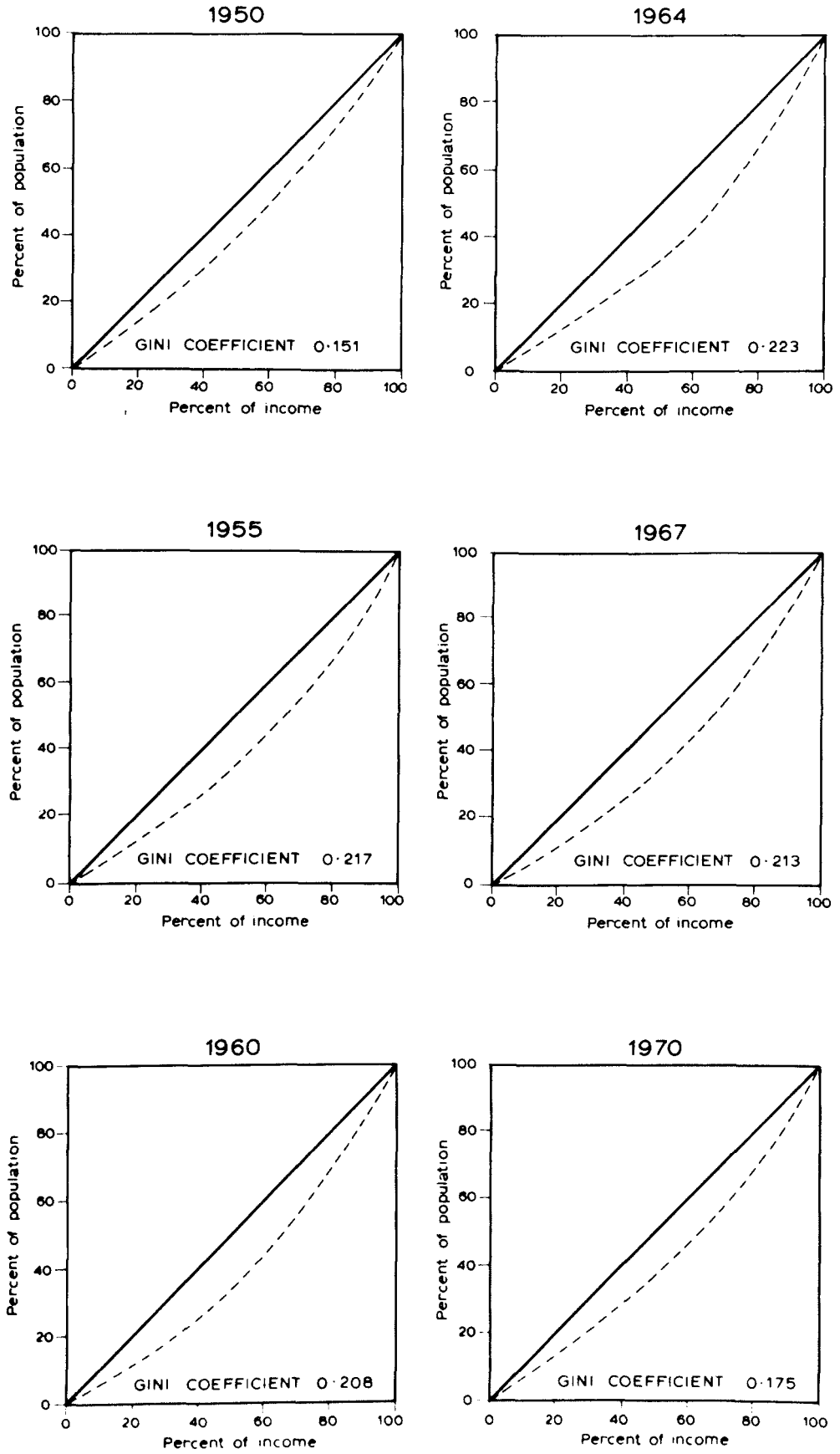
Problems Associated with the Spanish Growth-Pole Scheme

The survey of firms uncovered a large number of problems which together limited the effectiveness of the growth-pole scheme. Some of these problems were due to the way in which the scheme was administered, others to weaknesses in the industrial economy of Spain, whilst a further group were due to the basic limitations of this type of industrial promotion scheme. The following list summarises the more important problems and

FIGURE 17:1

The Regional Concentration of Income in Spain 1950-1970

LORENZ CURVES AND GINI COEFFICIENTS



Sources Banco de Bilbao, I N E Censo de la Población, and J Plaza Prieto

limitations encountered in the Spanish scheme:-

i) There was a general lack of co-ordination in much of the administration of the scheme. In part this arose out of a general lack of effectiveness in the National Plans due to the separation of functions between the planners who prepare the Plan and the ministries which implement it (Chapter 2). At the growth-pole level this has led to a lack of co-ordination between the regional administrators of the scheme and the Ministry of Public Works which carried out improvements to the infrastructure.

ii) The analysis in Chapters 4 and 7 emphasised the importance of identifying the underdeveloped regions within a national context. In the case of Spain the economically and socially deprived regions are in the south and west (Chapter 4) and yet the growth-pole scheme is unlikely to influence economic development over much of this area. A clearer analysis of the underdeveloped regions might have led to a more effective distribution of growth poles.

iii) There were far too many administrative delays in granting the benefits available under the scheme. In some cases these delays were of the order of two years. These delays often negated any advantage obtained from the benefits.

iv) Alterations to the growth-pole regulations, particularly to the categories of industries which qualify under the scheme (Table 6:2) and to the scale of benefits available under the scheme (Table 6:1), had an unsettling effect on a number of firms. These firms were in some doubt as to whether their applications would still qualify for benefits in the future.

v) The survey of growth-pole firms indicated that very few of the firms interviewed considered alternative locations (see above, Chapter 16). If this pattern is true of the rest of Spanish industry then it suggests that the growth-pole scheme is not likely to be very effective unless a) the benefits are increased to the point where they form a real attraction to firms or b) the growth-pole strategy is supplemented by a policy of restricting industrial development in the more developed regions.

vi) The granting of benefits to certain firms within a growth pole often had a depressing effect on the other firms in the area, particularly if they were in direct competition with the growth-pole firms.

vii) In some growth poles, notably Seville, the designation of the growth-pole led to a fierce speculation in land values. This had little effect on the growth-pole firms, which had the right of expropriation or compulsory purchase of land, but it had a very depressing effect

on firms outside the scheme.

viii) One of the main aims of the growth-pole policy has been the creation of as much new employment as possible. For this reason only the minimum benefits, type C or D, were available to those firms where expansion involved modernization rather than increased employment. Nevertheless the modernization of these firms could be very important to the long-term industrial development of the region.

ix) Finally there is a danger that by concentrating development entirely within the growth-pole cities, the surrounding rural areas will remain completely neglected.

Although it is possible to list these limitations and criticisms, the final assessment of the growth-pole scheme should be made within the context of regional planning in Spain. Up till 1964 all regional development plans had been based on agricultural reform schemes, especially irrigation and colonization. These schemes have been very expensive, slow in coming to fruition and limited in effectiveness[2]. In comparison the growth-pole scheme has been far more successful at creating new employment, and at a fraction of the cost. Although the growth-pole policy has not been able to redress the regional imbalance that exists within Spain, nevertheless it represents the most realistic attempt so far to solve the nation's regional problems.

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Appendix A

SPANISH NATIONAL INCOME DATA

Economic growth in Spain, as in other countries, is measured by changes in the level of national income. Similarly regional economic growth is measured by changes in provincial income. Although the supply of accurate national income information is essential for any assessment of the Plan, the growth poles, or indeed any general discussion of economic growth, considerable confusion and controversy exist over the reliability of Spain's national income figures.

The first attempts to measure the national income were made by private organisations and individuals using widely differing, and therefore non-comparable methods[1]. In 1944 an order of the Presidencia del Gobierno established a commission within the Consejo de Economía Nacional (C.E.N.) to make regular estimations of the national income.

The C.E.N. commission used indirect methods for its estimations for the periods 1906 - 1935 and 1940 - 1953, and more direct methods for the period 1954 - 1964[2]. The reliability of this data is a matter of some dispute. R. Tamames points out that there are many deficiencies in the data used by C.E.N., that many of the indices of production used are over-simplified, and criticises the C.E.N. commission for using indirect methods for the period 1940 - 1953, when as an official organisation, they easily could have used more reliable direct methods[3]. On the other hand H. Paris Eguilaz[4] claims that the calculations are valid, and points out that an independent evaluation made by Paul Hemberg of the United States economic mission for the years 1951, 1952, and 1953 almost coincides with the figures published by the C.E.N.

Year	C.E.N.	P. Hemberg	%
1951	219,000.	211,200	96.43
1952	231,300.	221,900	95.93
1953	239,100.	236,000	98.70

(All figures in million pesetas.)
(Source: H.Paris Eguilaz 1965.)

Unfortunately confusion has been created by the publication of differing

sets of figures, all purporting to be the C.E.N. calculations.

Spanish National Income at Current Prices : C.E.N. Figures

Year	A R. Tamames[5]	B Sindicatos[6]	C H. Paris Eguilaz[7]	D I.N.E.[8]
1954	258,3	258,3	270,6	-
1955	271,7	271,7	284,6	284,6
1956	310,5	310,5	325,3	325,3
1957	385,7	385,7	404,6	404,6
1958	440,2	440,2	461,6	461,6
1959	471,9	463,4	484,4	484,4
1960	469,1	469,1	489,9	489,9
1961	516,2	516,2	539,2	539,2
1962	573,6	573,6	605,1	605,1
1963	713,0	-	713,1	713,1
1964	798,0	-	798,1	798,1
1965	-	-	-	1,117,8
1966	-	-	-	1,274,6
1967	-	-	-	1,400,8
1968	-	-	-	1,512,9

(All figures in thousand million pesetas)

Whereas the figures given by R. Tamames and the Sindicatos (cols. A and B) are in agreement except for the year 1959, and the figures given by H. Paris Eguilaz agree with those given by the I.N.E. (cols. C and D), there is no agreement between the groups AB and CD.

The confusion in all these figures is highlighted in the Anuarios Estadísticos published by I.N.E. A footnote in the 1965 edition p.281 states that the figures supplied that year by the C.E.N. "suponen una rectificación completa" of those published in previous years. Up to the 1965 edition the Anuarios published C.E.N. figures (for the period up to 1964). In the 1966 edition they used C.N. figures (see below) for the period 1960 - 1964. From 1967 onwards they have used the new C.N. figures for the period after 1964 (see below).

In 1957 Professor Manuel de Torres of Madrid University formed a group of economists to prepare national accounts. In 1958, and in conjunction with the Ministry of Finance, they published their first results, the national accounts for the year 1954, (Contabilidad Nacional or C.N.). Since 1958 the C.N. group have published further accounts bringing the series up-to-date[9]. R. Tamames claims that it was a direct result of the C.N. group that in 1958 the C.E.N. group began to use improved and direct methods in their calculations for the period since 1954.

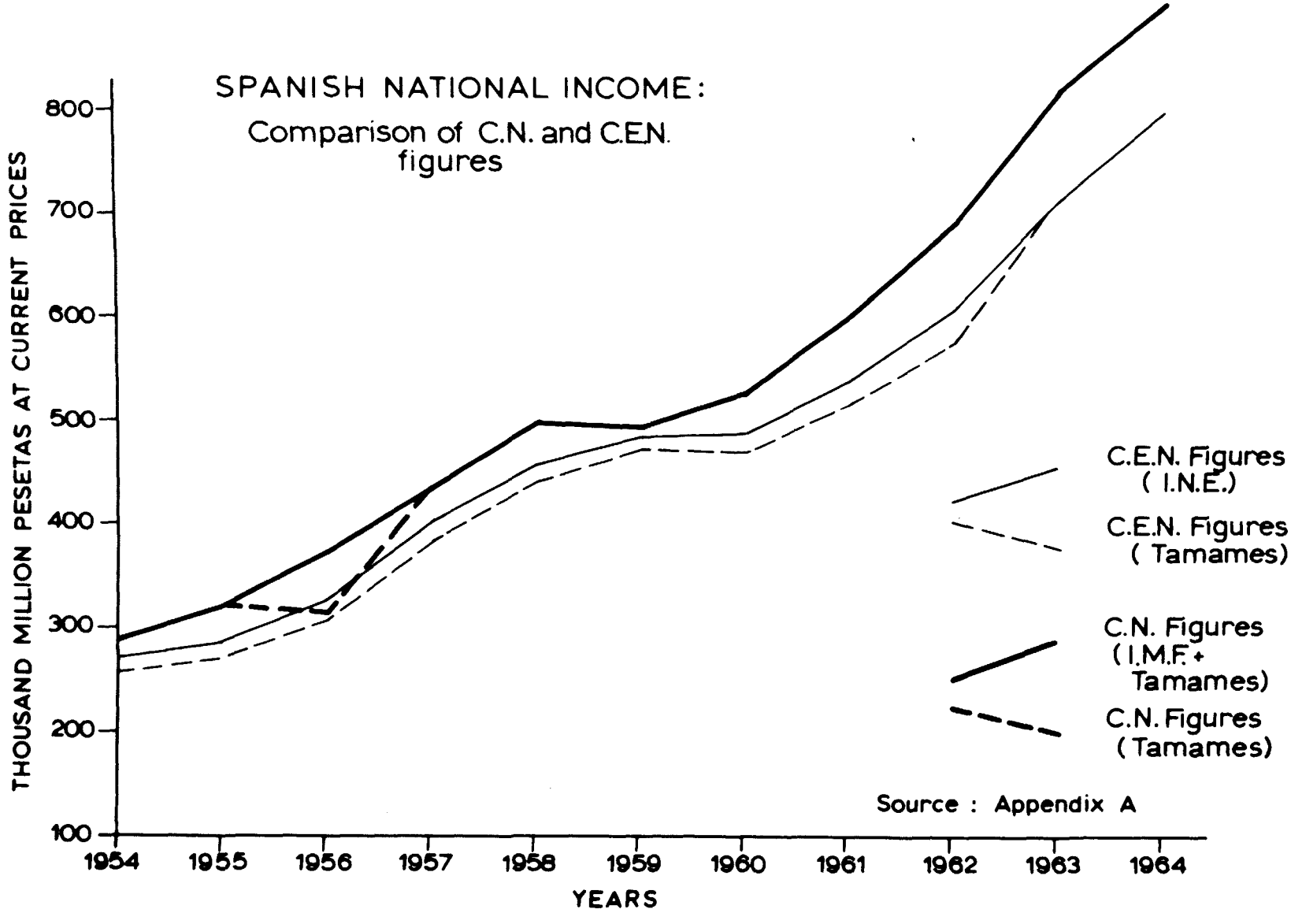
SPANISH NATIONAL INCOME:
Comparison of C.N. and C.E.N. figures
THOUSAND MILLION PESETAS AT CURRENT PRICES
800
700
600
500
400
300
200
100
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
YEARS
C.E.N. Figures (I.N.E.)
C.E.N. Figures (Tamames)
C.N. Figures (I.M.F. + Tamames)
C.N. Figures (Tamames)
Source : Appendix A

FIGURE A:1

C.N. figures have been published by R. Tamames and by the International Monetary Fund in its journal International Financial Statistics.

Spanish National Income at Current Prices: C.N. Figures

Year	A R. Tamames[10]	B I.M.F.[11]
1954	292	293
1955	321	322
1956	317	372
1957	436	436
1958	498	499
1959	496	497
1960	527	528
1961	602	602
1962	691	695
1963	821	841
1964	925	946

(All figures in thousand million pesetas).

It can be seen that there are no important differences between the two sets of figures except for the year 1956. Here the I.M.F. statistics would appear to be the more realistic for there was no recession or other reason why national income should fall in that year. Secondly the I.M.F. figures are constantly revised and therefore are likely to be more accurate.

In 1961 the Minister of Commerce, Sr. A. Ullastres, stated that the official figures (C.E.N.) were 20% or more below the real values[12]. In 1962 the Planning Commission used the C.N. figures as a basis for their studies of the economy. Thus the curious anomoly arose whereby the unofficial figures (C.N.) were more 'official' than the official figures (C.E.N.). This situation was resolved in 1965 when the National Statistics Institute (I.N.E.) was given the responsibility for preparing national accounts and calculating the national income. This new group is also called the Contabilidad Nacional.

The provincial distribution of the Spanish national income has been calculated by the Servicio de Estudios Económicos of the Banco de Bilbao for the years 1955, 1957, 1960, 1962, 1964, 1967, 1969 and 1971. These calculations have been made from official sources and the bank's own information. For the years 1955, 1957 and 1960 the bank used its' own system of computation and for the years 1962 onwards used the O.E.C.D.

system[13]. As the two systems are broadly similar, it is possible to make comparisons between the figures for the various years.

In 1965 the Banco Español de Crédito (Banesto) began the publication of yearly reports which include an analysis of the internal wealth of Spain. Little indication is given of how these income figures are obtained, and which show a significant divergence from the Banco de Bilbao figures.

Spanish National Income : The Provincial Distribution

Province	Banco de Bilbao 1964[14]	Banesto 1965[15]
Alava	6,944	6,950
Albacete	7,599	6,519
Alicante	21,386	29,537
Almería	5,817	6,568
Avila	4,430	3,373
Badajoz	12,754	10,916
Baleares	19,028	25,891
Barcelona	151,294	201,294
Burgos	11,179	11,039
Cáceres	8,430	7,477
Cádiz	18,684	16,408
Castellón	11,467	11,685
Ciudad Real	11,537	8,907
Córdoba	14,681	14,099
Corunna	21,398	20,350
Cuenca	5,991	4,962
Gerona	16,086	16,962
Granada	12,974	14,965
Guadalajara	3,947	3,333
Guipúzcoa	26,899	28,199
Huelva	8,551	5,737
Huesca	7,380	6,213
Jaén	11,310	12,924
León	15,606	13,879
Lérida	11,833	13,175
Logroño	8,593	6,251
Lugo	9,519	8,010
Madrid	147,812	195,027
Málaga	16,882	15,461
Murcia	18,326	19,413
Navarre	16,632	19,007
Orense	8,204	7,161
Oviedo	29,950	30,082
Palencia	6,831	4,603
Palmas (Las)	11,450	20,230
Pontevedra	17,669	17,281
Salamanca	9,001	8,461
Santa Cruz de Tenerife	11,280	21,253
Santander	15,909	14,758
Segovia	4,938	4,618
Seville	30,452	29,017
Soria	3,495	2,986
Tarragona	13,824	12,685

Teruel	5,264	3,849
Toledo	10,604	8,660
Valencia	50,379	54,786
Valladolid	11,626	10,071
Vizcaya	44,961	46,037
Zamora	6,422	4,427
Saragossa	22,426	26,080

(All figures in million pesetas)

The differences between the two sets of figures appear to be greatest in the tourist provinces (Alicante, Baleares, Las Palmas and Santa Cruz de Tenerife), in the main industrial centres (Madrid, Barcelona, Saragossa and Valencia) and in various other provinces (e.g. Ciudad Real and Huelva). An indication of relative reliability is given by the Planning Commission who have restricted themselves entirely to using the Banco de Bilbao's figures.

For these reasons it is proposed to use the C.N. national income figures and the Banco de Bilbao's provincial figures wherever possible, and only to use other sources when there is no alternative.

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Appendix B

Data sources used in the factor and cluster analysis

Agriculture

i) The area of cultivated land in hectares from the Anuario Estadístico, I.N.E. and the population according to the Padrón Municipal on the 31st December, 1967, and published in the Anuario Estadístico, I.N.E. Madrid (1970).

ii) The area of cultivated land in hectares from the Anuario Estadístico I.N.E. and the active population in agriculture from the II Plan de Desarrollo Económico y Social, Desarrollo Regional, Madrid (1967) pp.48 and 52.

iii) II Plan de Desarrollo Económico y Social, Desarrollo Regional, Madrid (1967) pp. 45, 46, 48, 52.

iv) Banco de Bilbao Renta Nacional de España y su Distribución Provincial 1964, Bilbao (1967).

v) See iii) and iv) above.

vi) Banesto, Anuario del Mercado Español, Madrid (1968).

vii) See vi) above.

viii) Foessa, Informe Sociológico Sobre la Situación Social de España, 1970, Madrid (1970) p.309.

ix) I.N.E., Primer Censo Agrario de España Año 1962, Madrid (1965).

x) See ix) above.

xi) See iv) and iii) above.

xii) I.N.E. Anuario Estadístico de Espana, Madrid (1969)

xiii) See xii) above.

xiv) See xii) above.

xv) See viii) above.

xvi) See ix) above.

xvii) See ix) above.

Industry

i) Banco de Bilbao, Renta Nacional de España y su Distribución Provincial 1967, Bilbao (1970)

ii) See i) above.

iii) I.N.E., Anuario Estadístico, 1969, Madrid (1970)

iv) Banesto, Anuario del Mercado Español, Madrid (1969).

v) See iii) above.

vi) See i) above.

vii) Servicio Sindical de Estadística, Estadísticas de Producción Industrial, 1965 - Analisis de Resultados, Madrid (1967).

viii) See vii) above.

ix) See vii) above.

x) See vii) above.

xi) See vii) above.

xii) See vii) above.

Social Structure

i) I.N.E. Poblaciones de Derecho y Hecho de los Municipios, Madrid (1971).

ii) Bradshaw, R.P., Internal Migration in Spain, Iberian Studies, Vol.1 No.2 (1972).

iii) Calculated from Anuario Estadístico, I.N.E. for the relevant years.

iv) See iii) above.

v) Foessa, Informe Sociológico Sobre la Situación Social de España, 1970, Madrid (1970) p.960.

vi) See v) above.

vii) I.N.E., Anuario Estadístico 1971, Madrid (1972).

viii) I.N.E., Encuesta de Equipamiento y Nivel Cultural de la Familia, Madrid (1968).

ix) See v) above.

x) Banco de Bilbao Renta Nacional de España y su Distribución Provincial/1967, Bilbao (1970).

xi) See viii) above.

xii) See viii) above.

xiii) See viii) above.

xiv) Calculated from the 1950 and 1960 censuses: I.N.E., Censo de la Población de España 1950, Madrid (1959); and I.N.E., Censo de la Población y de las Viviendas de España 1960, Madrid (1967).

xv) See xiv) above.

xvi) I.N.E., Anuario Estadístico, 1969, Madrid (1970).

Appendix C

QUESTIONNAIRE

Section 1

Name of firm

Location of factory

Location of Head Office

Single Plant or Multi-plant firm

Location of other factories

Section 2

Total labour force

Male Female Administrative Technical Production

Local Province Outside

Training: Factory Outside

Social Benefits: Social Housing Others

Labour problems (specify)

Section 3

Capital: Private Banks Foreign

Financial problems (specify)

Section 4

History of Firm: Date founded

Details of Production

Details of Employment

Section 5

Inputs

Type Quantity Origin Type of Transport Cost of Transport

Problems of obtaining materials (specify)

Section 6

Products

Type	Quantity	Destination	Type of Transport	Cost of Transport

Problems of selling products (specify)

Section 7

Nearest Competition

City	Province	Region	Nation	Foreign

Section 8

Transport

		Good	Indifferent	Bad
Services	Road			
	Railway			
	Sea			
	Air			
Costs	Road			
	Railway			
	Sea			
	Air			

Transport porblems (specify)

Section 9

Factory site and services

Size of site adequate ?

Situation of factory adequate ?

Water supply adequate ?

Waste disposal adequate ?

		City	Province	Region	Nation	Outside
Services	Commercial					
	Technical					
	Advertising					
	Legal					
	Marketing					
	Others					

Section 10

Attitudes towards the Growth Pole Scheme

Why locate in a growth pole ?

Why this growth pole ?

Which benefits have been of greatest assistance ?

Are you satisfied with the scheme ?

Section 11

Planned Extensions

Horizontal

Backward

Forward

Different

Section 12

Problems of starting production (specify)

Section 13

New firms

Why produce this particular product(s)

Previous experience at manufacturing this product

Section 14

Reasons for factory location in this site

Raw materials

Market

Sufficient labour

Available site

Near other factories in same industry

Home of founder

Growth Pole benefits

Others (specify)

Section 15

Future prospects of the firm

Appendix D

The Anscombe and Tukey rejection formula.

Anscombe and Tukey have calculated that an outlier can be rejected according to the following rule:

$$c = K\left\{1 - \frac{K^2-2}{4\nu}\right\}\sqrt{\frac{\nu}{n}}$$

where n is the total number of residuals

and ν is the degrees of freedom associated with the residuals

and K is given by:

$$K = 1.40 + 0.85\ N$$

and N is the equivalent normal deviate at a given premium.

The authors state that in most cases a premium of 2.5% will be small enough not to be missed. The N value is then obtained from a normal relative cumulative frequency curve table. When the residual is greater than C multiplied by the standard deviation, then the residual may be rejected. The calculation for the Spanish data is:

With a premium of 2.5%

$$N = (1.0 - 0.025)\ (\text{R.C.F. table})$$

$$= 1.96$$

$$K = 1.40 + 0.85 \times 1.96$$

$$= 3.066$$

$$C = 3.066\left\{1 - \frac{9.4}{4\nu}\right\}\sqrt{\frac{\nu}{n}}$$

$$= 3.066\left\{1 - \frac{1.85}{\nu}\right\}\sqrt{\frac{\nu}{n}}$$

$$= 3.066\left\{1 - \frac{1.85}{41}\right\}\sqrt{\frac{41}{47}}$$

$$= 3.066\left\{1 - 0.0451\right\}\ 0.9338$$

$$= \underline{2.733}$$

Thus any residual greater than 2.733 in terms of standard deviation may be rejected.

Reference:

Anscombe, F.J. and J.W. Tukey, The Examination and Analysis of Residuals, Technometrics 5 (1963), pp. 141-160.

i) Agriculture and Fishing.

Agriculture provides over a quarter of total provincial income, which is a significantly larger proportion than the national average of 18.5% (Table 10:1). Despite the importance of agriculture, it forms a very backward sector of the economy. The province of Corunna is part of the area of extreme fragmentation of farm holdings, where "one man's tethered cow fertilizes the next man's field", (see Table 10:3). Modern farming methods which rely on large-scale operations, such as irrigation and almost all farms of mechanisation, are impossible under such conditions. Attempts to reform this situation have been limited by the sheer size of the problem, the legal complexity of the land-tenure systems in operation[5], and the large number of landowners who have emigrated to South America. However, the major problem is that in Galicia agriculture is still organised on pre-capitalist lines. Production is geared towards self-sufficiency and forms a closed economic system which is not influenced by market requirements for improved stock, minimum standards of hygiene, bigger crops, etc.[6]

The small size of the farms and the humid climate of the region has led to the cultivation of those crops requiring intensive care. Thus in 1964 Corunna was the leading producer of potatoes and other vegetables in Spain, and was also one of the main dairying and pig rearing provinces[7]. Another product which does well and forms an important element in the local economy is forestry. The main trees grown are pines, especially pinus pinaster, covering 80% of the total forested area, and the eucalyptus, at present covering 10% of the forested area but rapidly becoming more important, particularly as a feedstock for cellulose factories[8]. In 1964 Corunna province was the leading producer in terms of value of wood and wood products in Spain[9].

Many types of fish are found in the waters around Corunna, from cod and sardines to the vast quantities of shellfish produced in the sheltered waters of the rías[10]. Fishing makes an important contribution to provincial income