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THE INDUSTRIAL DEVELOPMENT OF PERU

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EXPLANATORY NOTE

Resolution 250 (XI) of 14 May 1965, adopted by the Economic Commission for Latin America (ECLA) at its eleventh session, requested the Latin American Governments "to prepare national studies on the present status of their respective industrialization processes for presentation at the regional symposium". With a view to facilitating the task of the officials responsible for the national studies, the ECLA secretariat prepared a guide, which was also intended to ensure a certain amount of uniformity in the presentation of the studies with due regard for the specific conditions obtaining in each country.

Studies of the industrial development of fourteen countries were submitted to the Latin American Symposium on Industrial Development, held in Santiago, Chile, from 14 to 25 March 1966, under the joint sponsorship of ECLA and the Centre for Industrial Development, and the Symposium requested ECLA to ask the Latin American Governments "to revise, complete and bring up to date the papers presented to the Symposium".

The work of editing, revising and expanding the national monographs was completed by the end of 1966 and furthermore, two new studies were prepared. The ECLA secretariat attempted, as far as possible, to standardize the presentation of the reports, in order to permit comparison of the experience of the different countries with regard to specific problems, particularly in the field of industrial policy.

The national studies on industrial development, to be presented to the International Symposium relate, in alphabetical order, to the following countries: Argentina, Bolivia, Brazil, Central America, Chile, Colombia, Cuba, Ecuador, Guyana, Mexico, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay and Venezuela.

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/FOREWORD

FOREWORD

The aim of the present work is to describe the state of Peruvian industry in the last few years and to show how its principal sectors have evolved. It is hoped that it will contribute to the prosing and study of the problems relating to industrial development which will be discussed and further investigated in the meetings of the Latin American Symposium on Industrial Development, to be held in Santiago, Chile in March 1966, under the auspices of the Economic Commission for Latin America.

This report was commissioned by the National Planning Institute and has been jointly prepared by the research and economic study departments of the National Institute of Industrial Promotion and of the Industrial Bank of Peru. In certain cases the figures used are official, but in others they have been calculated on a provisional basis and will be subject to comparison with the results of the survey of the different sectors which is being prepared as a basis for the formulation of the General Economic and Social Development Plan for 1967-1970.

With regard to its structure, the general design recommended in ECLA's outline for the preparation of national reports has been followed, and certain points which could not conveniently be included in this will be added and developed by our delegates during the meetings.

/I. HISTORICAL

I. HISTORICAL SUMMARY OF THE INDUSTRIAL DEVELOPMENT OF PERU BETWEEN 1950 AND 1964

Between 1950 and 1964 the physical volume of industrial production increased at an average rate of 7.8 per cent a year. Expansion was continuous between 1950 and 1957, but in 1958, when the economic activity of the country suffered a slight recession, industrial production fell by more than 3 per cent from the level of the previous year. In the last five years (1960 to 1964), however, it has more than recovered and has been growing at an average rate of 9.3 per cent a year.

The contribution of industry to the total gross domestic product has also increased. Between 1950 and 1954 the gross domestic product increased by 5.6 per cent, and industrial production, measured by its quantum index, by 7.8 per cent. The gross product generated by the industrial sector rose from 15.5 per cent of the total gross production in 1950 to 17.1 per cent at the end of 1954. During the next decade, as is shown in table 1, the contribution of industry to the gross domestic product rose from the 17.6 per cent of 1955 to 18.4 per cent in 1959, and then from 18.8 per cent at the end of 1960 to 19.6 per cent in 1964.

It can be seen from this that manufacturing industry has maintained an almost constant rhythm of growth during the whole of the 15 years, covered by the analysis which shows that it is one of the most important sectors of the Peruvian economy. It is estimated that in the last of these years the gross value of industrial production was about 1,508 million dollars, measured at 1960 market prices.

/Table 1

Table 1

PERU: CONTRIBUTION OF THE GROSS PRODUCT OF MANUFACTURING INDUSTRY TO THE TOTAL GROSS PRODUCT

(Millions of dollars of 1960)

Years	Gross industrial product	Total gross product	Annual contribution	Percentage for the five years
1950	195.9	1 260.4	15.5	
1951	212.8	1 344.1	15.8	
1952	222.8	1 410.5	15.8	
1953	247.7	1 502.2	16.5	
1954	268.0	1 564.4	17.1	16.2
1955	284.9	1 617.2	17.6	
1956	292.9	1 654.8	17.7	
1957	318.6	1 727.6	18.4	
1958	308.6	1 743.2	17.7	
1959	333.2	1 813.2	18.4	18.0
1960	363.4	2 038.4	18.8	
1961	421.7	2 226.4	18.9	
1962	458.2	2 390.5	19.2	
1963	483.8	2 478.0	19.5	
1964	511.1	2 610.6	19.6	19.2

Source: Macro-Economics Section, National Accounting Department of the National Planning Institute.

II. RELATIVE IMPORTANCE, STRUCTURE AND GENERAL CHARACTERISTICS OF MANUFACTURING INDUSTRY

1. The gross product of manufacturing industry in the total gross domestic product

According to figures provided by the National Planning Institute, the real gross domestic product of Peru grew by 28.1 per cent between 1960 and 1964, which is equivalent to a cumulative annual rate of 6.4 per cent. Measured at 1960 prices, in the first of these years it was 2,038.4 million dollars and in the last 2,610.6 million. (See table 2.)

In the same period the real gross domestic product per inhabitant grew at a cumulative annual rate of 3.4 per cent and increased by 14.4 per cent in all. In 1960 it was 211 dollars and in 1964 246 dollars at 1960 prices, or 300 dollars in current values of 1964.

The last five years provide the most encouraging prospects of any period for which estimates of the gross domestic product have been made. Thus in 1955-1959 its total growth was only 2.9 per cent, as a result of the very unfavourable conditions of 1956 and 1958, while in the previous period, 1950-1959, it was 5.6 per cent, high enough, it is true, but still less than the rate achieved in the final period.

The most important factor in this strong expansion of the Peruvian economy has been the growth of exports, which have risen by 6.4 per cent in the five years, that is, from 432.4 to 554.3 million dollars at 1960 prices (exports of gold and gold products are not included in these figures).

The growth rates of the different sectors are given in table 2. The rate for manufacturing industry of 7.5 per cent is the fourth highest after those for commerce, fishing and building.

/Table 2

Table 2

PERU: REAL GROSS DOMESTIC PRODUCT, BY SECTORS OF THE ECONOMY

(Market prices of 1960)

Sectors	1960 (millions of dollars)	1964 (millions of dollars)	Average annual growth rate 1960-1964
Agriculture	414.6	512.7	5.5
Manufacturing industry	383.4	511.1	7.5
Commerce	339.9	458.9	7.8
Exploitation of mines and quarries	179.8	199.5	2.6
Housing	163.7	192.7	4.2
Government	157.2	202.4	6.5
Miscellaneous services	120.6	143.4	4.4
Transport, warehousing and communications	110.2	139.8	6.1
Banking, insurance and real state	75.5	96.7	6.4
Building	64.8	107.0	13.4
Fishing a/	28.7	46.4	12.7
Total real gross domestic product	2 038.4	2 610.6	6.4

Source: National Planning Institute.

a/ Comprises extractive fishing activity only.

2. Industrial employment in the total active population

There are two strongly contrasted types of enterprise engaged in industrial activity. One group, which includes both traditional industries such as textiles and brewing and industries belonging to more recently developed branches such as basic chemical products, plastic moulding, etc., consists of large-scale, well equipped factories.

The other comprises numerous small-scale establishments among which artisan forms of production prevail certain industries in the first stages of development, and long-established industries, such as those producing candles and tobacco products, whose manufacturing equipment is worn out and which therefore retain antiquated systems of production.

/To obtain

To obtain a more precise account of the difference between these two classes it is necessary to consider the figures for employment and for the number of establishments in each branch of industry, such as are given in table 3, where they have been based on a sample of 5,266 enterprises giving information, whose total employment is 181,197 persons. Their average employment is 35 persons per establisment, which indicates the extent to which the industrial sector consists of small and artisan-type industries. The branches which have the lowest employment figures, that is, 21 persons on average per establishment, are footwear and wearing apparel, wood and furniture, printing, and miscellaneous. If these industries - whose contribution to the total aggregate value is anyway small - are excluded, the average for the remaining manufacturing activities rises to nearly 40 persons per establishment.

Table 4, which is derived from the industrial census of 1963, elucidates the structure of industry in Peru. Of the 23,308 establishments included in the census 82.2 per cent employ less than 5 persons each, altogether employ 15.3 per cent of persons employed in industry and contribute 1.8 per cent of the gross production value. At the other extreme were 6.2 per cent of the establishments employing 71 per cent of industrial manpower at an average of more than 20 persons per establishment and contributing 92.1 per cent of the gross production value.

Analysis of employment distribution in registered industries shows that there is a high concentration in those manufacturing foods, textile products, footwear and chemical products, which altogether employ 54 per cent of the manpower of the sector.

An important aspect of the employment situation is the training given to employees. National Apprenticeship and Industrial Labour Service (SENATI) estimates that of all persons employed in manufacturing industry only 2.1 per cent belong to the category of professionals and technicians and 14.9 per cent to that of staff. 31.5 per cent count as skilled or semi-skilled workers and the remaining 1.5 per cent as unskilled workers.

/Table 3

Table 3

PERU: NUMBER OF ESTABLISHMENTS AND EMPLOYMENT IN MANUFACTURING INDUSTRIES GIVING INFORMATION, 1964

	Industrial divisions	Number of enterprises	Persons employed
20	Food products	1 285	45 452
21	Beverages	310	8 171
22	Tobacco	2	1 032
23	Textiles	406	27 060
24	Wearing apparel and footwear	583	14 436
25	Wood and cork, excluding furniture	208	3 788
26	Furniture	268	4 983
27	Paper and paperboard	40	2 734
28	Printing and related industries	318	7 938
29	Leather, excluding footwear	80	2 233
30	Rubber products	36	1 389
31	Chemical products	267	11 400
32	Petroleum and coal products	10	650
33	Non-metallic mineral products	243	9 808
34	Basic metals	21	7 586
35	Metal products	244	7 385
36	Machinery	189	5 656
37	Electrical machinery and accessories	105	2 153
38	Transport material	414	12 625
39	Miscellaneous	237	4 718
	Total	5 266	181 197

Source: Industrial Bank of Peru (BIP) - National Institute of Industrial Promotion (INPI), on the basis of official figures.

/Table 4

Table 4

PERU: NUMBER OF ESTABLISHMENTS, EMPLOYMENT AND GROSS PRODUCTION VALUE BY SIZES OF ESTABLISHMENTS, 1963

Size of establishments	Establishments		Employment		Gross production value	
	Total	Per cent	Total	Per cent	Total (thousands of dollars)	Per cent
Less than 5 employees	19 157	82.2	30 607	15.8	21	1.8
From 5 to 19 employees	2 704	11.6	25 596	13.2	71	6.1
20 or more employees	1 447	6.2	137 224	71.0	1 081	92.1
Total	23 308	100.0	193 427	100.0	1 173	100.0

Source: First National Economic Census.

3. Industrial investment in the gross formation of capital

As a result of the very considerable undertakings of the public sector in the period 1960-1964, during which it has increased its real investments by an average of 39 per cent a year, total real investment has gone up at an annual rate of 12 per cent. (See table 5.) During the same period private sector investments increased by 7.3 per cent a year on average and by 8.0 per cent in 1963-1964.

In 1964 the real investments of the public sector amounted to 16,816 million soles. These investments have also undergone structural changes during the last few years, being increasingly devoted to gross formation of capital. In 1964 the sectors on which the largest sums were spent were agriculture (30 per cent), transport (22 per cent) and industry (23 per cent).

The assessment of the real capital used in industry is one of the most complex problems arising from this analysis.

/Table 5

Table 5

PERU: FINAL SUPPLY AND DEMAND

(Annual percentage variation of values, 1960 prices)

	1961	1962	1963	1964	Annual growth rate
1. Real gross domestic product	9.2	7.4	3.7	5.4	6.4
2. Imports of merchandise (c.i.f.)	24.8	11.9	5.0	7.0	12.0
3. Total supply and demand	11.5	8.3	3.7	6.3	7.4
4. Total gross domestic investment	17.3	16.8	4.3	10.0	12.0
a) Public	57.2	59.3	27.3	16.6	39.0
b) Private	12.8	10.0	-1.0	8.0	7.3
5. Consumption	8.5	5.9	5.1	6.0	6.3
6. Exports of merchandise (f.o.b.)	16.5	6.2	-4.8	8.9	6.4
7. Population					
a) Total	2.8	2.9	2.9	2.9	2.9
b) Economically active	3.0	2.7	2.9	2.9	2.9
8. Real gross domestic product per inhabitant	6.2	4.4	0.7	2.4	3.4

Source: National Planning Institute.

A tentative assesment can be made on the basis of estimates of fixed capital at depreciated replacement prices and by analysing imports of machinery and equipment, since in most Latin American countries, and particularly in Peru, these represent a high proportion of the fixed investments of the manufacturing sector. The resulting figures have been reached by determining the value of imported machinery and equipment at constant prices of 1960, taking into account the accumulation and depreciation of such imports since 1934. 100 per cent extra is added to the value c.i.f. of imported machinery to cover duty, customs expenses, internal transport and installation costs. Finally, another 30 per cent is added to this total to cover investment in land and buildings.

This procedure gives a sum of nearly 33,608 million soles for the total industrial capital invested in machinery and equipment in 1964, but includes unregistered and artisan industry as well as registered enterprises. Addition of the 30 per cent for investment in land and

/buildings gives

buildings gives a figure of about 43,690 million soles for total fixed capital. (See table 6.)

Between 1960-1964 71,328 thousand dollars was invested in setting up 2,540 new industrial establishments. (See table 7.)

Analysis of the structure of the fixed assets of the enterprises registered with the Department of Industries and Electricity shows that on average 57.8 per cent of these consist of machinery and equipment.

Generally speaking, most branches of industry in Peru use only a part of their installed production capacity. In future a more intensive use of this capacity may improve the product-capital relation and lessen the amount of investment required to achieve any particular increase in the volume of production.

Table 6

PERU: ESTIMATED INVESTMENT IN MANUFACTURING INDUSTRY

(Millions of dollars of 1960)

Years	Imports	Depreciation	Net investment	Cumulative investment	Duties internal transport, installation (+ 100%)	Fixed capital including land and buildings (+ 30%)
1960	38.1	20.5	17.6	478.2	956.4	1 243.3
1961	47.4	21.9	25.5	503.7	1 007.4	1 309.6
1962	60.3	23.7	36.6	540.3	1 080.6	1 404.8
1963	64.9	25.7	39.2	579.5	1 159.0	1 506.7
1964	64.3	27.6	36.7	616.2	1 232.4	1 602.1

Source: Economic Studies Department of the Industrial Bank of Peru, based on the Foreign Trade Statistics since 1934.

/Table 7

Table 7

PERU: ACCOUNT OF INDUSTRIES ENTERED IN THE INDUSTRIAL REGISTER DURING 1960-1964

Industries	Number of enterprises	Amount of capital invested (thousands of dollars)	Scale of capital invested: Less than 1 million — Number of enterprises	Less than 1 million — Thousands of dollars	From 1 to 5 million — Number of enterprises	From 1 to 5 million — Thousands of dollars	More than 5 million — Number of enterprises	More than 5 million — Thousands of dollars	Employment
Food products	470	17 180	362	2 380	78	7 116	30	7 684	8 561
Beverages	113	1 022	107	687	6	335	-	-	952
Tobacco	-	-	-	-	-	-	-	-	-
Textiles	182	8 964	132	925	40	2 813	10	5 226	3 117
Wearing apparel and footwear	347	1 961	335	990	11	751	1	220	3 736
Wood and cork, excluding furniture	79	891	74	557	5	334	-	-	992
Furniture	121	627	118	407	3	220	-	-	1 282
Paper and paper products	22	1 176	15	119	6	691	1	366	247
Printing and allied industries	139	2 693	123	800	12	757	4	1 136	2 102
Leather, excluding footwear	30	399	28	234	2	165	-	-	420
Rubber products	5	142	3	12	2	130	-	-	107
Chemical products	185	13 144	124	714	45	3 678	16	8 752	3 312
Petroleum products	1	110	-	-	1	110	-	-	10
Non-metallic mineral products	94	3 262	83	840	7	447	4	1 975	2 299
Basic metals	9	40	9	40	-	-	-	-	96
Metal products	151	2 985	132	1 120	16	1 114	3	751	2 140
Machinery	95	6 444	80	596	7	563	8	5 285	2 157
Electrical machinery and accessories	83	1 564	72	237	10	594	1	733	868
Transport material	220	5 717	195	895	19	1 150	6	3 672	4 908
Miscellaneous	194	3 007	171	1 107	21	1 424	2	476	1 926
Totals	2 540	71 328	2 163	12 660	291	22 392	86	36 276	39 232

Source: Department of Industries and Electricity, Ministry of Development and Public Works.

/4. The

4. The contribution of the principal branches of industry to manufacturing industry as a whole

The achievement of a powerful rhythm of industrialization - that is, a progressive increase in the relative importance of manufacturing industry - has been one of the salient features of the Peruvian economy during the last five years.

The most outstanding characteristics of this process have been: (a) the absence of planning, and (b) the tendency for growth to be outward-directed. The first of these has meant that neither the necessary co-ordination between industry and other sectors of the economy nor any measure of uniformity of development between the different regions have been established, and consequently that the objectives of an authentic industrial development process have not fully been achieved. The second has meant that Peru has been unable to derive from the process of industrialization the advantages which in such cases normally devolve on all different sections of the community.

The growth of the manufacturing sector within the framework of over-all economic activity is thus the result of relatively isolated efforts - whether of public or private sector - in pursuit of totally unconnected and probably, on many occasions, conflicting objectives.

A particularly important contribution of industry has been its effect on the growth rate of the economy, which has been higher during these years than previously. Thus while the average annual growth rate of the gross domestic product was 3.4 per cent in 1960-1964, that of the gross industrial product per inhabitant was 4.5 per cent.

Apart from the general process of industrial development there are certain important changes taking place in the manufacturing sector which it is worth analysing in some detail.

As a result of the different rhythms of growth achieved in the different branches the composition of production has altered. While the total value of industrial production increased by 9.3 per cent a year between 1960 and 1964, the textile and basic metals industries grew at an annual rate of only 2.2 and 1.7 per cent respectively. On the other hand, the increases in the chemical, printing, metal-transforming

/and wood

and wood industries were much greater than that of industry as a whole. (See table 8.)

Towards the end of 1950 the food industries (excluding fish meal), which mainly consist of sugar production, fish preserving, extraction of oils, etc., contributed 28.9 per cent of the total industrial production of the country. However, the very nature of their activities imposed on them a growth rate similar to that of the agricultural sector, which meant that they progressively lost their relative importance within this total so far as to contribute in terms of value added only 19.0 per cent in 1964. Much the same happened in the case of the tobacco industry, whose contribution to industrial production suffered the greatest decrease over the period of any activity.

The contribution of the beverages industry to the total value added for the manufacturing sector went up from 6.8 per cent in 1950 to 7.8 per cent in 1964.

The contribution of the textile industry fell by more than 3.4 per cent a year between 1950-1964, in spite of the development of the synthetic fibre and hard fibre mills.

The leather industry, along with other relatively long-established branches of industrial production, has also diminished its contribution. By 1964 its relative importance within the total was about 1.0 per cent.

The chemical industries until 1957 grew at a rate very much the same as that of industrial production as a whole, but since then have developed much more rapidly. This is primarily because the traditional production of soap, candles, and products of a similar kind has been supplemented by many new activities mostly for production of intermediate goods such as artificial fibres, caustic soda, explosives, sulphuric acid, fertilizers, etc. and also by the development of a large number of laboratories making pharmaceutical products. The relative importance of these industries rose from 4.9 per cent in 1950 to 11.0 per cent in 1964.

/Table 8

Table 8

PERU: VALUE ADDED OF MANUFACTURING INDUSTRY AND GROWTH RATES, BY INDUSTRIAL DIVISIONS

Index No.	Industrial divisions	Value added 1960 (millions of dollars)	Percentage contribution	Annual rate of growth, 1960-1964 (percentages)
20	Food industries	105.8	27.6	6.9
21	Beverages industries	31.0	8.1	8.2
22	Tobacco industry	7.0	1.8	-6.5
23	Textiles industries	58.4	15.2	2.2
24	Footwear and wearing apparel	26.1	6.8	9.1
25-26	Wood industries	12.2	3.2	10.3
27	Pulp and paper industries	6.7	1.8	8.5
28	Printing, publishing and related industries	12.7	3.3	12.3
29	Leather industries	5.7	1.5	-0.5
30	Rubber industries	7.7	2.0	2.3
31	Chemical industries	29.6	7.7	19.3
32	Petroleum and coal derivatives	17.4	4.6	6.8
33	Non-metallic mineral products	18.8	4.9	7.8
34	Basic metal industries	7.4	1.9	1.7
35-38	Metal-transforming industries	26.5	6.9	10.6
39	Miscellaneous	10.4	2.7	42.5
Total value added in industry		383.4	100.0	9.3

Source: Estimates based on official statistics.

/Even without

Even without taking into account the many new kinds of articles produced by the metal-transforming industries, this sector has achieved one of the largest growths of any, with particularly large increases in the industries building machinery and fishing boats and, to a lesser extent, those producing articles for domestic use.

As regards the miscellaneous manufacturing industries, which together increased their relative share in the value added from 2.1 per cent in 1950 to 7.9 per cent in 1964, it is worth mentioning the exceptional growth of the plastics moulding industry.

Among the branches of smaller relative importance, the paper and paper products industries have achieved a considerable growth over the period.

Printing and allied industries have also developed very rapidly, even though its share in total industrial production is still very small, with about 3.7 per cent of the value added in 1964.

In addition to what has been said on the over-all growth of the manufacturing sector and the alterations which have taken place in the composition of production, it is interesting to point out the changes which have occurred in the forms of production of manufactured articles. There are many indications that factory production has grown much faster than artisan production. Within the factory sector there has also been a trend towards concentration of a greater volume of production in large units, at the expense of small- and medium-scale industry. The extent of these changes is, however, very difficult to determine in quantitative terms from the records available.

A rough notion of some of these changes can be obtained by comparing the figures given in the population censuses of 1940 and 1961. These show that while the cumulative annual rate of increase of the active population engaged in manufacturing activities was only 0.4 per cent between these years, that of employment in registered industries was 1.5 per cent.

While it does not deprive these trends of their significance, it should be borne in mind that a large proportion of the total population employed in the manufacturing sector continues to belong to artisan

production and small-scale industry. The censuses mentioned above show that in 1940 about 75 per cent of this total and in 1961 60.4 per cent were employed in this section.

The high percentage represented by artisan employment is largely due to the structure of many branches of the food, wearing apparel industries, etc. Nevertheless it has become apparent that in all of these the relative importance of this type of production is waning.

The changes in the distribution of industrial establishments according to scales of capital are also indicative of a trend towards heavier concentration of industrial production in larger units.

The lack of direct statistical data from the sources of information makes itself felt particularly with regard to the conditions under which the productive processes of manufacturing industry are being developed.

Thus the analysis of the siting of industrial enterprises, their distribution by size according to specific and well-defined strata, their use of capital goods and installed capacity, certain problems relating to manpower, inputs and production costs - none of these can be elucidated in the full detail required by the vital part they play in any complete characterization of the status quo in the industrialization of Peru.

Nevertheless certain aspects of these conditions will be described in what follows.

5. General conditions of the development of production

The fact that the industrial growth of Peru is relatively recent and that there have been large imports of machinery and equipment means that industry is in general well provided with means of production. This is a common feature of most industries of any extent of operation (though there are exceptions in the case of industries engaged in the more old-fashioned lines of production) and even extends into some branches where artisan or small-scale industrial activity is predominant. There are also, however, many branches where, because the latter types of activity have a high relative importance, neither the equipment used nor the techniques of production are of a satisfactory standard.

/Given these

Given these large differences, it seems proper to give a brief description of the situation obtaining in each of the main branches of industry.

In the beverages industry, for example, the breweries and malthouses have very modern equipment and production is concentrated in a small number of establishments. Soft drinks are also to a certain extent produced by large, efficient plants, but a high proportion of the total production is still in the hands of numerous smaller plants whose markets are limited to the requirements of provincial towns. The alcoholic liquors branch also includes a number of establishments using modern equipment.

In the tobacco industry production of cigarettes, which is in the hands of a single enterprise with factories in two regions of the country, is carried out with antiquated machinery. Very recently, however, it has begun to purchase new equipment.

With regard to the textile industry, which was one of the earliest to develop, 31 per cent of the spindles of the cotton sector and 27 per cent of those of the wool sector can count as modern. On the other hand, 100 per cent of those of the cut fibre mills belong to this category. Of all spindler, 51 per cent of those in the cotton sector and 66 per cent in the wool sector are obsolete. As for looms, 48 per cent of those in the cotton sector, 69 per cent in the wool sector and 28 per cent of those used for artificial fibres and filaments are also obsolete. The industrial sector has become concerned about the state of the inventory of textiles machinery, as is shown by the continual loans granted by the Industrial Bank to this industry for use in modernization of existing installations.

The wearing apparel and footwear industry has probably the highest proportion of artisan production of any branch of the manufacturing sector. The industrial census on establishments of 1 to 4 persons recorded more than 8,900 such establishments in this branch in 1963.

Artisan and small-scale industrial production also plays a large part in the wood and wooden furniture and fixtures industries, where there are 3,500 establishments of 1 to 4 persons.

As regards the paper and paper products industry, Peru possesses a large and modern factory for production of certain types of paper and paperboard; the production of other paper and paperboard products is distributed among 7 units in some of which the equipment is antiquated.

/In leather

In leather and leather products (excluding footwear) tanning and preparation of hides is mostly carried out by a small number of establishments using modern equipment. In the other branches of the industry most of the production is carried out by numerous small-scale establishments or even by artisan activity.

As regards the rubber industry, production of tyres and inner tubes is centralized in two relatively new plants. These have lately been renewing their equipment.

The plastics industry was established still more recently, and its installations are therefore mostly modern.

Within the chemical industry there are considerable differences from one branch to another. In some cases production is centralized in a few establishments, operating on a large scale and, particularly those which have developed most recently, using modern equipment. This is the case primarily in the plants producing nitrogen fertilizers, caustic soda, artificial fibres, sulphuric acid, etc. In the pharmaceuticals industry, antiquated equipment exists alongside the most modern and efficient. Part of soap and candles production, is carried out by numerous small establishments mostly with a low degree of mechanization. Matches are now produced by a plant possessing up-to-date equipment.

As regards the industries manufacturing non-metallic mineral products, cement production is carried out in different parts of the country by factories operating on an economical scale and using efficient equipment.

Thus the general conclusion may be drawn that Peruvian industry contains two strongly contrasted types of enterprise. The first consists of plants operating on a large scale and using modern, efficient equipment. These include not only industries of more or less recent development, as are some of the basic chemical branches, plastics moulding, etc., but also traditional industries, such as textiles and brewing. The second type, on the other hand, is made up of an enormous number of small establishments, among which artisan scales and methods of production are predominant.

6. Supply of raw materials and intermediate products

Peruvian industry has the advantage of a large variety of internal resources suitable for use as sources of the most essential raw materials and intermediate products of the productive processes. Thus Peru possesses many different types of agricultural resources, considerably developed primary industries covering a wide range of products, and great reserves of various kinds of fuels. These provide a very solid basis for the development of industry.

It is estimated that of a total of raw materials and intermediate products of approximately 612.0 million dollars, 435.1 million were of internal origin, the remaining 176.9 million, or 28.9 per cent, being imported.

The extent to which industry is dependent on imports naturally varies considerably from one branch to another. Imported raw materials and intermediate products play a very small part in such branches as wearing apparel and footwear, leather, petroleum, non-metallic minerals, and the basic metal industries.

In the beverages industry, imported raw materials and products constituted about 26.4 per cent of total consumption in 1964. This percentage is still higher if manufacture of wines and liquors is excluded. Chemical imports cover a broad range of products including both intermediate goods for use in industry itself and goods for final consumption. The latter consist mainly of a wide range of pharmaceutical products.

The plastics moulding industry also uses a very high proportion of imported raw materials.

Further activities with a high proportion of imports in internal supply are the paper industry (35.7 per cent) and the wood industry (39.6 per cent).

These facts and figures are of particular interest as showing that in almost all branches of industrial activity there is room for import substitution - though in varying degrees.

In addition to the conclusions which may be drawn from direct evidence of this kind, it should be understood that in several cases what occurs in the data as domestically produced raw material may in fact be

intermediate products deriving from industries where the proportion of imported material is high.

Even if this heavy dependence on imported raw materials and intermediate products is in many cases due to the deficiencies of agricultural production, it is also to a considerable extent due to the situation in industry itself. For instance, many intermediate manufactured products are imported for use as raw materials simply because their production cannot be carried out in the country. It is likely that adequate further development of industry will depend on the channelling of some of the available investment funds into industries producing these kinds of products.

7. Characteristics of foreign trade

The heavy dependence of the Peruvian economy on the export sector is evident from the contribution of the latter to the gross domestic product, a contribution which in the last few years has been increasing. Thus, in 1964 exports represented 25 per cent of the gross product. This means that the growth of the product as far as it is related to this sector, since it is dependent on the position of raw materials in the world market, is to a high degree vulnerable.

The foreign trade of Peru has been developing rapidly ever since 1950, but from 1960 onwards its progress has been especially dynamic, to such an extent that it can now be said that it has undergone one of the largest increases in Latin America.

In 1960-1964 the figures for exports of merchandise were higher than those of imports, resulting in a surplus in the balance of payments. According to statistics prepared by the customs authorities, exports in 1964 amounted to 9.7 million tons in weight and 667.0 million dollars in value. (See table 9.) These figures are a long way above those of the year before - 9.2 million tons and 541.2 million dollars - and give an increase of 520.0 thousand tons (5.4 per cent) and 125.8 million dollars (23.2 per cent) in that year.

Exports from Peru, measured in dollars per inhabitant, rose from 44 dollars in 1960 to 51 dollars in 1964.

/Table 9

Table 9

PERU: MAIN PRODUCTS EXPORTED

Products	1960		1961		1962		1963		1964	
	Thousands of dollars	Percentage of total exports	Thousands of dollars	Percentage of total exports	Thousands of dollars	Percentage of total exports	Thousands of dollars	Percentage of total exports	Thousands of dollars	Percentage of total exports
Cotton	73 298	16.9	79 842	16.0	97 164	18.0	91 428	16.9	91 343	13.7
Sugar and sugar derivatives	47 684	11.0	64 202	13.0	54 447	10.1	64 876	12.0	63 974	9.6
Coffee	18 552	4.3	22 772	4.6	24 193	4.4	25 563	4.7	36 977	5.5
Wool	7 056	1.6	7 462	1.5	9 915	1.7	11 731	2.2	11 637	1.8
Fish products	52 002	12.0	71 53	14.4	121 475	22.5	121 981	22.5	166 869	25.0
Subtotal for agriculture and fishing	198 592	45.8	245 808	49.5	306 194	56.7	315 579	58.3	370 800	55.6
Petroleum and petroleum derivatives	17 913	4.1	14 489	3.0	13 168	2.4	9 832	1.8	9 620	1.4
Copper	94 688	21.9	105 108	21.2	92 344	17.1	87 256	16.1	102 998	15.4
Iron	32 721	7.6	36 844	7.4	32 684	6.1	36 442	6.7	38 879	5.8
Silver	24 094	5.6	27 559	5.6	32 879	6.1	35 789	6.6	45 239	6.8
Lead	21 670	5.0	22 303	4.4	16 401	3.0	16 408	3.0	32 978	5.0
Zinc	16 722	3.9	19 068	3.8	15 855	2.9	15 823	2.9	39 112	5.9
Subtotal for mining	207 808	48.1	225 371	45.4	203 331	37.6	201 550	37.1	268 826	40.3
Other products	26 675	6.1	25 194	4.1	30 561	5.7	24 112	4.6	27 364	4.1
Totals	433 075	100.0	496 373	100.0	540 086	100.0	541 241	100.0	666 990	100.0

Source: Foreign Trade Statistics.

/The inclusion

The inclusion of new products of considerable economic importance among exports marks one of the main features of Peru's export trade-diversification. This has been a constant characteristic of the history of the Peruvian economy. From time to time new products have appeared, e.g. cotton during Second World War, and fish products, coffee and iron ore in the '50's, and now, as a result of the opening of the Toquepala mines, exports of copper have undergone the extraordinary expansion of more than 600 per cent between 1950 and 1960.

This favourable situation is in some cases due to the initiative of domestic enterprises, and in others to deliberate action on the part of the government. The scale of foreign sales of fish meal - since 1962 Peru's most valuable export - and the expansion of coffee exports are both the achievement of a private initiative guide to take advantage of available resources. On the other hand, the growth of mining exports is due in the case of copper, to legislative changes which have induced foreign enterprises to set up operations in Peruvian territory and to the low costs of production achieved in the exploited deposits; and in the case of iron, in addition to these factors, to the high quality of production maintained under the requirements established by the mining law and to careful surveys of mineral resources carried out by the government.

In spite of the considerable diversification existing in exports from Peru, three main products together provided 54.1 per cent of foreign sales in 1964. These were copper (15.4 per cent), cotton (13.7 per cent) and fish products (25.0 per cent). The figures given in table 10 show further that during the period 1960-1964 this concentration of exports into a small number of products tended to increase.

/Table 10

Table 10

PERU: STRUCTURE OF IMPORTS, a/ 1960-1964

(Dollar prices of 1960)

	1960		1961		1962		1963		1964	
	Thousands of dollars	Percentage of total imports	Thousands of dollars	Percentage of total imports	Thousands of dollars	Percentage of total imports	Thousands of dollars	Percentage of total imports	Thousands of dollars	Percentage of total imports
Consumer goods	82 532	22.1	104 482	22.5	116 377	22.3	137 197	25.1	153 015	26.1
Non-durable	51 941	13.9	62 451	13.4	71 776	13.8	82 654	15.1	90 998	15.5
Durable	30 591	8.2	42 031	9.1	44 601	8.5	54 543	10.0	62 017	10.6
Fuels	17 129	4.6	15 946	3.4	16 433	3.2	17 068	3.1	19 645	3.4
Raw materials	121 812	32.7	141 144	30.3	151 521	29.1	153 608	28.1	176 346	30.1
Metal-transforming	20 602	5.5	24 734	5.3	25 830	5.0	27 978	5.1	26 580	4.5
Other intermediate products	101 210	27.2	116 410	25.0	125 691	24.1	125 630	23.0	149 766	25.6
Capital goods	149 978	40.2	202 115	43.4	234 443	45.0	237 214	43.4	233 543	39.9
Building material	17 201	4.6	24 770	5.3	28 850	5.5	25 305	4.6	28 560	4.9
Agricultural machinery and equipment	10 556	2.8	17 397	3.7	12 435	2.4	12 047	2.2	11 933	2.0
Industrial and mining equipment	78 764	21.1	104 448	22.5	133 354	25.6	134 372	24.5	133 804	22.9
Transport and communications equipment	43 457	11.7	55 500	11.9	59 804	11.5	65 790	12.1	59 246	10.1
Miscellaneous	1 334	0.4	1 544	0.4	1 959	0.4	1 895	0.3	2 742	0.5
Totals	372 785	100.0	465 331	100.0	520 733	100.0	546 982	100.0	585 291	100.0

Source: Foreign Trade Department, National Planning Institute.

a/ Gold and gold products not included.

/Analysis of

Analysis of the quantum of products exported brings out the extraordinary increase of exports of fish products between 1960 and 1964 - by 220.9 per cent. The product which has had the next highest growth is zinc, whose foreign sales increased over the same period by 133.9 per cent. After this came coffee and silver, with increases of 99.3 per cent and 87.8 per cent respectively.

According to figures prepared by the Foreign Trade Department of the National Planning Institute, the value of imports increased between 1960 and 1964 from 372,785 to 585,291 thousand dollars at constant prices of 1960. The cumulative annual rate of increase of foreign purchases was therefore 12.0 per cent, with a higher rate in 1961 and lower rates in 1962 and 1963. (See table 10.)

Analysis of the composition of imports brings to light an interesting structural change during the period. In 1960 consumer goods constituted just over 22 per cent of the total and by 1964 had increased to 26.1 per cent. Raw materials, after undergoing various ups and downs during the period, registered an increase in the last year. As regards capital goods, it appears that the composition has remained almost without variation during the period; they made their highest contribution to the total in 1962, (45 per cent), chiefly on account of the large imports of industrial and mining machinery made in that year.

Imports per inhabitant in 1960, 1961, 1962, 1963 and 1964 were 39, 47, 51, 52, and 54 dollars respectively (1960 prices) and developed during the period study at a cumulative annual rate of growth of 8.5 per cent between the first year and the last.

In 1960 imports altogether represented 18.3 per cent of the gross domestic product, the relation of imports to the product being 4.1 per cent for consumer goods, 7.4 per cent for capital goods and 5.9 per cent for raw materials.

During the period 1960-1964 there was a more or less uniform increase of the import coefficient, which reached its maximum value of 22.4 per cent in 1964; this was made up of 8.9 per cent: capital goods, 5.9 per cent: consumer goods and 6.7 per cent: raw materials.

/8. Financing

8. Financing of manufacturing industry

The chief source of funds on which Peruvian industry has depended for the financing of its growth has been reinvestment of profits by both industrial and other types of enterprises. Internal credit in the form of special industrial credits or loans from commercial banks has played a smaller part, as have the capital market and foreign capital investments or credits.

According to figures given by the National Taxation Department, between 1950 and 1961 the assets of registered industry increased by 294.1 million dollars, at constant prices of 1950.

Of this increase 30 per cent[1/] derived from the formation of new enterprises and the expansion of existing ones, 23 per cent from accumulation of reserves and capitalization of undistributed profits, and 47 per cent[2/] from bank and suppliers' credits.

(a) Internal source of industrial financing

The two most important internal sources are depreciation of assets and reinvestment of profits. A third source of some significance consists of the investments represented by types of expenditure for which it is difficult to give precise figures.

(i) Policy on depreciation. In Peru the traditional practice, and one which is authorized by the Tax Inspectorate of the Ministry of Finance and Trade, has been to find the annual depreciation of fixed assets by substracting from their value the following percentages:

5 per cent of the value of real estate, except land;

10 per cent of the value of machinery and equipment;

20 per cent of the value of vehicles;

1/ This percentage includes the capital market, public investment, foreign investment and part of the reinvested profits coming under the heading "Capital extension of existing enterprises" which to a large degree consist of split shares.

2/ This percentage includes loans from the Industrial Bank of Peru and from commercial banks, and also suppliers' credits.

/The sums

The sums thus accruing from depreciation have been used as the source of finance for a considerable part of the industrial development of the country.

In addition to this, Law 13270 of Industrial Promotion authorizes revaluation of the Peruvian currency value of machinery and equipment whenever this currency suffers depreciation relative to the United States dollar.

The same law further included a provision intended to counteract poor utilization of installed capacity, according to which industrialists were granted higher rates of depreciation for more intensive use of their equipment. Thus for any machine working only one shift a day and depreciating to a certain extent in a fixed number of years, an equivalent machine working two or three shifts a day was considered as having depreciated to that extent in half or one third as many years.

(ii) Reinvested profits. It is only fair to acknowledge that the industrialists of Peru have followed an extremely sensible policy as regards distribution of their profits. In general, by paying out only a fraction of these in dividends to their shareholders, they have been able to accumulate reserves with which to make reinvestments or enlarge their working capital.

The Industrial Promotion Law also did much to foster reinvestment by decreeing that any profits of an industrial enterprise intended for reinvestment in the industry itself should be exempt from tax either wholly or in part, depending on the geographical situation of the enterprise. Thus, enterprises situated on the litoral were allowed to retain 40 per cent of their profits tax free for reinvestment, those in the Sierra 60 per cent, and those in the Selva 100 per cent. All those belonging to frontier departments had the same treatment as those of the Selva. Moreover if the sum total of any reinvestment was not covered by the tax free reserves of any one year, the enterprise was able to employ those of the five succeeding years to answer the needs of the case. However the provisions thus established by Law 13270 on behalf of reinvestment of profits had the disadvantage of only authorizing reinvestments according to this procedure in the same enterprise as had made the profits and thus tended

to produce a vertical growth. Decree 74, of 15 November 1963, eliminated this by authorizing in addition to this the partial or total exemption from tax of profits reinvested in allied or subsidiary enterprises, whether engaged in the same or other forms of activity.

The tax reliefs thus established for reinvested profits constitute perhaps the most important provision of Law 13270.

(b) External sources of industrial financing

By external sources is understood: long and medium-term industrial credit, commercial credit (which is almost always for short terms) and contributions from private savings. A distinction may be drawn between internal and external credit, and similarly, with respect to the contribution from savings, between that which is provided by the internal capital market and that which comes from abroad in the form of foreign capital contributions.

(i) Internal industrial credit. As has already been said, this is primarily in the hands of the Industrial Bank of Peru, whose operations in this sphere have become of real importance in recent years. The industrial development of the last five years has been to a considerable extent due to its credit activities.

The most important aspect of industrial credit has become, since these operations began, the possibility and extent of deferred terms, rather than interestrates, which are kept within definite limits by the price of money.

The Industrial Bank only allows a term of five years for loans in Peruvian currency, owing to the limited state of its resources. Loans in foreign currency, which are charged to international credit lines are granted for ten years. Concession of amortization free periods is very important. The practice of the Bank is to extend such periods until the equipment financed by the loan is brought into operation. The grant of any loan involves a technical, economic, book-keeping and legal study of the merits of the case and of the prospects of recovering the sum granted. In many cases these studies show that the loan originally applied for would be insufficient and a larger sum is granted. In others it is concluded that a further supply of capital is required, in addition

to that of the loan, if the financial indexes of the enterprise are to show any improvement.

The amount of the loans granted by the Industrial Bank has been increasing progressively over the last few years, as can be seen in table 11.

If loans granted to industry by commercial banks are considered it appears that here there has not only been an increase in volume, but also in their contribution to the total of loans granted to all sectors by banks in general. (See table 12.)

Thus while the index of this total rose from 100 in 1953 to 324.2 in 1963, that of loans to industry reached 409.5.

Quantitative analysis of loans granted by the Industrial Bank shows that the number of those of up to 35,000 dollars has increased very slowly (see table 13).

Table 11

PERU: LOANS OF THE INDUSTRIAL BANK, 1953-1964

(Millions of dollars of 1963)

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Quantity	2.5	3.1	3.2	5.6	12.0	14.4	17.2	19.2	21.9	25.1	47.8	69.6
Index	100.0	123.4	126.4	224.3	476.3	571.7	684.6	761.6	869.8	997.0	1 897.9	2 766.7

Source: Industrial Bank of Peru.

Table 12

PERU: COMMERCIAL BANK LOANS TO INDUSTRY IN COMPARISON WITH TOTAL LOANS, 1953-1963

(Millions of dollars of 1963)

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Total loans	123.4	132.2	157.8	180.3	195.6	198.7	208.0	253.0	306.0	356.6	400.0
Index	100.0	107.1	127.9	146.1	158.5	161.0	168.6	205.0	248.0	288.9	324.2
Loans to industry											
Quantity	30.6	34.1	39.9	44.6	50.4	50.3	53.7	68.7	88.5	106.6	125.4
Percentage of total loans	24.8	25.8	25.3	24.7	25.8	25.3	25.8	27.1	28.9	29.9	31.3
Index	100.0	111.3	130.2	145.7	164.4	164.4	175.2	224.3	289.0	348.1	409.5

Source: Bank Inspectorate.

/Table 13

Table 13

PERU: LOANS BY THE INDUSTRIAL BANK ACCORDING TO SIZE OF LOANS 1962-1963

(Dollars of 1963)

	1962		1963	
	Number	Percentage	Number	Percentage
Up to 1,864 dollars	194	24.4	209	24.3
From 1,864 to 37,285	435	54.8	444	51.6
From 37,285 to 111,857	124	15.6	139	16.1
From 111,857 to 186,428	35	4.4	52	6.0
Above 186,428	6	0.8	17	2.0

Source: Industrial Bank.

The largest proportions of the loans of the Industrial Bank has been concentrated within the area of Lima and Callao, thus corresponding to the present geographical distribution of industry. In the last few years, however, the Bank has taken steps to extend its operations to other regions through association with the regional banks and the departmental development corporations.

As regards the use of these loans, 47 per cent went towards purchase of machinery equipment, buildings and other basic assets, 27 per cent towards consolidation of debts and bank loans, 8 per cent towards purchase of raw materials and 17 per cent was used as working capital. (See table 14.)

The Industrial Bank has recently begun operations for the long term financing of yards for building fishing boats, most of which will be intended for export. For this purpose it has been aided by a loan of 1 million dollars from the Inter-American Development Bank's Special Fund for the development of export trade.

/Table 14

Table 14

PERU: LOANS BY THE INDUSTRIAL BANK CLASSIFIED BY USE, 1963

(Millions of dollars of 1963)

Use	1963		1964	
	Amount	Percentage	Amount	Percentage
Machinery and equipment	19.4	40.6	23.1	33.2
Buildings and other basic assets	3.0	6.2	3.7	5.3
Miscellaneous liabilities	8.6	18.1	20.4	29.3
Payments to banks	4.5	9.4	6.1	8.7
Raw materials	3.8	8.0	6.2	9.0
Working capital	7.9	16.6	9.8	14.0
Inspection, survey and valuation costs	0.2	0.4	0.1	0.2
Industrial Bank shares	0.4	0.8	0.2	0.3
Total	47.8	100.0	69.6	100.0

This arrangement makes it possible to lengthen the terms of financial assistance to such an extent as to enable internal credit to compete with the loans offered by industrialized countries, for which reason the Industrial Bank is trying to extend it to other branches producing capital goods.

The credit available to industry from commercial banks is very restricted, chiefly on account of a stipulation of the Bank Law whereby they may not grant credits for terms of more than one year. Because of this they generally carry out transactions involving longer terms through subsidiary financial enterprises whose functions are to provide long-term financing and to conduct operations outside the normal ranges of activity of their parent bodies. They use similar methods to channel external resources into the financing of manufacturing industry.

Practically no statistics on the activities of the financing companies have been compiled or published. The sole regulation governing them is

/that their

that their interest rates must not exceed 12 per cent a year, plus a 1 per cent commission.

(ii) External industrial credit. The international credit institutions and agencies have established credit lines in favour of the Industrial Bank and certain financing corporations so that these may grant sub-loans chargeable to these lines. The largest experiment of this kind has been carried out by the Inter-American Development Bank which grants loans at a moderate rate of interest (5 3/4 per cent at present) for a term of 12 years, the first two of which are free of payment, the loan being amortized over the following 10. This body is only consulted on individual transactions involving more than one million dollars, the Industrial Bank having a free hand for any others. The aid thus granted by the Inter-American Bank has been invaluable both to large-scale and to medium- and small-scale industry.

The International Development Agency (IDA) has also granted certain credit lines on very favourable conditions.

(iii) Internal Commercial credit. In Peru the commercial banks have lent very considerable support to industry. This has surpassed the aid granted to agriculture and rivals the amount granted in trade credits. Although the industrial credits are essentially short term - generally advances on documentary guarantees, overdrafts on current accounts or promissory notes - in some cases they may be converted into longer term loans by carrying over the balances from one year to the next under the form of ordinary loans.

The recent experiment made by the Industrial Bank and the commercial banks in Peru of forming pools for the support of particular sectors of manufacturing activity shows how much can be achieved in the Latin American countries by a policy of co-ordination between institutions engaged in similar lines of work. This has been carried out so far with respect to the fishing boat industry and should be capable of extension to other sectors.

(iv) External commercial credit. Foreign commercial banks, above all those of the United States, of Canada, and recently of Germany, work in close contact with the Industrial Bank and commercial banks of Peru to

/make short

make short term credits available to Peruvian industry. Preference is given to the financing of industrial products for export, as has been the case with respect to fish meal and preserved fish. These transactions have the advantage of being capable of being carried out quickly and at a low cost. They make an excellent complement to the credit lines of the international development banks and solve for the industrial enterprises the problem of obtaining working capital arising when the Peruvian currency resources of the domestic credit institutions are insufficient.

(v) The capital market. In Peru the capital market operates on an insignificant scale. There are very few enterprises which quote their share prices in the market and there are still fewer which, whether in the process of formation or in subsequent extensions, raise their capital from public contributions. In general the shares have been allocated before the enterprise even has legal existence. Thus the investor on a small or even a medium scale has few chances of using his savings to take part in financing the industrial development of the country.

There is a Stock Exchange in Lima which acts as the centre of buying and selling of shares, bonds, deeds, etc. The small sums involved in the transactions carried out through it appear from the following table:

Table 15

PERU: MOVEMENT OF SECURITIES, 1961-1965

(Millions of soles)

	1961	1962	1963	1964	1965
Liabilities					
State debts	1.8	0.9	1.8	0.8	3.4
Mortgage deeds	14.8	17.7	12.8	35.2	62.7
Bonds	3.9	4.4	2.9	1.4	0.7
Total	20.5	23.0	17.5	37.4	66.8
Shares					
Industrial	8.2	9.5	2.2	1.2	0.2
Others	20.6	19.8	14.8	39.8	62.2
Total	28.8	29.3	17.0	41.0	62.4

Source: Stock Exchange of Lima.

/A much

A much greater quantity of such transactions is carried out by the securities departments of the commercial banks, which in every case work more or less in co-operation with the stock-brokers. For some time efforts have been made to put more life into the Stock Exchange. An ad hoc commission was nominated to deal with this problem and proposed a series of measures which might have done something to solve it, but these have still not been put into effect.

Perhaps because of the non-existence in Peru of a genuine exchange where shares might find a ready sale, industrial bonds have come to play a part of some importance in financial operations connected with industry. These lack some of the advantages of shares, such as their higher dividends and the possibility of being supplemented by split shares deriving from capitalization of reserves, but on the other hand have a greater liquidity, particularly in the case of the recent issues which involve short terms of amortization.

In this connexion, the Industrial Promotion Law, by allowing enterprises to issue bonds on security of machinery and equipment of twice the value of the issue, has taken a considerable step towards strengthening the financial securities market of the country. Various important enterprises have made such issues, some in Peruvian and some in foreign currency, and to very good effect.

Among the projects soon to be carried out by the Industrial Bank is that of entry into the industrial securities market by purchasing shares in various enterprises in process of formation or extension, which shares will in turn stand as securities for its own bond issues. In this indirect way public savings will be put to work as capital for industrial enterprises. The recent success of the Bank in finding a sale in the private sector for the majority of its class "B" shares seems to provide sufficient evidence in favour of this important move.3/

3/ The success of the Industrial Bank in selling its shares to private investors deserves special comment, as it brings out the extent of its achievements in the internal capital market. Thanks to a tempting tax free dividend of up to 12 per cent, to the thoroughness of its published balance sheets, to prompt quarterly payments of dividends, and to the care it takes in selling the shares of anyone who wishes to get rid of them, it has managed to turn itself into a public company with the largest number of shareholders on every scale of any in the country.

/(vi) The

(vi) The contribution of foreign capital. Foreign capital has made some contribution of a technological as well as financial nature, to the industrial development of Peru.

Almost the whole of the foreign resources entering the industrial sector as on December 31st 1964 came from Germany (81 per cent). As regards the international organizations, the IDB can be mentioned as having contributed 7.5 million dollars, a larger sum than what it has granted to any other sector of the economy. Denmark has also provided a loan of 3.9 million dollars.

With regard to the interest rates, the greater part of the total granted (73.6 per cent) involves interest of over 6 1/2 per cent a year.

(c) Financing of raw material and manufactured products stocks

One of the greatest weaknesses to appear in the financial structure of Peruvian industrial enterprises is their lack of sufficient working capital for efficient operations. Most of them are deficient in liquidity and many only just maintain the equilibrium between liquid assets and liabilities. A relation of 1.5 to 1 is rare enough and still more so the 2 to 1 recommended by orthodox standards.

This is partly due to the constant rise of production costs and to the fact that the trading concerns, by continually exacting deferred terms for the payment of manufactures, put the whole burden of maintaining stocks on industry itself. But it is also due to the fact that the managements in many cases divert resources, which might be used as working capital, into purchase of equipment which is only put to use for part of the day when in any case a more intensive use of their existing machinery could achieve the same level of production. The combined result of these circumstances is that industry comes to depend continually more heavily on the financial support of banks and suppliers, the expenses of which add to production costs.

Financing of stocks of raw materials and manufactured products rests almost entirely on credit from the commercial banks. The Industrial Bank is taking measures to improve this situation by deducting part of its funds to such financing, but its efforts are limited by its lack of resources. Moreover this is not its proper function, since any increase in loans

/for working

for working capital involves curtailment of the credit it has available for investment.

As regards industries manufacturing articles for export, the problem is partly solved by the foreign commercial bank credits mentioned above, which are, as was then said, granted at very moderate rates of interest. But it remains a grave difficulty for industries producing goods for internal consumption.

9. Size and characteristics of industrial establishments

Analysis of the different branches of industry supports a tentative division into three groups.

The first of these consists of the industries which are essentially linked to foreign trade such as the sugar mills, fish meal production, metal refining, etc. These are characterized by efficiency, high production capacity and excellent levels of productivity.

The second consists of the industries whose production is designed to satisfy the demands of a market of some size and which have therefore been justified in installing units large enough to operate economically and can consider themselves producers of durable consumer and investment goods. These include the tyre and inner tube factories and the glass, some of the chemical, and the metal-transforming industries, all of which have been efficiently equipped with modern machinery and processes and work to high quality standards. They also have a high manpower productivity, but at the same time a poor average level of use of their installed capacity relative to the size of the market.

The third group is made up of industries - many of which have been built up from artisan beginnings - engaged in production of non-durable consumer goods. Some of these have been brought up to date and have modified their structure of production and administration so as to compete with the modern factories installed in the last few years. These include the footwear, wearing apparel, leather and some of the metal-transforming industries. The group can also be taken to include the textiles industries, although these, on account of their importance and the fact that, even though they include the relatively well-known artisan woollen goods

/industry, their

industry, their structure does not derive from artisan forms of production, might better be considered as constituting a group apart. Textiles production was one of the first industrial activities to begin in Peru, a fact whose consequences are not entirely advantageous for the industry. Thus, the average annual growth rate of this industry was only 2.2 per cent during 1960-1964 as compared with the 9.3 per cent of the value of industrial production as a whole.

10. Employment in industry

Availability of manpower seems also to have had a breaking effect on the development of industry, since the latter cannot create employment to the extent required by the manpower entering the employment market.

According to figures provided by the Employment and Human Resources Bureau, total industrial employment in 1964 was over 483,100 persons;[4/] this includes about 181,000 employed in what is known as registered industry and just over 24,000 in establishments of 1 to 4 persons which may not have been included in the former figure.

Analysis of the distribution of employment in registered industry according to types of activity gives a heavy concentration in manufacture of foods, textile products, footwear and in the chemical industries. These branches together provide over 54 per cent of the employment of the sector. If their employment figures are compared with those for their value added it appears that as well as the general productivity differences of registered as compared with unregistered and artisan industry there are important, though smaller, differences between the various branches of the former.

The highest figures for value added per person employed have occurred in the petroleum, tobacco, beverages and paper industries and the next highest in rubber, basic metals and chemicals, while those for the wood, footwear and leather industries are relatively low.

4/ The proportion of male employees in this figure is 77.8 per cent and that of women 28.2 per cent. The high percentage of women employees is chiefly due to the large numbers engaged in artisan production.

/It is

It is clear that these differences are essentially connected with the average size of the establishments of the branches concerned and with the different degrees of mechanization and capital intensity characteristic of the different types of activity they are engaged in. They can therefore reasonably be counted as normal features of the stage of industrial development through which Peru is now passing, while it is probable that in future they will tend to become less marked as productivity is generally increased above the present levels.

A further aspect of undeniable importance in connexion with industrial employment is its degree of training. SENATI estimates that of all persons employed in manufacturing industry only 2.1 per cent belong to the category of professionals and technicians, and 14.9 per cent to that of staff, while 31.5 per cent are skilled and semi-skilled workers and 51.5 per cent unskilled workers. The last two categories therefore amount to 83 per cent of the total, which is 16 per cent more than the 67 per cent normally prescribed for properly constituted industries.

The shortage of trained personnel at all levels is greatest in what are known as the dynamic industries. This constitutes a serious problem as the future industrial development of the country depends on them.

SENATI mentions the following as being the chief deficiencies of the structure of industrial employment in Peru:

(a) a 60.5 per cent shortage of professionals and technicians;

(b) a 20 per cent shortage of staff;

(c) a 19 per cent surplus of workers of all categories.

The technical education given by the state is insufficient to deal with this shortage of trained manpower. Public education is therefore being substantially reformed so as to establish a compromise between technical and cultural teaching which will provide the lines along which it can develop in future.

It is also well worth mentioning the valuable contribution being made to manpower training by such organizations as the National Apprenticeship and Industrial Labour Service (SENATI), the Franco-Peruvian Centre, the Army Industrial Training Centre, the National Productivity Centre, the Labour Studies Centre, etc.

/11. Geographical

11. Geographical distribution of industrial production

Peruvian industry, as is widely recognized, shows a strong trend towards concentration in the Lima-Callao zone, at the expense of industrial development in other regions. (See table 16.)

It is true that there are many good reasons for choosing this zone as a location. It not only contains most of the purchasing capacity of the population but also all the external economies natural to a centre which has already had a pretty considerable industrial development. It also offers the best facilities for obtaining imported raw materials and intermediate products while at the same time constituting an excellent location for industries aspiring to take part on any considerable scale in trade with foreign markets. Lastly, it provides the easiest access and best possibilities of contact with the official bodies and credit institutions concerned in industry, and it is this, together with the concentration of trained manpower in the capital which has been decisive in the general preference for this location, above all in the case of registered industry.

Nearly 33 per cent of all establishments are situated outside the Lima-Callao zone; these absorb 36.3 per cent of industrial employment and contribute 35.1 per cent of the total value of manufacturing production.

A more thorough analysis according to industrial divisions shows that most of manufacturing production carried on outside Lima and Callao belongs to the food and the basic metal industries, and in these two sectors consists mainly of sugar refining and metal founding and refining for both of which the decisive factor in location is the nearness of sources for their raw material requirements, rather than transport, manpower, motor power, etc.

The concentration of Peruvian industry becomes still more obvious when the production of the zones outside Lima and Callao is considered apart from these two activities, for it now only amounts to 22.9 per cent in value of that of industry in Lima and Callao minus the same activities, and only reaches figures of any relative significance in the cases of the beverages, textiles, wood, furniture, and leather industries.

As regards food industries outside Lima-Callao, the departments which contribute most to production are, in order of importance: Lambayeque,

La Libertad and Ancash. Much of the contribution of the two former derives from sugar refining. As regards basic metal industries, almost the whole production is carried out in Junin and Ancash. Only the departments of Lima and Arequipa and the province of Callao possess any appreciable degree of industrial diversification.

Table 16

PERU: GEOGRAPHICAL DISTRIBUTION OF MANUFACTURING INDUSTRY

Departments	Percentage of total establishments	Percentage of industrial employment	Percentage of production value
Lima and Callao	67.0	63.7	64.9
Junin	3.6	5.4	7.7
Ancash	2.3	5.0	5.7
Arequipa	5.3	4.7	3.9
Piura	1.9	3.3	5.9
La Libertad	3.1	3.2	4.4
Lambayeque	2.3	3.1	3.7
Cuzco	2.1	2.3	0.7
Ica	3.4	2.2	1.4
Loreto	2.8	1.4	0.4
Cajamarca	0.9	1.3	0.2
All other departments	5.3	4.4	1.1
Total	100.0	100.0	100.0

Source: Industrial Census of 1963.

III. PLANS AND PROGRAMMES FOR INDUSTRIAL DEVELOPMENT

1. The Economic and Social Development Plan 1967-1970

The Economic and Social Development Plan 1967-1970 is at present under review for approval by the National Economic and Social Development Council. This plan aims at four general objectives:

(a) Diminution of vulnerability to circumstances of foreign trade

(b) Redistribution of income

(c) Increase of production

(d) Increase of employment

The achievement of an acceptable degree of success in reaching these objectives depends on a significant increase in the growth of the economy, which in turn involves a higher rate of capitalization based on national and foreign savings.

In its strategic aspects the plan envisages an increase of capitalization by means of a slight diminution of the present over-all growth rate of consumption, especially that of urban consumption.

It also envisages an increase in domestic savings to such an extent as to make it possible to finance most of the necessary investments from them and to reduce the size of the foreign debt and meet the commitments arising from it.

Increase of the growth rate of the economy will require substantial changes in the structure of production. In particular, it will be necessary to promote agricultural development if objectives (a) and (b) are to be satisfactorily attained.

In brief, the fundamental points of the over-all strategy of the plan, as resulting from its general objectives, are as follows:

(a) Increase of the over-all investment coefficient

(b) Increase of the contribution of domestic savings to the financing of over-all investment

(c) Expansion of agriculture

(d) Integration of industry

/2. The

2. The general strategy of industrial development

The over-all strategy of the development plan involves the following objectives for the industrial sector:

(a) The industrial sector must increase its present rate of growth so as to satisfy the rising demand for manufactured goods and contribute to the employment of the urban population.

(b) The industrialization process must be directed principally towards the integration of industry, to ensure its continuity.

(c) Industrial development must take into account the needs of the agricultural sector both as regards production of inputs, tools and equipment and as regards industrializing the production of this sector.

(d) Production of consumer goods must be mainly directed towards ensuring adequate supply of the goods essentially needed by common people.

(e) Manufacturing production must become to a greater extent decentralized.

(f) The interests of the consumer of final and intermediate goods must be better protected by creating a competitive market in which cornering manoeuvres will be impossible.

(g) Exports of manufactured products must increase by raising the quantities of those at present produced and by opening up new lines of production.

The industrial policy of the country has been given its general outline by two basic instruments, Law 9140 and Law 13270 of Industrial Promotion. These do not go so far as to provide a systematic and thoroughly worked out industrial policy, but have served as a general standard governing the measures adopted in particular cases.

The industrial development policy follows the recommendations of the Punta del Este Charter and of other inter-American and world meetings where co-ordination of industrial development strategy with the plans and promotion programmes for other activities belonging to a general system of economic and social development has been studied.

In the course of this work certain specific aspects have been mentioned which are considered as integral to a systematic policy of industrial development. Of particular importance among these is the definition

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of the maximum level of use of products deriving from agriculture needed to produce a proper equilibrium between industrial development and expansion of the agricultural sector, this being of recognized strategic value in the general growth of the country.

3. Bodies having executive responsibilities in industrial development

For a long time the only institutions for industrial promotion were the Department of Industries and Electricity of the Ministry of Development and Public Works and the Industrial Bank of Peru.

The two first public corporations, the Santa Corporation of Peru and the Amazon Corporation (this latter was taken over in 1949 by the Agricultural Development Bank of Peru) were formed in the '40's. Somewhat later other development corporations were set up to assume, in accordance with their statutes, the task of developing industry in specific regions.

The Department of Industries and Electricity of the Ministry of Development and Public Works is responsible for centralization of administrative work in connexion with the operation of manufacturing industries and of electric power stations and facilities. Although most of its activities are administrative it is invested with certain powers to carry out promotion activities. The relevant Law 13270 of Industrial Promotion lays down in clause (g) article 6 that this department has the duty of studying the industrial promotion and development projects of the Government itself, and of state controlled entities and state corporations, whatever may be the position or powers of the bodies proposing them, and formulating the necessary recommendations in each case. The department has, however, gone even further by financing industrial projects over and above its direct promotion activities in the electric power sector.

The creation of the Industrial Bank of Peru was decreed by Law 7695, which came into force on 30 January 1933, but it was not until some time afterwards that it formally inaugurated its operations. This was on 2 October 1965, the date on which its first board of directors was officially installed. The time between these two dates was used to accumulate the capital needed for it to begin its activities.

The Bank was initially constituted for 30 years, subject to renewal for terms of equal length. As laid down in its statutes it was founded as a mixed state and private corporation. As a credit institution it was supposed to foster manufacturing activities in the country by granting loans to established industrial companies whose production was too small to satisfy demand and to industrial enterprises in the process of formation. It was to provide credits for use as working capital as well as for investment in fixed assets (equipment and industrial buildings). It was also expected to carry out other transactions such as discounting of bills, reception and shipping of products to be sold in the country or abroad, and in general every kind of bank transaction approved by the Bank Directorate and within the field of factory industry.

In succeeding periods its organization and functions were modified and enlarged by several further legal provisions. But the Industrial Promotion Law 13270, which came into force in November 1959, initiated a total reform of its structure. However, even though this particular set of provisions resulted in very considerable changes for the Bank, there was still none, possibly the most necessary, authorizing it to act as a direct promotion institution. This was finally brought about by Law 13805, of December 1961, which entitled it to take part in the formation and extension of private industrial enterprises whose creation or continued existence might, on the initiative of the Bank and under favourable report from the National Institute of Industrial Promotion, be declared by the Executive to be in the national interest. The Bank was authorized to provide up to 50 per cent of the share capital of these enterprises as long as the sum provided was not in any single case more than 10 per cent of its own capital and reserves. In addition to this it may not use more than 35 per cent of its total resources in direct investment, the remaining 65 per cent being reserved for use in connexion with credit.

This law included other provisions for facilitating and/or extending the activities of the Bank. The most important were as follows:

- The existence of the Bank was prolonged for another 30 years, until 1993;

/- The shares

- The shares belonging to private capital were brought into single class known as "class B";
- The condition whereby industrialists receiving loans were obliged to purchase shares in the Bank was abolished;
- Its authorized capital was raised to 37.3 million dollars and the state contribution was enlarged by an additional 30 million soles a year for which provision was to be made in the Budget over 10 consecutive years;
- The system of evaluating industrial enterprises as a whole was introduced, so as to extend the margin of credit which may be granted them by the Bank and to bring their development under its more direct assistance and control.

To enable the Bank to operate as a direct promotion institution the first step of its Promotion Department was to set up the Economic Studies Office. However, to avoid reduplication of effort it was thought best to attach this office to the National Institute of Industrial Promotion (INPI) which was already responsible for all general and specific preliminary studies for the creation or expansion of industrial enterprises. Thus not only does the Bank provide financial assistance to industry but also since the middle of 1963 it has jointly with INPI been de jure and de facto responsible for technical assistance.

Ever since it was founded the Industrial Bank has been authorized to make use of the rediscounting facilities of the Central Reserve Bank up to the legal limit determined by its own capital and reserves. In practice, however, this limit has rarely been reached because the latter's policy has partly been to remain as sparing as possible in granting rediscount lines.

At the present time the Industrial Bank has the largest liability-free capital of any bank institution in the country. This capital is also growing faster than any other. But in spite of this and of the supplies which it has recently been receiving from the Central Banks it would not have been able to enlarge its scope of action to the extent that it has without the support of foreign long and short term credits.

/Within the

Within the general administration of the country the Industrial Bank belongs to what is known as the "independent public sub-sector". It is autonomous in the conduct of its affairs, all decisions resting on its board of directors and management. But, since much of its capital is state owned, it remains tied to the Government as regards administration of its revenue and expenditure.

Lastly, it works in close co-operation with the commercial banks not only by carrying out transactions chargeable to them but also by entrusting them with its representation in places where it does not have a branch or any agency of its own. Recently, on its initiative, a new system of financial support has been set up in aid of industrial sectors with acute financial problems which the Bank cannot solve unaided; under this system it enters into partnership with the commercial banks which thus share the risks of the transaction and enable the assistance given to be as comprehensive as possible.

Among the state corporations engaged in direct industrial promotion the following may be mentioned: the Santa Corporation of Peru, the Mantaro Electric Power Corporation and the National Fertilizer Corporation.

The Santa Corporation of Peru was set up in June 1943. Its chief purpose is the development and exploitation of the resources deriving directly or indirectly from the regions of the River Santa and its tributaries. It can also develop and exploit the mineral and industrial resources of any other region of the country as long as this has some connexion direct or indirect, with its main purpose.

From the start the Santa Corporation concentrated its efforts on the hydroelectric development of the River Santa and on setting up the iron and steel works at Chimbote. In connexion with this latter it has carried out surveys of the iron ore deposits at Marcona which have been brought under its jurisdiction, and as a preliminary to its programme for exploiting the waters of the Santa it has made studies on the irrigation of its right bank.

In May 1956, on the basis of domestic and foreign private capital, it set up the Chimbote Iron and Steel Company S.A. (SOGESA) which it made responsible for the administration of the Chimbote works. In December 1961,

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when a contract for extending the works was signed, it was agreed that the shares of SOGESA should pass in toto into the control of the Santa Corporation.

The Mantaro Electric Power Corporation was set up in December 1961 to develop and exploit the potential resources for electric power of the River Mantaro and to promote industrialization of the area comprised by its basin. But its organic law and statutes further entitle it to take shares in public companies, existing or in formation, engaged in production, supply, services or other industrial activities in the zone of the Mantaro basin, such as those concerned with production and supply of electric power, with building material, with agricultural development, etc.

The State Petroleum Company is a state organization engaged in extracting petroleum and refining its derivatives. Its primary purpose is the survey, exploration and exploitation of the terrains and deposits of petroleum and similar hydrocarbons, and is also entitled to carry out activities in connexion with fuels and to operate petrochemical industries.

Its first industrial operation will be to engage in refining its own production of crude petroleum; for this purpose bidding for contracts for construction of a refinery with capacity of 15,000 barrels a day in the place known as "La Pampilla" was opened in September. The financing of this enterprise has been undertaken by means of a loan from the Inter-American Development Bank, on endorsement by the Peruvian Government. The contract for building the refinery was awarded to a North American firm, and it will cost 10.6 million dollars.

Parallel to this it is making studies for installation of a factory for synthetic nitrogen fertilizers - possibly which can be processed from natural gas from the Los Organos petroleum fields in the department of Tumbas.

The National Fertilizers Corporation was set up by decree in May 1963, to exploit, produce, purchase, distribute and sell every kind of fertilizer, for which purpose it is entitled: to study and assess the fertilizer needs of domestic agriculture; to examine and promote study and exploitation of new sources of production; to exploit the guano deposits of the country; to increase production of guano by protection of marine fowl; to promote, produce and sell synthetic and organic fertilizers, fertilizer mixtures suitable for

the agricultural zones and cultivated products of the country, and chemical substances deriving from island guano; to acquire every kind of fertilizer needed to make up the deficit in the supplies needed by domestic agriculture; and to advise farmers on the proper use of fertilizers.

The departmental development corporations were set up to meet the needs for immediate help of departments which had suffered from earthquakes, droughts or floods. An exception to this was the Tacna Development Corporation whose formation was due only to the need to stimulate the economic and social development of that region. This explains why its statutes and also its activities lay much greater emphasis on matters connected with civil construction than on industrial promotion.

The Reconstruction and Development Corporation of Cuzco owes its formation to an earthquake which ocurred in Cuzco in June 1950, and was the first of those to be created in response to such situations. It was initially called the Reconstruction and Development Council of Cuzco and was assigned an income deriving from an extra tax placed on tobacco and tobacco products, under a decree whereby 30 per cent of the receipts of this tax were to be used in developing industry in the department of Cuzco preference being given to industries producing building material and hydroelectric power stations, the term of this income being determined by resolution of the Executive.

The Reconstruction and Development Corporation of Cuzco was set up in February 1957 in place of the council. Its responsibilities include: industrial development through an electrification plan, whose first step will be installation of one or more power stations for Cuzco, and study and solution of problems relating to supplies of cement and fertilizers and of other questions concerning the industrial development of the department.

This corporation has an indefinite form of existence but in any case of not less than 30 years. It enjoys economic and administrative autonomy for its specific operations, but is under the over-all control of the Bank Directorate and the Head Acounts Office of the Ministry of

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Finance and Trade. It is managed by a board of directors, who are in turn responsible to a supervising council.

Its most important task in connexion with industrial development is the construction of electric power stations. It is at present setting up a nitrogen fertilizers factory, which constitutes the second stage of the industrialization plan for the Cuzco department, the first being the installation of the Machupichu Hydroelectric Station.

The Rehabilitation and Development Council of Arequipa was set up by law on 11 March 1958 with the special task of organizing the reconstruction of the city, which was partly destroyed by earthquake on 15 January of that year. It is expected also to prepare studies and promotion programmes for the agricultural, industrial, mining and trade activities of the department. It has been stipulated that the Council should as far as possible use the services of existing bodies and departments in carrying out its schemes, in accordance with which it is empowered to organize programmes for the financing or execution of works in association with national and international promotion and/or financing agencies.

From the point of view of industry, its most important operation is the Arequipa cement factory. This will be constructed by a German firm which placed the lowest bid in an international competition held for the purpose. Its cost will be approximately 10.8 million dollars and its capacity 150,000 tons of Portland cement a year. The Council has also engaged in a very small way in granting credits to artisans and small-scale industrialists in the department.

Among the projects which it is at present developing are the following:

(a) Identification and ordering of priorities among new industries.

(b) Studies on the Industrial Development Grouping of the region: distribution of its industries, their operating conditions, determination of types of industries to be installed.

The cost of supplying the needs of the Grouping, including land and civil works, would be 2.4 million dollars.

(c) It has contracted a German firm to purchase the equipment of, instal and put into operation a food dehydration plant, for the sum of 7.4 million marks.

/Among its

Among its projects still under study are installation of factories for plumbing fixtures, tin cans, a sulphuric acid plant, packing paper, insecticides, mixed fertilizers and milk products, the total investment for which will be about 2.6 million dollars. It also has under notice certain projects of the private sector which it is now studying and modifying so as to make them conform to the regulations governing the industrial development groupings and their corresponding tariff benefits, after which they will be supported by the loans and guarantee of the Council. There are four such projects, for which the total investment will be 4.6 million dollars. They include production of alpaca tops, nylon 6.6 thread, and other chemical products.

The Tacna Development Corporation was set up in January 1961 to promote - in line with the general policy of the Government - the economic and social development of the department of Tacna. Among its duties are preparation of integral studies of the agriculture, mining, industries, electric power supply, irrigation, roads, urban facilities, housing, and public services of the department of Tacna; the conduct of works resulting from such integral studies which come within the order of priorities established by the management board; provision of loans charged to itself or a third party for the development of such various activities established or in process of establishment as may be of benefit to the department; arrangement of loans and credit procedures in Peruvian or foreign currency, in or outside the country, on its own behalf or that of its borrowers, with the power to provide guarantees for the latter whenever it may be necessary; buying and selling of real estate and movable property and of natural and manufactured products, on such conditions as it may specify and not necessarily by public auction; assistance towards formation of regional banks and credit institutions for promotion and economic development.

As regards activities towards the development of the basic infrastructure for the subsequent industrial development of the department, the Corporation is carrying out a series of electric power installation and irrigation works. The first stage of those will be generating installations for producing 35,000 kW from the waters of the Aricota lagoon, whose volume is 850 million cubic metres of water.

/The current

The current thus generated, which will become available in 1966, will be used for general consumption in the cities of Tacna, Moquegua and Ilo, for running the pumps of the irrigation systems for the pampas of Ite and La Yarada, for development of the fishing and industrial port at Ite (Caleta Morro), and for provision of power to the industrial development grouping of the city of Tacna.

According to its reports the Corporation has received 35 applications from industrialists wishing to be included in the industrial development grouping of which 5 have already been able to satisfy the conditions laid down in its regulations. The investment needed for their projects is 7.1 million dollars, and the plants installed would include: a polyvinyl chloride factory, an assembly plant for electronic apparatus, a pharmaceutical products factory, a textiles industry for alpaca wool, and a nylon synthesizing industry.

The Social and Economic Development and Promotion Corporation of Puno was set up in December 1961 to improve the standard of living of the population of the department of Puno. This is almost all engaged in agricultural production, in which a state of crisis has been produced by the droughts of the last few years. The organic law of the Corporation requires that it be primarily concerned with the problems of the agricultural areas of Puno, where a dense Indian population struggles for a living in more than precarious conditions. It includes the stipulation that its work on behalf of industrial development must be strictly related to the needs of the country districts. Thus, one of its objects is described as being to provide encouragement and assist for the establishment of industries, but particularly those transforming or giving initial processing to raw materials produced in the territory it is responsible for, and also those producing for the consumer requirements of the inhabitants of this territory. Another stipulation is that in making loans the Corporation should give preference to small-scale farmers, stock raisers, industrialists, mine operators, and artisans, and to Indian communities and their co-operatives.

The main work of the Corporation in connexion with industry consists in providing technical aid and advice for the development of artisan

activity and small-scale industry, especially household and peasant activities. It receives financial aid from international organizations and from the Industrial Bank of Peru to support its efforts in this field.

The Reconstruction and Development Corporation of Ica was set up in May 1963 on account of the considerable damage caused to the economy of the department by the flooding of the River Ica. Its activities are almost entirely devoted to the various tasks involved in reconstructing the city of Ica and its surrounding areas. It is however also entitled to carry out industrial promotion activities, that is, in direct co-operation with the National Planning Institute to prepare studies and plans and effect programmes of economic development, to that effect encouraging joint action on the part of private initiative and public investment authorities and arranging the internal and external credits needed to finance such undertakings.

The Rehabilitation and Economic Development Corporation of Moquegua was created by law on 17 October 1963 to stimulate agricultural production, to increase the size of cultivated areas by carrying out irrigation works, improving existing irrigation and selling fertilizers to small farmers, to provide drainage and electric light installations, to conduct urban development works, to build and improve roads, and to promote small-scale industry.

4. Rules for authorization to instal industrial establishments

In Peru construction or installation of industrial establishments requires the previous authorization of the Department of Industries of the Ministry of Development. The requirements for this are:

(a) A report on the location of the new buildings and structures or of the existing real estate to be used for industrial purposes, agreed by the National Planning and Urbanization Office (ONPU).

(b) A report by the local health unit on the fitness for habitation, hygienic arrangements and healthfulness of the factory.

(c) Two copies of the ground plans of the plant installations with their complementary water and drainage fixtures.

/(d) Three

(d) Three copies of a statement describing the processes by which the product of the proposed manufacture is to be obtained.

If the enterprise concerned proposes to take advantage of the tariff exemptions established for imports of machinery needed by industrial plants or any other privileges granted to stimulate the process of industrialization the establishment must be entered in the Industrial Register of the above Department of Industries.

The municipality concerned must also be applied to a municipal licence to open the establishment, for which the requirements are:

(a) A single copy of the constitution deed of the company or of the proper document accrediting the persons proposing to operate the establishment.

(b) A receipt for payment of the rent of the real estate or the title deed of the latter.

(c) A receipt certifying payment of the previous quarter's lighting and garbage collection.

(d) A copy of the ONPU report.

(e) A copy of the local health unit report.

(f) Certificate of entry in the Industrial Register.

(g) Certificate of entry in the National Labour Centres Register of the Ministry of Labour and Native Affairs.

IV. THE MAIN SECTORS OF MANUFACTURING INDUSTRY

1. Food industries

This division of industry, which includes manufacture of fish meal accounts for 27.8 per cent of the gross production value and 25.3 per cent of the value added of manufacturing production.

Examination of the structure of the food industries with respect to the gross products generated by its different branches shows that two groups, sugar manufacturing and fish meal production, by themselves represent 56 per cent of its activity.

The cocoa, chocolate and sugar confectionery industry contributes very little to the product of the division. Nevertheless during the last few years this industry has grown very considerably. In 1960 its production formed only 2.1 per cent of the gross product of the division, but between 1960 and 1964, when the total production of the division grew by 6.9 per cent a year, the growth of cocoa, chocolate and sugar confectionery was 9.8 per cent a year.

The food industries employ somewhat over 45,000 persons in nearly 1,300 different establishments. Their average employment is 35 persons per establishment, a little above that of manufacturing industry as a whole. The sugar manufacturing group has an unusually high average of 227 persons per plant. The employment average of the milling industry is about the same as that of factory industry as a whole.

The average net productivity of manpower in the food industries is 20 per cent higher than that of manufacturing industry as a whole. Their gross product per person employed is almost 4,000 dollars.

The efficiency of the sugar manufacturing group is the most important factor in the high productivity figure for the sector. This group, together with the fish meal and flour products industries also has one of its highest employment figures.

The highest salaries and wages per employee belong to the milling industry and the lowest to the fruit and vegetable preserving group.

The average relation of compensations to employees to the product generated is lower in the food industries than in manufacturing industry as a whole. In 1964 salaries and wages represented 21 per cent of the gross product in the former and 28 per cent in the latter.

/The most

The most important products of the food division are sugar, fish meal, wheat flour and oils. These together account for about 75 per cent of its total production value.

These data give a good idea of the small extent to which food production has been developed and diversified. But they also show that many sections of these industries have tremendous possibilities of expansion, with consequent benefits for the development of agricultural production and for the nourishment of the population. This is the case, for instance, in the preserving industry which, though it has been growing rapidly in the last few years, has not yet emerged from its initial stages of development.

Almost 25 per cent (in value) of the raw materials used by the food industries was imported, the major imports being wheat, soya oil, powdered milk, etc.

The textile industry provides vegetable fibre packing materials for the food industry. The paper industry also provides other types of packing materials.

The chemicals industry provides hydrogenated oils, caustic soda and celophane paper.

Inputs deriving from metal-transforming industries consist primarily of tin plating (imported) and tin cans (made in Peru from imported plating).

As industries primarily engaged in production of consumer goods, the development prospects of the food products group are to a great extent dependent on public demand for their products. Most of the intermediate goods produced by the group are intended for further use by industries within the division (e.g. wheat flour), and owing to this they are hardly affected by intermediate demand from other industrial sectors or economic activities.

The undynamic character of the food industries, which has stopped them from advancing beyond what are relatively the first stages of development, must be altered in future, at least as regards certain branches. The existence of a strong and expanding food industry is of the utmost importance for the development of agriculture. The development of manufacturing production based on agricultural raw materials can in certain situations become a vital condition of the progress of the latter sector. An assured and stable purchasing power on the part of these industries constitutes a strong stimulus

/for farmers

for farmers and encourages them to introduce new techniques into their methods of cultivation and to improve the quality of their produce.

Since it would take too long to provide a separate analysis of each of the branches of the food industries, only the most important will be treated here.

(a) The meat industry

In the most recent period (1960-1964) the slaughterhouse and meat preparation and preserving industries have developed at an average of 2.4 per cent a year. Their equipment is antiquated and their production capacity is insufficient to meet demand.

According to the preliminary figures of the Agrarian Economics Department of the Ministry of Agriculture, in 1964 the total animal stock raised in the country was 164,900 metric tons, as against 157,000 in 1963. This is an increase of 5.0 per cent. The statistics also show that there were very large increases in slaughter of cow and pig stock in the latter year, at the same time as a slump in sheep and goat raising. Consumption of meat for the whole country is estimated at 194,000 metric tons packed, which includes 13,000 tons of imported frozen and dried meat. (See table 17.)

Table 17

PERU: APPARENT CONSUMPTION OF MEAT

(Thousands of metric tons)

Year	Production		Imports of frozen, dried, prepared meat, etc.	Apparent consumption
	Meat from stock animals	Fowl meat		
1960	150.3	10.5	3.6	164.4
1961	151.1	13.0	7.1	171.2
1962	160.3	13.6	9.8	183.7
1963	157.0	15.3	10.2	182.5
1964	164.9	15.8	13.2	193.9

Source: Agrarian Economics Department, Ministry of Agriculture; Foreign Trade Statistics.

/(b) Milk

(b) Milk products

The production value of the milk products branch reached 29.2 million dollars in 1964 and has grown by an average of 6.7 per cent a year between 1960 an 1964. The chief products are evaporated and condensed milk.

Estimates of the physical volume of production in 1964 are 40,000 tons of evaporated milk, 3,000 tons of condensed milk and 765 tons of powdered milk and diatetic products. Domestic production accounted for 81.3 per cent of internal consumption of evaporated milk and 94.3 per cent of that of condensed milk.

Imports of processed milk have been on some scale during the last few years, especially in 1964 when their value was over 5.4 million dollars. The average annual value of these imports during 1960-1964 was 3.4 million dollars. (See table 18.)

Exports of milk products, mainly cheeses, have not reached any significant scale. Between 1960 and 1964 the physical volume of these exports was 306 tons and their value 0.1 million dollars at 1960 prices.

An important part of manufacture of milk products consists in milk pasteurization, where development has been outstandingly rapid during the last few years.

Table 18

PERU: IMPORTS OF MILK, BY TYPES

(Metric tons)

Years	Evaporated milk	Condensed milk	Powdered milk	Decreamed milk	Diatetic products	Total
1960	4 404	133	471	3 157	129	8 294
1961	6 422	217	429	2 091	154	9 313
1962	7 568	456	435	3 666	204	12 329
1963	8 280	247	468	4 983	202	14 180
1964	9 183	195	1 138	6 592	883	17 991

Source: Foreign Trade Statistics.

/There is

There is still a large potential demand in the Peruvian market for non-perishable milk products since these provide the best means of supplying milk to the major cities, whose populations are growing faster than the production of fresh milk in their surrounding districts. Moreover the installation of processing plants in the more outlying centres could stimulate dairy production by providing more stable levels of demands and prices for the producers.

Cheese and butter production has stayed at practically the same level in recent years. Many of the establishments engaged in this activity are technologically extremely backward and their production, as a result, does not always meet below acceptable standards of quality and presentation.

In 1964 the enterprises engaged in manufacture of milk products employed 2,200 persons, of whom 1,750 were workmen.

The gross product of this branch amounts to 6 per cent of the total for the food division. Its inputs amount to about 72 per cent of its gross production value.

(c) The preserving industries

Examination of the production of the preserving industries shows that after two years of stagnation, in 1962 and 1963, they achieved a sudden expansion of 14.8 per cent in 1964. This growth, however, has been unevenly distributed, being largely due to very high rates of the fruit and vegetable canning industries, although it is known that in 1964 the fish preserving group also made a partial recovery, with a production of 21,700 tons.

The Maritime Institute of Peru estimates that of the 35 fish canning and freezing plants existing at the end of 1964, only 16 were operating at normal levels. This is possibly due to high production costs and to competition from other countries in a position to undercut the prices of the Peruvian products.

According to the figures of the Fisheries Service, exports of preserved fish during 1964 amounted to 15,104 tons, of which 71.1 per cent was tuna in oil and 16.2 per cent undressed tuna. (See table 19.)

/Table 19

Table 19

PERU: EXPORTS OF PRESERVED FISH BY TYPES, 1964

	Kilogrammes gross weight	Percentages of total
Undressed tuna	1 218 284	8.0
Undressed barrilete (skip jack)	25 500	0.2
Undressed bonito	2 444 524	16.2
Undressed trout	244 058	1.6
Tuna in oil	103 328	0.7
Bonito in oil	10 737 245	71.1
Sardines a/ in oil	296 243	2.0
Bonito in tomato sauce	28 585	0.2
Machete b/ in tomato sauce	156	-
Sardines in tomato sauce	1 950	-
Salted anchoveta	4 150	-
Total	15 103 987	100.0

Source: Fisheries Service.

a/ Sardinia caerulea.

b/ Otherwise Machuelo (Ethmidium Maculatum f. Clupeidae).

The fruit and vegetable preserving factories, both in Lima and in the North of Peru, have shown considerable activity. It is reasonable to suppose that the growth of their production has been very directly related to the increase in demand deriving from the growth of the population and the income per head. But the possibility that the population may have substantially altered its consumption habits and have become used to purchasing preserved foods should also be taken into account. A change of this kind would depend largely on lowered costs on the part of the factories now in operation and on their producing larger and better quality supplies of these products at prices suited to the lower income groups of consumers.

/(d) The

(d) The milling industry

The milled products industry comprises establishments engaged in, production of flour from such grains as wheat, maize, etc., in rice milling, and production of flour and broken grain mixtures for use chiefly as balanced foods for animals.

This is one of the oldest industries in the country. It has recently greatly enlarged its production capacity.

37.4 per cent of the mills are situated in the Lima-Callao zone, 12.5 per cent in Lambayeque, 12.5 per cent in La Libertad, 8.9 per cent in Arequipa, and 8.9 per cent in Loreto. The remaining 19.8 per cent are variously distributed among the departments of Huanuco, Piura, Ancash, Junín, Apurimac and Tacna.

The milling industry employs nearly 2,500 persons in 75 different establishments.

The main production of the flour products branch consists of consumer goods, principally wheat bread, biscuits and pasta.

In 1964 the total production value of flour product manufactures was 21.2 million dollars.

Most of the bakeries operate at artisan levels. Their means of production are sometimes limited, and the quality of their products not consistently satisfactory.

About 36 per cent of flour products production is still carried out by small-scale industry and artisan activity. The industrial census of establishments employing 1 to 4 persons recorded 1,891 establishments in this branch, employing 4,106 persons.

In 1964, 396,142 tons of flour was used by the establishments manufacturing flour products.

(e) The sugar industry

Sugar manufacture and refining accounts for over 21 per cent of the production value of food industry.

Of the total sugar and molasses production of 1964 (786,873 metric tons), 23.7 per cent was fine white, 1.3 per cent standard white, 67 per cent export type 96°, 12.1 per cent T brand, and 2.2 per cent unrefined brown sugars.

/The largest

The largest volume of sugar production is carried out in the Lambayeque and Zaña valleys, whose mills produced 291,896 tons in 1964, and in Chicana and Santa Catalina (354,946 tons). The next largest volumes come from Pativilca, Nepeña, Huacho and Tambo, among other areas.

In 1964, 76,290 hectares were planted with sugar cane. (See table 20.) The area of cane cut was 48,897 hectares and the yield of crushed cane 7.4 million tons.

Table 20

PERU: MANUFACTURE OF SUGAR AND SUGAR DERIVATIVES

(Metric tons)

Years	Area under cultivation (hectares)	Sugar		
		Production a/	Exports	Internal consumption
1960	66 868	827 036	513 435	289 561
1961	69 382	821 436	552 355	296 643
1962	73 892	788 429	464 787	309 211
1963	72 735	836 340	492 532	223 463
1964	76 290	786 873	428 399	327 774

Source: National Agrarian Society.

a/ Includes unrefined sugar.

Of the total 428,399 metric tons exported in 1964, 48.8 per cent was sold to the United States, 26.2 per cent to Chile, 14.3 per cent to Great Britain, 9.9 per cent to Italy, and the remaining 0.8 per cent to Germany and Switzerland.

Manufacture and refining of raw sugar, syrups and granulated sugar provides employment for 6,600 persons in 29 different establishments. The average net productivity is 7.7 thousand dollars per person.

(f) Edible oils and fats

Production of edible oils and fats has increased considerably between 1960 and 1964, but is still to small to meet demand, as is shown

/by the

by the National Nutrition Institute of the Ministry of Public Health, out of the daily consumption per head in Peru of 2,015 calories (86 per cent of the average daily consumption per head in Latin America as a whole) only 33 grammes consists of fat products, that is, scarcely 279 calories a day.

Approximately 57 per cent of national production of edible fat materials and 41 per cent of the total consumption consists of cotton seed oil. Use of refined and deodorized fish oil in manufacture of edible fats is continually increasing, product accounted for nearly 13 per cent of internal consumption in 1964. As regards pork lard, production has almost ceased to show any further development owing to the poor production levels of pig farming in Peru.

In 1964 production of oils and fats was 89,763 tons, divided between cotton seed oil, vegetable fats, hydrogenated marine oils, and pork lard.

In the same year the volume of imports was 31,580 tons, of which 96 per cent was pork lard and soya oil. The apparent consumption of edible fat materials was 121,343 tons, an increase of 31.6 per cent on that of 1963. (See table 21.)

Table 21

PERU: APPARENT CONSUMPTION OF EDIBLE FAT MATERIALS

(Metric tons)

Years	Production	Imports	Apparent consumption
1960	59 144	23 055	82 199
1961	64 732	33 293	98 025
1962	60 115	34 109	94 224
1963	76 912	15 320	92 232
1964	89 763	31 580	121 343

Preparation of figures: BIP-INPI, based on official figures.

/(g) The

(g) The fish meal industry

According to figures supplied by the National Fisheries Society in 1964 fish meal production was 1.6 million tons.

The port of Chimbote had the greatest production volume of 562,664 tons (36.2 per cent); Callao had 293,147 tons (18.9 per cent); Supe 151,236 tons (9.7 per cent); Ilo 103,544 tons (6.7 per cent); and Cerro Azul the smallest volume of 3,295 tons (only 0.2 per cent).

According to the Annual Report of the Maritime Institute of Peru, there were 169 fish meal plants in 1964 with a total reduction capacity of 7,283 tons of raw material an hour (which would give a total annual reduction capacity of over 13 million tons of anchoveta), as against 85 plants with a reduction capacity of 1,518 tons at the end of 1960. This report also draws the conclusion that the installed capacity exceeds the requirements of efficient production and adds that at present a good many of the fish meal intallations are for various reasons not in use, at all, while a number of others are producing at only 60 per cent of their capacity. It is clear, it says, that a large proportion of the productive potential of the fish products plants is being wasted, just because of their inadequate or technically outmoded fish meal installations.

As regards location of fish meal plants, there is a high concentration in Callao, which had 37 units at the end of 1964, and in Chimbote, which had 35. After these came Chancay, with 20 plants and Huacho with 19. None of the other ports had as many as 10 units. (See table 22.)

According to the figures of the Customs Authority, by the end of 1964 the year's exports of fish meal had reached 1.4 million tons. The largest purchasers were the United States with 322,914 tons, or 22.6 per cent of the total exports, West Germany with 256,543 tons (17.9 per cent), and Holland with 253,013 tons (16.4 per cent).

These figures show that these exports tend to be absorbed by very large markets, which in this year together accounted for over 56 per cent of the total.

Exports of fish oil, excluding sperm oil, amounted to 153,623 tons in 1964, the largest purchasers being Holland, Germany, Denmark and Colombia. (See table 23.)

/Table 22

Table 22

PERU: FISH MEAL PLANTS AND THEIR RAW MATERIAL REDUCTION CAPACITY PER HOUR

Ports	1960		1961		1962		1963		1964	
	Plants	Tons	Plants	Tons	Plants	Tons	Plants	Tons	Plants	Tons
Paita	1	5	1	5	1	5	2	15	3	45
Chimbote	22	413	29	605	32	700	35	1 300	35	1 366
Samanco	2	30	2	60	1	75	1	75	1	75
Casma	2	37	2	37	2	47	4	117	5	167
Huarmey	6	95	6	102	6	124	7	149	8	251
Supe	6	71	11	188	11	439	16	633	21	832
Végueta	-	-	-	-	-	-	3	120	3	120
Huacho	7	94	9	122	12	447	18	692	19	697
Chancay	2	31	5	164	11	475	18	730	20	870
Callao	34	730	36	917	37	1 600	37	1 700	37	1 858
Pucusana	1	12	1	32	1	32	1	40	1	40
Cerro Azul	-	-	-	-	-	-	1	48	1	48
Tambo de Mora	-	-	-	-	-	-	4	179	6	310
Pisco	-	-	-	-	1	30	1	60	1	60
Atico	-	-	-	-	1	20	2	100	2	100
Mollendo	1	12	1	12	2	63	2	83	2	118
Ilo	1	35	1	35	1	60	4	296	4	326
Totals	85	1 518	104	2 279	119	4 119	156	6 328	169	7 283

Source: Maritime Institute of Peru, Ministry of Marine Affairs.

/Table 23

Table 23

PERU: EXPORTS OF FISH OIL BY IMPORTING COUNTRIES, 1964

Importing countries	Metric tons	
Semi-refined oil		
Belgium	615	
Brazil	200	
Colombia	14 145	
Czechoslovakia	2 275	
Denmark	15 655	
France	4 670	
Germany	20 085	
Great Britain	1 420	
Holland	52 494	
Italy	500	
Norway	2 312	
Panama	70	
Sweden	530	114 971
Crude oil		
Germany	1 950	
Holland	16 702	18 652
Total		133 623

Source: National Fisheries Society.

Note: Sperm oil not included.

/Table 24

Table 24

PERU: PRODUCTION OF THE BEVERAGES INDUSTRIES

(Thousands of litres)

Years	Wines	Liquors	Beer	Mineral waters	Soft drinks
1960	7 945	1 163	146 093	6 297	64 704
1961	7 020	1 211	142 905	6 328	79 615
1962	8 426	1 619	159 666	6 734	94 043
1963	9 770	2 381	163 689	6 492	106 035
1964	8 321	2 805	164 644	6 360	117 318

Source: Alcohols Section, Deposits and Shipment Bank.

2. The beverages industry

During the last five years manufacture of beverages in Peru has been increasing at a cumulative annual rate of 8.2 per cent. This growth, however, has not been evenly distributed over the different branches; production of liquors and soft drinks, for example, grew at annual rates of 24.5 and 16.0 per cent respectively, while brewing grew by only 3.0 per cent a year and production of wines and mineral water scarcely at all. (See table 24.)

In 1964 the beverages industry generated 5.3 per cent of the gross product of factory activity as a whole. It employed 8,100 persons, or 4.5 per cent of all persons employed in factory activity. Its net productivity per person employed in gross product terms was 5.3 thousand dollars, as against the average in factory activity as a whole of 3.2 thousand.

It has a higher average of salaries and wages per wage earner than that of manufacturing industry as a whole. This is due to high levels of wages in the breweries and non-alcoholic beverages factories.

The total value of its inputs amounts to about 34 per cent of its gross production value. 95 per cent of the value of these inputs corresponds to raw materials and intermediate goods and the remaining 5 per cent to power accesory materials and fuels. Imports account for about 26 per cent of the value of the raw material and intermediate goods inputs.

/Liquor production

Liquor production had an outstanding growth during 1960-1964, with the highest rate of any branch of the sector.

In these years, too, encouragement has been given to the establishment of enterprises operating under international prestige trademarks whose parent firms have been supplying the techniques needed to manufacture of liquors capable of substituting imports.

The liquor industry alone contributes 8.5 per cent of the production value of the beverages industries and employs 21 per cent of all persons employed in the sector. It consists of 130 establishments of which only a few have the proper equipment and techniques for manufacturing products of satisfactory quality. 35 per cent of the total production of this branch is carried out by 8 establishments.

Between 1960 and 1964 soft drinks production continued to show the high rate of growth which it had been sustaining for several years previously, in spite of heavier sales taxes on these products, which might well have reduced demand to some extent.

Beer production rose from 163.7 million litres in 1963 to 164.6 million in 1964. There are 7 breweries in Peru, two of which, situated in Greater Lima, account for 75.3 per cent of national production.

During the summer months the breweries work at full capacity and for the rest of the year at an estimated 85 per cent. The quality of production is of a reasonably high standard and the methods used are efficient.

Of the raw materials and intermediate goods used by this branch 44.9 per cent come from agriculture (rice, barley, maize and hops), 23.4 per cent from the beverages industry itself (malt), 7.2 per cent from food industries (sugar), and 13.9 per cent from the printing industries (labels), the non-metallic minerals industries (bottles) and the metal-transforming industries (crown bottle tops). The remaining 10.6 per cent consists of miscellaneous products of smaller importance.

About 31 per cent of its raw material inputs are imported products. (See table 25.) The largest imported input is barley, and the next largest hops and malt. These together account for almost 98 per cent of raw material imports. However, larger areas are now being planted with special brewing barley, which will bring about complete substitution of imports of barley and malt by domestic production.

/As a

As a result of expansion programmes undertaken by the breweries, about 90 per cent of their malt supply is now produced in the country.

Table 25

PERU: STRUCTURE OF THE BREWING INDUSTRY - 1964

(Units and thousands of dollars)

Establishments giving information	7
Persons employed	3 118
Staff	777
Workers	2 341
Compensations to employees	5 800
Salaries	2 329
Wages	3 471
Production value	48 320
Input value	11 391
Raw materials	7 967
Domestic	5 503
Foreign	2 464
Special materials (containers, labels, etc.)	2 580
Fuel	515
Electric power	329
Value added	36 929

Preparation: BIP-INPI, based on official figures.

3. Textile industries

The first thing to appear from examination of the composition and structure of textile production is the very high contribution of the cotton sector (61 per cent of textile production as a whole). The advanced state of development of manufacture of hard fibre yarns and fabrics and man-made fibres is also noticeable. These contribute 37 per cent and 16 per cent respectively of total production.

/The textile

The textile industry contributes almost 12 per cent of the gross product of manufacturing industry, which makes it, apart from the food industries, the most important sector of manufacturing industry. It is also one of the technically most advanced.

It employs over 27 thousand workers, or 16 per cent of total manufacturing employment, and has an average net productivity of 2.6 thousand dollars a year, about 18.4 per cent lower than that of factory industry as a whole.

Its chief inputs are cotton and cotton yarns, wool and woollen yarns, man-made fibres and jute fibre many of which are produced by this sector itself. In 1964 these inputs accounted for over 82 per cent of the total inputs of raw materials and intermediate goods. Chemical products inputs such as caustic soda and dyes are also of some importance. 5 per cent of the whole value of inputs in 1964 consisted of electric power, accessory materials and fuels.

In general the textile industry has no difficulties in obtaining adequate supplies of good quality raw materials.

Textile production has been concentrated in very large establishments. In 1964 there were 406 establishments with an average of almost 70 workers per unit, over twice that of factory industry as a whole.

Another important feature of the sector is its geographical concentration: over 86 per cent of production, measured in gross product terms, derives from the Lima-Callao zone. The largest establishments, which together contribute 12 per cent of the production value, are mostly situated here, the remainder being distributed between Ica, Junín, Arequipa, Cuzco and Piura.

During 1960-1964 it received loans from the Industrial Bank of Peru to the amount of 20.8 million dollars, and with capital from this and other sources carried out large scale investments. Thus, 38.7 million dollars were invested during this period in machinery and equipment alone. (See table 26.)

According to figures given by the Technico-Economic Studies Section of the Ministry of Development and Public Works, at the end of 1964 the basic capital equipment of the textile industry used in manufacture of wool and cotton yarns, cut fibres and continuous filaments, was 313,656 spindles and 8,425 looms.

/Table 26

Table 26

PERU: IMPORTS OF MACHINERY FOR THE TEXTILE INDUSTRY

(Tons and thousands of dollars)

Years	Machines and apparatus for preparation of textiles materials and for spinning, doubling and spooling		Special machinery and looms for knitted goods, tulles, lace and similar products		Looms of all kinds for fabrics in general, automatic and non-automatic		Machinery and apparatus for bleaching, dyeing and general finishing of textile products, and other special equipment for textile industry		Total	
	M. Tons	Thousand $	M. Tons	Thousand $	M. Tons	Thousand $	M. Tons	Thousand $	M. Tons	Thousand $
1960	1 516	2 107	265	1 029	923	973	405	775	3 109	4 884
1961	1 180	2 624	426	1 644	575	1 091	444	1 104	2 625	6 463
1962	1 302	2 796	520	1 951	849	1 429	623	1 703	3 294	7 879
1963	1 977	4 430	359	1 875	1 182	2 387	852	2 482	4 370	11 174
1964	969	2 515	283	1 444	1 056	2 124	761	2 179	3 069	8 262

Source: Foreign Trade Statistics.

/Cotton is

Cotton is the chief fibre used, and the cotton sector has 73.6 per cent of the spindles and 71 per cent of the looms of the industry; the wool sector has 16.3 per cent of spindles and 11.2 per cent of looms, the cut fibre sector 10.1 per cent of spindles and 8.9 per cent of looms, and the continuous filaments sector 8.9 per cent of looms. (See table 27.)

Even though textile production is a traditional activity, its growth rate between 1960 and 1964 (2.2 per cent a year for the whole period) can scarcely be considered satisfactory, especially considering the large sums lent it by the Industrial Bank.

It appears that apparent consumption of textiles (finished goods of cotton, wool, man-made fibres and hard fibres) has been very small during this period and that consumption per head in 1964 was practically the same as in 1960. This is undoubtedly the result of the large increases which have been undergone by the prices of these products. (See table 28.) Table 28 also shows that while cotton and hard fibre manufactures have the highest consumption, there is a growing preference in Peru for fibre articles of man-made fibres.

/Table 27

Table 27

PERU: SPINDLE AND LOOM IN USE IN THE TEXTILE INDUSTRY

	1963	1964
Cotton sector		
Spindles	225 176	230 916
Looms	5 692	5 984
Mechanical	1 245	1 169
Automatic	4 447	4 815
Wool Sector		
Spindles	55 802	51 220
Combers	29 208	25 024
Cards	26 594	26 196
Looms	937	947
(Combers)	(368)	(344)
Mechanical	274	240
Automatic	94	104
(Cards)	(569)	(603)
Mechanical	537	579
Automatic	32	24
Short fibre sector		
Spindles	31 505	31 520
Looms	668	745
Mechanical	32	96
Automatic	636	649
Continuous filaments sector		
Looms	689	749
Mechanical	251	294
Automatic	438	455
Total spindles	312 483	313 656
Total looms	7 986	8 425

Source: Technico-Economic Studies Section, Department of Industries, Ministry of Development and Public Works.

/Table 28

Table 28

PERU: CONSUMPTION OF TEXTILES MANUFACTURES

(Metric tons)

Years	Cotton goods	Woollen goods	Man-made fibre goods	Hard fibre goods	Total
1960	16 470	2 762	5 149	17 259	41 640
1961	16 107	3 083	5 253	16 215	40 668
1962	17 798	2 773	5 644	19 981	46 196
1963	17 104	2 650	6 974	23 076	49 804
1964	17 590	2 120	7 123	15 978	42 811

Source: Author's figures.

It should be remembered that the textile industry includes more artisan and small-scale production, mostly in the Sierra region, than almost any other industrial sector, and that as this goes unrecorded in the statistics the production and consumption figures fall short of reality, particularly as regards knitted goods.

During 1964, 18,802 tons of cotton were consumed by the 45 registered cotton yarns and fabrics establishments.

It is worth mentioning that 88 per cent of domestically produced yarns used in manufacture of smooth fabrics were thus used by the factories producing them; the remaining 12 per cent were sold to third parties, mainly as material for knitted goods.

During 1964 the 20 woollen yarns and fabrics factories of the country consumed 6,052 tons of wool, of which 94.8 per cent was sheep's wool and the remainder from the llama family.

The figures for yarn consumption indicate that woollen goods consumption increased steadily during 1960 and 1961, but in 1962 fell off by almost 9.8 per cent from the 1961 figure, apparently on account of a considerable drop in demand. It continued to decline during 1963 and fell again more sharply in 1964.

/94 per

94 per cent of domestically produced wool yarns for use in manufacture of smooth fabrics was consumed by partially integrated yarn and fabrics factories; the main consumer of the rest was the knitted goods industry. The wool branch is thus more completely integrated than the branch manufacturing cotton smooth fabrics.

Very few industrial activities have had such a high rate of growth during the period under study as production of man-made fibre yarns and fabrics. Between 1960 and 1964 the volume of this production increased by an average of over 6 per cent a year.

The factories making fabrics from man-made yarns, under the need to lower costs so as to bring their production more within the range of the large mass of demand, have been modernized more than any others during the last few years.

At the end of 1964 there were 28 factories producing worsted and woven fabrics of man-made fibres, of which 10 use yarn and the other 18 short fibre alone.

Consumption of burlap and jute bagging has been increasing during 1960-1964. Domestic production, however, has contributed little towards satisfying demand, and supply has largely consisted of imports.

It is important to stress the growing contribution of domestically produced jute fibre to the consumption of the 4 jute bagging factories in Peru. These together have a maximum installed capacity of 7,300 tons, which is equivalent to 10.7 million bags.

Jute production was 459 tons in 1960 and is estimated at 3,498 for 1964. 3,428 tons of this latter was standard jute and 70 high quality jute. The 1964 consumption of the sacking factories, according to the figures of the Agricultural Development Bank, was 1,264 tons, 719 of standard and 546 of high quality jute.

/4. Wearing

4. Wearing apparel and footwear industries

This division, which is primarily engaged in producing consumer goods, in 1964 represented almost 4 per cent of manufacturing activity in gross product terms. It has developed relatively fast during 1960-1964, partly in response to growing demand for its products, but even more by absorption of artisan and small-scale industrial activities. It satisfies almost the whole of internal demand, and the few imports consist only of luxury articles.

About 59 per cent of wearing apparel and footwear production is still carried out by small-scale industry and artisan activity. Their contribution, however, is tending to decline as factory production becomes increasingly capable of supplying its products on favourable terms for the consumer.

51.8 per cent of the sectors production consists of articles manufactured from textiles products and the remaining 48.2 per cent of footwear manufacture.

In 1964 this division employed somewhat more than 14,400 workers, or 8 per cent of the manufacturing total. Their net average productivity in gross product terms in that year was 1.5 thousand dollars, which is scarcely 45 per cent of the factory average. Most of the establishments are relatively small, the average being 25 employees per establishment. The First National Economic Census (Industrial Section) has produced a register of establishments of 1 to 4 persons in manufacturing industry. It appears from this that in 1963 there were 8,795 such establishments in the wearing apparel and footwear sector, that is 36.3 per cent of the total of informing establishments belonging to this category. This enormous number of unregistered small-scale and artisan establishments makes it extremely difficult to obtain approximate figures of employment, production, etc. for the sector. Its imports amount to about 55 per cent of its gross production value. About 97 per cent of these consists of raw materials, the remainder is fuels, accessory materials and power. Almost 80 per cent of the raw materials are domestically produced which reflects the high degree of development of the textile and leather industries, the

/main suppliers

main suppliers of inputs for wearing apparel and footwear manufacture. In 1964 footwear production by registered establishments was 8.4 million pairs, 14 per cent above the figure for 1963.

Wearing apparel manufacture has grown considerably during the last five years. According to the Economic Census of 1963, there are 275 wearing apparel establishments in Peru, but the real figure must certainly be considerably higher on account of the large numbers of unregistered small workshops. In spite of the large number of establishments of the branch production is heavily concentrated in a few factories, that is, those which operate most efficiently.

There are some grounds for expecting a relatively rapid development of the wearing apparel industry in Peru. One of the most important of these lies in the incorporation into the monetary economy of that section of the population which has hitherto been self-sufficient.

5. The leather industries

The leather industries account for 1.1 per cent of manufacturing activity, in gross product terms.

More than 98 per cent of their production consists of leather tanning and finishing; the remainder consists of manufacture of leather articles other than footwear and wearing apparel.

Their inputs amount to 63 per cent of their gross production value. 4 per cent of these corresponds to electric power fuels and accessory materials (containers, labels, etc.). The remaining 96 per cent consists of raw materials and intermediate goods.

The main raw material used is untanned hides, which account for over 49 per cent in value of all raw material inputs. Apart from those the most important inputs are tanning agents and other chemical products and tanned hides for manufacture of leather articles. Somewhat more than 29 per cent in value of their total raw materials are imported.

2,200 persons are employed in the industries of this sector in 80 different establishments. The average employment of these establishments is 27 persons, which is slightly more than that of manufacturing industry as a whole.

/The net

The net productivity of the persons employed is 2.0 thousand dollars per person, 37.9 per cent below average productivity in factory industry as a whole.

There are 45 tanning establishments in Peru. Four of these account for almost 42 per cent of production, and a further 7 for another 30 per cent, which shows that tanning activity is heavily concentrated in a few large establishments.

Estimated production for 1964 is 20 million square feet of leather and nearly 5 thousand tons of sole leather. As the annual volume of imports of these products is very small, this production must be practically equal to consumption.

56.2 per cent of the national leather production in 1964 was box calf and 12.6 per cent dressed sheepskin; the remaining 31.2 per cent consists of various types of leather, the most important of which are chamois and japanned leather.

As regards sole leather, 73.8 per cent of total production is tanned soles and 14.7 per cent rawhide soles, all other types being manufactured in very small quantities.

From the early '40's to the first years after the war manufacture of leather articles other than footwear increased at full capacity and had an excellent export market. Not only made-up articles of crocodile and lizard skin, but industrial leather articles such as heels, heel-pieces, straps, etc. were in demand in foreign countries, as well as being required for internal consumption. But since the beginning of the present decade the rhythm of production of these industries has been slackening. A proof of this is given by the fact that the leather footwear factories have been growing at a faster rate than tanning production, for from this it follows that use of domestically produced leather in manufacturing leather articles is relatively decreasing.

There is clearly no exact correspondence between the rhythm of production of the made-up articles factories and their consumption of leather raw materials, especially as plastics are beginning to replace leather as the raw material for many of the articles which they manufacture.

/Nevertheless, though

Nevertheless, though this might tell against any positive assertion that production is actually diminishing, it cannot be denied that during the last few years the leather articles factories and their subsidiaries, taken as a whole, have remained stagnant or have developed to a very small extent.

6. The pulp and paper industries

The pulp and paper industries are among those which have been developing most rapidly during the last few years. During 1960-1964 the average annual growth rate of this division was 8.8 per cent. In 1964 the gross product generated by paper, paperboard and pulp manufacture was 2.5 per cent of the total manufacturing product.

Pulp production, which is carried out by two plants using sugar-cane bagasse, amounted to 42,700 tons in 1964. In 1963 and 1964 apparent consumption of pulp in Peru was 58,200 and 61,100 tons. (See table 29.)

Table 29

PERU: APPARENT CONSUMPTION OF PULP
(Thousands of metric tons)

Years	Production of chemical pulp from bagasse	Imports		Apparent consumption
		Mechanical pulp	Chemical wood-pulp	
1960	28.0	0.4	10.7	39.1
1961	31.5	0.5	17.0	49.0
1962	35.4	0.8	17.5	53.7
1963	41.6	0.6	16.0	58.2
1964	42.7	0.6	17.8	61.1

Source: Producers and Foreign Trade Statistics.

/Pulp imports

Pulp imports consisted of mechanical pulp (3.3 per cent) and chemical wood-pulp (96.7 per cent), this latter being primarily supplied by the United States, Canada, Finland and Switzerland.

It is clear that the consumption of paper and paperboard of any country is closely related to its level of economic and cultural development, and it is therefore not reasonable to expect a large increase in consumption in Peru in the near future, since it will be a long time before the large section of the population which lives at a sub-consumer level can be incorporated into the consumer market - the length of this depending on the persistence and thoroughness of the deliberate efforts to improve the standard of living of over three-quarters of the inhabitants of the country.

Nevertheless paper and paperboard consumption will certainly show a greatly accelerated growth during the next few years, because besides the gradual raising of standards of living and the entry of further sections of the population into the monetary economy - which may well occur at slower rates than in previous years - it will benefit from the natural growth of present demand.

In addition, many products at present imported could be supplied by domestic production. Paper and paperboard industries in Peru thus have considerable room for expansion, and should eventually be able to supply almost the whole requirements of internal demand with the single important exception of newsprint.

Total paper and paperboard consumption increased from 74,900 tons in 1960 to 117,200 tons in 1964. This is equivalent to 7.8 kilogrammes per head in the former year and 10.9 in the latter.

This corresponded to an increase of 19,900 tons in domestic production and of 22,400 tons in imports over the same period. Domestic industry has during these years, therefore, lost ground in the total internal supply of paper and paperboard. Thus in 1960 it supplied 62.6 per cent of the physical volume of consumption and in 1964 only 57.0 per cent. (See table 30.)

/Table 30.

Table 30

PERU: APPARENT CONSUMPTION OF PAPER AND PAPERBOARD

(Metric tons)

Years	Production		Imports		Exports		Apparent consumption	
	Paper	Paperboard	Paper	Paperboard	Paper	Paperboard	Paper	Paperboard
1960	24 760	22 161	27 176	870	2	74	51 934	22 957
1961	29 547	23 498	36 103	1 328	43	28	65 607	24 798
1962	32 772	22 637	38 535	1 473	-	-	71 210	29 110
1963	35 345	26 556	40 114	2 554	249	-	75 307	24 110
1964	38 181	28 579	48 814	1 564	1	-	86 994	30 143

Source: Department of Industries and Electricity, Ministry of Development and Public Works. Foreign Trade Statistics.

/The over-all

The over-all growth rate of consumption during this period was 11.8 per cent a year, and the cumulative growth rate of consumption per head 8.7 per cent a year.

The products which have achieved the largest sales expansion have been packing paper (owing to the development of industrial and trade activity) bond, ledger, couché and other similar papers used in printing, publishing, office work, etc., paper for personal use such as toilet paper, paper napkins, tissue paper, for which the market expands automatically as a result of population growth and rising standards of living, and paperboard of all types, owing, above all, to the recent enlargement and modernization of the box manufacturing industries.

Between 1960 and 1964 domestic paper and paperboard production rose in volume from 46,900 to 66,800 tons. Tables 31 and 32 give the growth of internal production by types of product, the degree of precision as regards the different classifications being that of the statistics at present available.

It can be seen that in terms of cumulative annual growth production has in every case, with the exception of copy paper and duplex, grey and white paperboard, shown a strong expansion. The manufactured volume of bond paper has increased by 9.9 per cent, of packing paper by 13.1 per cent, and of tissue paper by 12.6 per cent. As regards paperboard, corrugated paperboard has increased by 3.2 per cent a year and grey paperboard by almost 32 per cent, this latter owing to the fact that in 1964 one of the factories increased production of this product by nearly 5,000 tons.

Imports of paper and paperboard, classified according to the large groupings used for tariff purposes and given in quantities and values c.i.f., have increased relatively little. During the last five years there has been a definite downward trend in imports of products having to compete against domestically produced substitutes, such as paperboard in general, kraft paper and various types of writing and printing paper. One the other hand there has been an increase, sometimes very considerable, in imports of paper products not produced or produced in insufficient quantities by domestic industry, such as paraffin or waxed paper, glassine paper and other products manufactured from mechanical pulp (e.g. paper of types similar to newsprint, for manufacture in block), couché paper, bristol-board, gummed paper, etc.

/Table 31

Table 31

PERU: PAPER PRODUCTION BY TYPES

(Metric tons)

Types	1960	1961	1962	1963	1964
Kraft	14 933	20 548	21 967	22 128	24 457
Sulfite	3 420	3 656	4 686	4 261	4 215
Bond	4 089	2 370	3 273	5 960	5 966
Tissue	2 008	2 412	2 547	2 396	3 232
Copy	310	561	299	600	311
Total	24 760	29 547	32 772	35 345	38 181

Source: Department of Industries and Electricity, Ministry of Development and Public Works.

Table 32

PERU: PAPERBOARD PRODUCTION BY TYPES

(Metric tons)

Types	1960	1961	1962	1963	1964
Corrugated	16 573	17 257	17 525	21 316	18 820
Duplex	2 250	1 741	2 234	1 842	1 756
Grey	2 290	2 017	1 850	1 745	6 972
White	120	214	160	272	109
Others	928	2 269	868	1 381	922
Total	22 161	23 498	22 637	26 556	28 579

Source: Department of Industries and Electricity, Ministry of Development and Public Works.

/Newsprint is

Newsprint is the largest import of the division; in 1964 it constituted 75 per cent of total paper imports, with a value of 5.5 million dollars. The largest paperboard imports are glazed and lined paperboard (54 per cent together).

The second important group consists of chemical pulp, white bond paper, ledger paper, and other types used in printing and typecast productions, including wood or non-wood pulp featherweight paper. Imports for this group showed a downward trend until 1963, but in 1964 began to increase again, though without reaching the figures registered in 1960 and 1961.

Imports of white and coloured couché paper have shown an upward trend owing to the expansion of the quality printing industries. In 1964 their volume was 1,552 tons and their value 0.5 million dollars.

A further group is constituted by special papers for food preserving. In 1964 imports of products under the tariff item: coloured and non-coloured parchment or sulpharized paper especially for wrapping foods, including glassine and similar types, amounted to 992 tons (500 thousand dollars in value) as against only 650 tons in 1960.

Further important imports are: silk paper and similar types, white and coloured bristol-board, and building board re-inforced with additional substances such as asbestos.

Cellophane paper is also an important import item, rising from 263 tons in 1960 to over 480 tons in 1964 (500 thousand dollars in value), in spite of strong competition from polyethylene which is replacing it in a number of uses.

There are nine enterprises for paper and paperboard manufacture in Peru, of which two also produce pulp from sugar cane bagasse.

These factories employ 264 staff and 1,367 workers, paying total annual salaries of 0.7 million dollars and wages of 1.3 million dollars.

The total value of raw materials used in 1964 was 8.6 million dollars, of which 52.4 per cent were imported.

The estimated gross production value for 1964 was 21.0 million dollars, which was an increase of 9.7 per cent on the previous year. (See table 33.)

/Table 33

Table 33

PERU: STRUCTURE OF THE PULP, PAPER AND PAPERBOARD INDUSTRY

(Units and thousands of dollars)

	1962	1963	1964
Establishments supplying information	7	8	9
Persons employed	1 595	1 597	1 631
Staff	238	247	264
Workers	1 357	1 350	1 367
Compensations to employees	1 323	1 632	1 980
Salaries	454	602	709
Wages	869	1 030	1 271
Production value	15 796	19 173	21 028
Input value	6 871	7 270	9 596
Raw materials	6 040	6 309	8 603
Domestic	3 254	3 585	4 098
Foreign	2 786	2 724	4 505
Accessory materials (containers, labels, etc.)	83	139	120
Electric power	630	695	739
Lubricants and fuels	118	127	134
Value added	8 925	11 903	11 432

Prepared by: Industrial Bank of Peru, National Institute of Industrial Promotion, based on official figures.

/The report

The report "La Industria del Papel y la Celulosa en Perú", brought out by INPI and BIP at the beginning of 1965, estimates that the 1964 paper and paperboard consumption of 117,200 tons will rise to 285,000 tons in 1973.

The only existing enterprises at present carrying out an expansion programme is the Sociedad Agrícola Paramonga, which intends to put itself in a position to supply the whole of the country's needs for writing and printing paper.

7. Rubber industries

In 1964 the industries of this sector accounted for 1.3 per cent of the gross production value of all manufacturing activities, and manufacture of tyres and inner tubes for about 74 per cent of that of the sector. Its remaining manufactures consist largely of consumer goods.

The tyre and inner tube industry has been kept sufficiently active during the last few years by increasing internal demand and by a considerable export trade with Argentina, Mexico and Chile. Since the beginning of 1963, however, exports have been practically at a standstill.

Imports of rubber and rubber products increased between 1960 and 1964 from 5.7 million to 6.0 million dollars. This increase was largely due to the growing value of imports of transmission belts, strip and hoses with or without wire, since imports of tyres fell from 1.7 to 0.9 million dollars and of inner tubes from 0.2 to 0.1 million dollars. Imports of rubber itself remained practically the same throughout the period. (See table 34.)

Since the beginning of 1957 there have been two enterprises producing tyres which even then were able to substitute the greater part of imports. These plants subsequently made large additions to their capacity so as to meet a growing demand and substitute certain types of tyres still important at the beginning of the 60's. Since then imports have been limited to tyres of special types or dimensions. During 1964 these two plants produced 275,364 tyre units and 174,151 inner tube units.

The inputs of the rubber industries amount to about 58.0 per cent of their gross production value. Of all inputs, 5.0 per cent consist of electric power, fuels and lubricants and accessory materials (containers, etc.), and the remainder of raw materials.

/Table 34

Table 34

PERU: PRODUCTION, IMPORT AND APPARENT CONSUMPTION OF RUBBER
(Metric tons)

Years	Production	Import	Apparent consumption
1960	2 627	2 666	5 293
1961	2 622	2 631	5 253
1962	3 322	2 638	5 960
1963	3 159	1 720	4 879
1964	2 620	2 901	5 521

Source: Agricultural Development Bank; Foreign Trade Statistics.

67 per cent in value of the total raw materials used by the tyre and inner tube industry are of foreign origin. Of these foreign raw materials 46.4 per cent consists of nylon and rayon cord and fabrics, and only 29.4 per cent of rubber itself, natural, synthetic and reclaimed.

The two factories of this industry employ 840 persons with a total annual compensation of 2.2 million dollars (see table 35). Net average productivity per employee in terms of the gross product was 4.4 thousand dollars in 1964, that is, 37 per cent higher than that of manufacturing industry as a whole. These factories are thus much more highly mechanized than is generally the case in Peruvian industry.

In 1964 the fixed capital used by this industry was valued at 6.2 million dollars. 73.7 per cent of this consisted of machinery and equipment.

In 1964 one of the companies, Good Year, announced an expansion programme for its tyre and inner tube works, which will give them the extra capacity required to meet the demand resulting from installation of several new motor vehicle assembly plants in the country. It will also enable them to manufacture 20 different types of tyres of various sizes. The sum invested in this expansion will be 2.3 million dollars.

/Table 35

Table 35

PERU: STRUCTURE OF THE TYRE AND INNER TUBE INDUSTRY

(Units and thousands of dollars)

	1962	1963	1964
Establishments giving information	2	2	2
Persons employed	705	730	840
Staff	196	214	307
Workers	509	516	533
Compensations to employees	1 231	1 542	2 218
Salaries	547	674	1 120
Wages	684	868	1 098
Production value	10 143	10 868	12 914
Input value	6 286	6 913	7 539
Raw materials	6 008	6 612	7 227
Domestic	1 772	2 729	2 388
Foreign	4 236	3 883	4 839
Accessory materials (containers, labels, etc.)	31	23	28
Electric power	167	185	190
Fuels and lubricants	80	93	94
Value added	3 857	3 955	5 376

Prepared by: BIP - INPI, based on official figures.

/The other

The other enterprise, Lima Rubber, also has several large-scale investment projects in hand which will increase its capacity for lorry tyres by 33 per cent and for passenger car tyres by 90 per cent. The purchase of equipment for manufacture of hosing for absorbents and for waste discharge in the fish products industry is also envisaged. This plant has also recently begun to produce fishing floats, which have had great success on the market.

The smaller rubber industries - latex foam, technical rubber articles, etc. - cover most of internal demand, but have little economic importance.

8. The chemical industries

The chemical industries may be grouped according to types of products into: industries producing acids and base chemicals, fertilizer industries, industries producing man-made fibres and plastics in general, pharmaceutical products, paints and miscellaneous.

As regards the acids and basic chemicals group, production is almost entirely limited to manufacture of sulphuric acid and, on a smaller scale, of caustic soda. The first of these is produced partly as a by-product of other industrial operations, particularly by treatment of foundry gasses. There is at present one basic producer of sulphuric acid in Peru, the Cerro de Pasco Corporation, and one potential producer with an almost unlimited production capacity, the Southern Peru Copper Corporation. Two further producers are Industrias Químicas Básicas and Rayón Peruana; these use imported sulphur as their raw material. The present production of all three plants together is 43,000 tons a year. The projects now being undertaken by the Banco Minero (a zinc refinery) and the Southern Copper Corporation will add a further 15,000 tons a year, that is, a potential increase of 35 per cent. According to present installation plans for these two factories production of sulphuric acid as a mineral by-product will then be 60 per cent of total production. This will by no means exhaust the productive capacity of the country, since the Cerro de Pasco Corporation, like Southern Copper, is in a position to make considerable additions to its present installations. Thus production of sulphuric acid in Peru presents no problems; its only limitation is the size of the market.

/Caustic soda

Caustic soda is in a very different position, for although unlimited raw material is available from sea water and salt deposits, it must be manufactured specifically rather than as a by-product of any present or future industry. Production of other acids (phosphoric, nitric, etc.) is or will be carried out as an application of sulphuric acid. Nitric acid, for example, is manufactured by the complex of industries producing ammonium derivatives.

At present one of the chief bottlenecks in the process of agrarian development lies in the poor utilization of fertilizers. The corresponding development of the fertilizer industries therefore depends finally on effective government action in this matter. Studies of fertilizer production have generally been carried out on the assumption of solvent demand or in connexion with the process of import substitution. Any prospective production is, however, necessarily limited by two related factors: the purchasing power of the peasant communities and the marginal yield of cultivated land, particularly in the Sierra. These limitations could be counteracted by an adequately mounted credit campaign in aid of agriculture and agricultural extension. The most serious limitation of all is the low marginal yield of fertilizer which in many cases makes expansion of production uneconomical. However this also has a solution. An agrarian reform policy backed up by adequate provisions for marketing agricultural products would enable part of the present excessive profits of the middlemen to be directed to the producer and part to the consumer. It would also stabilize retail prices and increase the income of the peasant, all of which would mean an enormously increased demand for fertilizers.

Considering also that manufacture of fertilizers is based on the one hand on readily available raw materials (petroleum, coal, fish, phosphates) and on the other on atmospheric components, and also that it has an enormous potential market, the development of this industry, itself essential to the general development of the economy, becomes a distinct possibility.

/Consumption of

Consumption of malleable synthetic plastic materials, such as man-made fibres and resins, is increasing. Nevertheless the large investments needed in establishing this form of production make it scarcely economical in a small market such as that of Peru. For this reason the development of the basic chemicals industries must be thought of in terms of a Latin American market.

As regards the other chemical industries, the most important in economic terms are those producing explosives for mining and quarrying and manufacture of insecticides and pesticides for use in agriculture. One of the main raw materials of the explosives industry, glycerine, is a by-product of the soap industry. Manufacture of paints has been greatly stimulated by the development of fishing and by the housing programmes.

There is no reason why the great majority of inorganic chemical products and their raw materials should not be produced in Peru (see table 36). However as yet no carbochemical, petrochemical (in the strict sense) or ichthyochemical industries have been installed, while other industries using mineral and organic raw materials operate on a minute scale. As a result there is no production of light oils such as benzene, toluene, xylene, naphthalene and phenol. Moreover the petroleum refineries produce solely low octane gasoline and fuel oil, having no installations for refining and distilling light oils or for production of non-saturated hydrocarbons in any quantity. Nevertheless demand for petrochemical products is going to increase along with the development of the petroleum industry and the chemical industries in general; and, Peru, a country of great apparent resources of petroleum, should take advantage of these and following the example of other Latin American countries, as far as possible develop full-scale production processes for petroleum and natural gas products, as a result of which it will increase diversification within its industrial integration and put itself in a position to manufacture a series of products required by existing industries, as well as several for which present demand is small but which have excellent prospects for the future and whose export would bring in the foreign exchange so urgently needed in the present stage of economic development.

/Table 36

Table 36

PERU: PRODUCTION OF CERTAIN CHEMICAL COMPOUNDS

(Metric tons)

	1960	1961	1962	1963	1964
Sulphuric acid	38 424	37 069	36 581	42 422	47 469
Caustic soda	2 792	6 579	7 872	8 047	7 275
Explosives	4 645	5 311	3 873	5 042	5 908
Superphosphates	19 693	17 569	18 809	17 961	17 152
Hydrochloric acid	1 196	1 260	1 319	1 520	1 364
Ammonia	11 336	16 299	18 349	18 585	23 332
Concentrated nitric acid	72	265	421	610	645
Dilute nitric acid	26 104	42 079	51 213	50 681	63 813
Ammonium nitrate for agriculture	14 111	26 213	33 846	33 685	41 310
Technical ammonium nitrate	2 316	1 746	178	700	1 099
Ammonium sulphate	12 570	14 326	11 833	12 133	15 758
Lead arsenate	20	988	1 046	1 077	730
Calcium arsenate	890	572	581	627	898

Source: The Producers.

In spite of the incompleteness of present political development measures, which have so far given little attention to the basic industries, and the limitations of raw material supplies and of the consumer market, the chemical industry continues to be one of the most dynamic of the economy thanks to the financial stimuli towards development provided by private investment and by the government. During 1964 it registered increases of 18.8 and 15 per cent in the basic chemical products and pharmaceutical products branches.

Nevertheless this form of production is showing some signs of reaching saturation point, and certainly will do so unless measures are taken towards establishing a heavy chemical industry and unless the market is enlarged by Latin American integration and agrarian reform.

/In spite

In spite of being a relatively new sector the chemical industry, together with the miscellaneous manufacturing sector, which includes the plastic articles moulding industry, the metal-transforming industry and the printing industry, has shown the highest average growth rate during 1960-1964, as can be seen from the quantum index of industrial production. Between 1960 and 1964, the first and last years of the period under study, the chemical industry increased by 19.4 per cent a year. Analysis of the structure of imports explains this rapid development, for from this it becomes obvious that there are few manufactures with such exceptional prospects of import substitution as basic chemical products and pharmaceuticals.

Until 1956 the domestic chemical industry covered only the fields of paints, detergents, etc., which as a whole comprised products belonging to what is known as light chemical industry. But from this year onwards production lines for various basic chemical compounds, such as fertilizers, explosives and certain petrochemical products began to be installed.

The chemical industries together represent 6.7 per cent of factory activity in the country, in terms of gross production value at 1960 prices. It is estimated that about 11 per cent of its gross production value derives from unregistered industry and artisan production.

Its inputs amount to over 48.0 per cent of its gross production value. Of these about 6.0 per cent corresponds to power, fuels and services. The remainder consists of raw materials and intermediate goods, of which 41.2 per cent are imported.

Imports of chemical products are very high. Their average annual value c.i.f. for 1960-1964 was 48.2 million dollars and their value for 1964, 53 million dollars (1960 prices). The main imports are chemical elements and compounds (pharmaceutical products) and tannic products for tanning. One the other hand the growing demand for these products has given rise to a large number of new projects whose implementation will help to improve the proportion of domestic inputs in internal supply within the next few years.

/Exports of

Exports of chemical products have been inconsiderable, with an average value f.o.b. of only 1.2 million dollars (constant prices) during 1960-1964. The main exports are chemical elements and compounds (pharmaceutical products) and essential oils, perfumes, cosmetics, soap and related articles.

The chemical industries, in spite of certain factors likely to limit its expansion which will be considered below, have among the best prospects of growth during the next few years of any sector. This is supported by the figures given in table 36, which show that almost all the products tested have expanded by a considerable percentage.

The fact that chemical products manufacturing has been primarily concerned with consumer goods has resulted in a heavy concentration of its enterprises in or near the major centres of population, which scarcely makes for stable economic development. More than 80 per cent of the industrial enterprises and more than 88 per cent of the manpower of this sector are concentrated within the Lima-Callao zone.

The chemical industry is now entering a stage which both economically and technically is more far-reaching and difficult than that of the '50's. It involves setting up heavier industries using more complicated technology, which in some cases will be expected to compete abroad and must therefore operate efficiently and economically. It will also involve the complex and long-drawn-out business of rationalizing existing industries so as to raise their productivity, improve the quality of their production and lower the prices of their products.

One limiting factor on the establishment of modern industries is the shortage of trained engineers and high level administrators. Another is the shortage of second-level technicians and skilled workers.

The rapid growth of industry has created a large demand for trained manpower, which the educational system of the country has shown itself powerless to satisfy, not only in respect of technical training but even in that of basic education. This shortage of trained manpower has not, however, created more serious problem in Peru than in other Latin American countries, doubtless owing to the existence of widespread artisan production previous to the development of factory industry, this having the consequences which have been pointed out by White.

/In 1964

In 1964 the industries of this sector employed 11,000 persons with an average net productivity of 4.0 thousand dollars (gross product per person employed), this being 24 per cent higher than that of factory industry as a whole. There are 267 establishments of which most are engaged in manufacturing pharmaceutical products.

An important step towards solving the problem of the shortage of trained manpower was the creation of the National Apprenticeship and Industrial Labour Service (SENATI) in 1961 to organize the instruction and training of the industrial worker.

The technological development of the chemical industry has occurred without any corresponding integrated development of the technological capacity of the country. Important parts of its industrial processes are established and operated under license from processes developed abroad, which results in considerable expenditure for the country in patents, royalties and other rights. The real costs of this type of transfer of technology are unknown. Nevertheless what is known of many individual processes established in this way suggests that the fees paid by the chemical sector, calculated on the basis of real fees (royalties, patents and foreign assistance in installation and operation), reach a significant figure.

Observed development trends point towards a transformation of the structure of consumption of chemical products. In this connexion it is worth mentioning the decrease of the relative importance of consumption of traditional goods in favour of more modern products such as man-made fibres, plastics, etc., and the increase of that of synthetic and petrochemical products in consumption of imported heavy chemical products of organic origin. Imports of intermediate goods of this division have increased at the expense of imports of finished goods. Production of intermediate goods in general has not developed at the same rate as that of consumer goods; the exception to this is fertiliser production for which new plants have been installed with the object of substituting imports.

/(a) Basic

(a) Basic chemical products

The main basic chemical products manufactured up to now have been sulphuric acid, nitric acid, hydrochloric acid, ammonium sulphate, ammonium nitrate and caustic soda. In the case of the first of these, as will be seen below, domestic industry satisfies internal demand, which is very small, while in that of the last, 64 per cent of consumption consists of imports.

The statistics give 51 establishments as existing in 1964, 72.5 per cent of which were situated in Lima and Callao. Only 9 of these are primarily engaged in manufacture of basic chemicals, while the remaining 42 produce other compounds which could as well be manufactured in the miscellaneous chemicals industry.

8 of these establishments alone account for over 56 per cent of production. Over 40 per cent of raw materials used are of foreign origin. The most important activity of the group in terms of production value is explosives manufacture, which is carried out by 2 establishments.

During 1964, 1,694 persons were employed in these industries; of these 1,143 were workers. (See table 37.)

(i) Sulphuric acid. The total market of sulphuric acid in Peru has increased from an average of 12,585 tons a year for 1950-1954 to an average of 40,393 tons a year for 1960-1964, within the latter period an average annual growth rate of 5.4 per cent.

It is estimated that over 62 per cent of the market for this product lies within the Lima-Callao zone.

Imports have been inconsiderable; in 1964 they were only 47 metric tons of pure acid and 9 metric tons of acid for commercial use.

At present there are three producers, of which the first began production before 1940, the second in 1955 and the third in 1959. This last began to produce chemically pure sulphuric acid in 1963.

The estimated structure of consumption for 1963-1964 is given below (table 38).

/Table 37

Table 37

PERU: STRUCTURE OF THE BASIC CHEMICALS INDUSTRY, INCLUDING FERTILIZERS

(Units and thousands of dollars)

	1962	1963	1964
Number of establishments	41	46	51
Persons employed	1 561	1 612	1 694
Staff	482	515	551
Workers	1 079	1 097	1 143
Compensations to employees	2 178	2 512	2 763
Salaries	1 080	1 256	1 488
Wages	1 098	1 256	1 275
Production value	16 007	18 572	21 228
Input value	5 072	6 177	6 544
Raw materials	3 793	4 895	5 116
Domestic	1 777	2 995	3 049
Imported	2 016	1 900	2 067
Accessory materials (containers, labels, etc.)	303	612	729
Fuels	509	240	239
Electric power	467	430	460
Value added	10 935	12 395	14 684

Source: BIP-INPI, based on official figures.

/Table 38

Table 38

PERU: FINAL USES OF SULPHURIC ACID

Quantitative annual average over 1963-1964

	Thousands of metric tons	Percentage
Fertilizers	20.7	41.2
Rayon	1.8	3.6
Explosives	3.5	7.0
Detergents, paints and other chemical products	0.5	1.0
Metal refining	19.0	37.8
Petroleum refining	0.8	1.6
Other uses	3.9	7.8
Totals	50.2 a/	100.0

a/ 47.5 thousand of sulphuric acid, plus 2.7 thousand petroleum (forming sulphuric acid) production during the same period.

At present there are several expansion plans for the existing sulphuric acid plants being considered, which will involve an increase in the demand of the related plants. The Banco Minero has a project for constructing a zinc refining plant which would include a sulphuric acid plant of 52,000 metric tons annual capacity. The Southern Peru Copper Corporation is also considering installing a large plant (capacity: 400 tons a day) near Ilo. Most of the sulphuric acid produced under the Banco Minero project would be used for manufacture of simple superphosphate.

Much of the production of the three existing plants is consumed by the producers themselves. In one case it is used in electrolytic treatment of zinc. In another almost the whole production is used for manufacture of superphosphates and rayon. In the third most of the production is used in manufacture of ammonium sulphate.

/(ii) Caustic

(ii) Caustic soda. Out of the so-called sodium alcalis, only caustic soda is produced in Peru. During 1960-1964 its production increased remarkably, rising from 2,792 tons in 1960 to 7,275 tons in 1964, that is by 27 per cent a year (see table 39). This was in response to the large number of its applications in manufacturing industry.

Table 39

PERU: APPARENT CONSUMPTION OF SODIUM ALKALIS

(Metric tons)

Years	Production of caustic soda	Imports		Apparent consumption expressed in form of caustic soda
		Caustic Soda	Sodium Carbonate	
1960	2 792	12 662	8 484	21 857
1961	6 579	9 314	13 138	25 808
1962	7 872	10 165	12 154	27 210
1963	8 047	12 606	13 707	30 998
1964	7 275	7 200	15 475	26 154

Source: Producers; Foreign Trade Statistics.

In this period, therefore, production has shown a clear growth trend which gives grounds for expecting further rapid development during the next few years, which will be founded primarily on growing internal consumption resulting from the installation of new industries using caustic soda as their staple input.

During the same period imports expressed in terms of caustic soda fell by 0.3 per cent a year (from 19,065 tons in 1960 to 18,879 tons in 1964) while apparent consumption increased at a cumulative annual rate of 4.6 per cent. It is interesting to observe that the share of domestic production in consumption rose from 12,8 per cent in 1960 to 27.8 per cent in 1964.

The large contribution of imports to consumption shows the extent to which internal demand must still be satisfied from foreign supplies.

/One feature

One feature of the development of caustic soda production in Peru has been the increase of unused production capacity, which is largely caused by difficulties in using chlorine.

With regard to caustic soda, Peru presents a picture of strongly developing production (by 1961 most of the increase was being contributed by the new Alkalis Peruanos installations) combined with a continual increase in demand. However demand for sodium carbonate, which has remained between 8 and 15 thousand tons during the period, must still be met by imports.

The electrolytic installations of Peru have difficulties in eliminating their excess chlorine. This is generally converted into hydrochloric acid, but in some cases it has even been necessary to discharge it into rivers or the sea. This is clearly one cause of the high price of caustic soda in the country.

(b) Fertilizers

In Peru, as in other countries, the solution to the problem of supplying food and clothing for a continually growing population lies in the use of every resource available to increase the productivity of the soil. One of the most important of these is careful and extensive application of fertilizers.

(i) Nitrogenous fertilizers. The nitrogenous fertilizers produced in Peru are island guano, ammonium nitrate and ammonium sulphate. Production of island guano at present covers only 25 per cent of internal demand for nitrogenous fertilizers.

During 1960-1964 sales of this product to domestic agriculture were as given below in Table 40.

In response to the low yields of guano production consumption of chemical nitrogenous fertilizers has been increasing. At present this consumption is estimated as equivalent to 50,000 tons of nitrogen, its value fluctuating between 13.1 and 14.9 million dollars. Some of this chemical nitrogen is supplied by a domestic industry, Fertilizantes Sintéticos S.A. (FERTISA).

/Table 40

Table 40

PERU: ISLAND GUANO, EXPLOITATION, SALES TO DOMESTIC AGRICULTURE AND EXPORT

(Metric tons)

Years	Exploitation			Sales to agriculture			Exports
	Potassium or rich guano	Phosphate or poor guano	Total	Potassium	Phosphate	Total	Potassium
1960	127 540	30 375	157 915	101 830	12 790	114 620	12 974
1961	142 937	16 261	159 198	117 505	8 696	126 201	16 866
1962	184 332	21 765	206 097	121 875	8 545	130 420	13 335
1963	181 672	10 170	191 842	180 197	10 153	190 350	13 806
1964	187 087	18 005	205 092	168 954	13 815	182 769	6 641

Source: National Fertilizers Corporation.

/FERTISA has

FERTISA has installed a complex with a capacity of 16,500 metric tons of nitrogen a year, working 330 days a year and 24 hours a day. At the beginning of 1963 it arranged a foreign loan to finance expansion of its production capacity by 20 per cent. This will be completed by the end of 1965, after which FERTISA will be in a position to supply 33 per cent of internal consumption of nitrogenous fertilizers.

Total fixed asset investment for the present plant (excluding the expansion programme) is 9.9 million dollars, and total investment, including working capital, etc., is 12.7 million dollars.

The paid up capital of the enterprise is 5.5 million dollars. The difference between this and the total of 7.2 million dollars is made up of credits of different kinds, of which 73 per cent are medium and long-term liabilities.

Among FERTISA's productions are 33 per cent ammonium nitrate and 21 per cent ammonium sulphate. This latter is manufactured with sulphuric acid produced by a Peruvian enterprise, Industrias Químicas Básicas, S.A. (INDUS).

It also produces technical ammonium nitrate for use in explosives manufacture and concentrated (98 per cent) and dilute (53 per cent) nitric acid.

Its production volumes in metric tons since the first operations of the factory are given in Table 41.

FERTISA is gradually normalizing its production. In the latter part of 1962 it began to operate without loss. For this it was necessary to introduce a system of average prices calculated according to units of nitrogen into the internal market for nitrogenous fertilizers, as it has not been feasible to impose protectionist duties on imports of this product, which enters at what seems to be artificially reduced prices. The calculated price system increases the price per unit of imported nitrogen and thus enables FERTISA to operate at a reasonable margin of profit.

A second factory for synthetic nitrogenous fertilizers, which is now being constructed by the German consortium Unde Ferrostaal Hochtief on behalf of the Cuzco Development and Reconstruction Corporation, will come into operation in 1965. It will be situated in the Cachimayo district, 15 kilometres from the city of Cuzco. It will manufacture calcium ammonium

/nitrate, using

nitrate, using as raw material the lime marls which exist in sufficient quantities for this purpose in the neighbourhood. Hydrogen for synthesizing ammonia will be produced by electrolysis of water, which process will take up approximately 75 per cent of the total power required by the plant (estimated at 24,149 kilowatts).

Table 41

PERU: PRODUCTION OF FERTILIZANTES SINTETICOS S.A.

(Metric tons)

Products	1960	1961	1962	1963	1964
Ammonia	11 336	16 299	18 348	18 585	23 217
Concentrentated nitric acid (98 per cent)	72	265	421	610	645
Dilute nitric acid (53 per cent)	26 104	42 079	51 213	50 681	63 813
Ammonium nitrate for agriculture	14 111	26 213	33 846	33 685	41 310
Technical ammonium nitrate	2 316	1 746	178	700	1 099
Ammonium sulphate	12 570	14 326	11 833	12 133	15 758

Plant capacity will be 149 tons per day - 48,884 per year - of calcium ammonium nitrate containing 26 per cent nitrogen. According to preliminary estimates, the cost of this fertilizer will be 44.8 dollars per metric ton.

The total investment is estimated at 17.9 million dollars. The area supplied by the factory will consist of the departments of Cuzco, Apurimac, Arequipa, Puno, Ayacucho, Madre de Dios, and, eventually, Moquegua and Tacna.

One of the problems of fertilizer production in Peru is the relatively low price of island guano.

Guano is perhaps the lowest priced fertilizer in the world, per unit of nutrient component. In 1964 it was sold at 1.5 and 2.2 dollars per nitrogen unit without any extra charge for content of phosphoric and potassium acids. That is, on the basis of its nitrogen content alone, it is sold to agriculture for less than 65 per cent of the international price of nitrogen fertilizer.

/It is

It is only, therefore, as a result of the large gap between nitrogen demand and guano supply that there is any room for the development of synthetic fertilizers.

A further problem lies in the low price (with a clear trend towards further decrease) of the imported chemical fertilizers unloaded in Peruvian ports. And this is more serious from the point of view of domestic industry in that in this case, since world production of synthetic nitrogenous fertilizers shows one of the highest growth rates of any sector of chemical industry, there is no limit on potential supply.

The higher costs of the Peruvian factories resulting from the limited size of their installations give rise to a dilemma: either domestically produced fertilizers are protected which raises the prices of fertilizers available in Peru, as is happening at present, or unrestricted trade is permitted and the Peruvian factories become uncompetitive. Both of these carry large disadvantages. The only solution to this is the establishment of a national fertilizers plan for building up enterprises capable of operating on a competitive scale.

(ii) Complete fertilizers. During the last few years manufacture of complete fertilizers (also known as reinforced fertilizers) containing fundamental elements - nitrogen, phosphorous and potassium - in quantities suitable for particular crops and types of soil has gathered very considerable momentum. These are best when the complex type, that is manufactured by chemical synthesis rather than by simple mixture of their components. Since their first introduction, relatively recently, into the European and American markets their sales have been growing at a much faster rate than those of all other types of plant nutrient. Their production costs have shown the great savings which may be obtained by simultaneous production of various nutrient elements in a single-stage process.

As regards Peru, a company for manufacture of mixed and compound fertilizers has been set up under the name of Abonos Completos S.A., its plant being installed at kilometre 24 of the Central Highway. This is capable of producing an average of 45 tons of granulated fertilizers per 8 hour shift, with a maximum of 60 per shift. The company has been established on a paid-up capital of 600,000 dollars. It began production in June 1961.

/In addition

In addition to this, the Industrias Químicas Básicas S.A. group has just arranged financing for - together with a calcium superphosphate plant - a factory for balanced granulated fertilizers, which will use for its operations part of FERTISA's production of nitrogenous fertilizers.

(iii) Phosphate fertilizers. Consumption of phosphate fertilizers in Peru has consisted almost entirely of the phosphates contained in guano. Since the phosphate and nitrogen contents of guano are roughly equal, total phosphate consumption has remained in near correspondence with that of nitrogen. Imports of phosphate fertilizers, however, have been considerably smaller than of nitrogenous fertilizers. It is hard to speak of a demand for phosphates seeing that data on its consumption as a component of guano are obscured by the specific demand for nitrogen. Guano is valued according to its nitrogen content without any reference whatever to phosphates. It is highly likely that many of the farmers who purchase guano do so solely for the sake of the former and it is very difficult to estimate whether there would be any extra demand for phosphates if guano lacked this component. It would, therefore, be deceptive to state that there is, an absolute demand for 50,000 tons of phosphate a year in Peru.

In the last few years use of single superphosphate manufactured by Rayón Peruana, which recently doubled its plant capacity of 100 tons per day of 20 per cent superphosphate, has begun to get under way. In 1964 its superphosphate production was 17,152 tons as against 17,961 in 1963 and 213 at the beginning of its operations in 1957. At present it produces sulphuric acid from imported sulphur which is thus combined with imported phosphate rock to produce superphosphate.

Extensive phosphate deposits have recently been discovered in the Sechura desert. The exploitation of these is now under negotiation; when it comes into effect Peru will be a large-scale exporter of this mineral a and, with suitable political measures, will be able to guarantee its own internal supply.

(c) Artificial and synthetic fibres

As a consumer of auxiliary products used in cleaning, dying and preparing yarns and fabrics and of a large variety of fibres essentially manufactured by chemical processes, generally synthesis, the textile industry constitutes an important market for the products of the chemical industry.

/Peru produces

Peru produces viscous and acetate process continuous filament yarns and yarns of nylon 66, but no artificial or synthetic short fibre, which is imported for internal consumption.

Consumption of artificial and synthetic fibres is showing a rapid expansion at the expense of the market for natural fibres, particularly cotton and wool.

The fall in relative importance of cotton consumption was initially primarily due to the rapid increase of that of artificial fibres of cellulose origin. Recently, however, the growth of this latter type of fibres was diminished and is being replaced by that of synthetic fibres, particularly the polyamides: nylon and perlon.

Domestic production of artificial and synthetic fibres increased between 1960 and 1964 by 4.0 per cent a year, from 1,400 tons in 1960 to 1,637 in 1964. This is as a result of increased production of viscous-process rayon and of the beginning of manufacture of nylon fibre, these compensating for the drop in production of acetate-process rayon. (See table 42.)

The most dynamic development among man-made fibres is that of nylon, whose production increased from 53 tons in 1961 to 213 in 1964, that is, by 415 per cent.

Table 42

PERU: PRODUCTION OF ARTIFICIAL AND SYNTHETIC FIBRES

(Metric tons)

Years	Rayon		Nylon	Total
	Viscous-process	Acetate-process		
1960	1 100	300	-	1 400
1961	903	244	53	1 200
1962	931	238	152	1 321
1963	1 015	266	184	1 465
1964	1 069	295	273	1 637

Source: The Producers.

/There have

There have also been large imports of continuous filament rayon yarns of types not produced in the country. Table 43 gives the figures for consumption and supply with respect to rayon yarns in general.

Table 43

PERU: PRODUCTION, IMPORTS AND CONSUMPTION OF CONTINUOUS FILAMENT RAYON YARNS

(Metric tons)

Years	Production of viscous-process yarn	Production of acetate-process yarn	Imports	Apparent consumption
1960	1 100	300	456.5	1 856.5
1961	903	244	528.2	1 675.2
1962	931	238	684.5	1 853.5
1963	1 015	266	709.4	1 990.4
1964	1 069	295	858.3	2 222.3

Source: The Producers; Foreign Trade Statistics.

Peruvian prices of continuous filament yarns vary according to their count but are usually high in comparison with international prices. The highest price recorded in Peru was the equivalent of 2.80 dollars per kilogramme and the lowest 2.45 dollars per kilogramme, while the international price is about 1.40 dollars c.i.f. In spite of the imports of these yarns the difference between the prices of the Peruvian and the international product can be maintained by means of a heavy duty on imports of 1.70 dollars per kilogramme plus 20 per cent ad valorem.

Manufacture of synthetic yarns in Peru is limited to nylon 66. Present production capacity is 300 tons per year, of which a large part is used in manufacture of stockings and socks. There is now a project for installing an additional factory for manufacture of nylon 6.

Both rayon and synthetic short fibres are entirely supplied by import and expanding consumption of these products may, among other reasons, be attributed to their functional qualities in the manufacturing

/process, whether

process, whether used alone or in mixture with natural fibres, and to the consequent moderate prices of the articles produced from them. Customs duties on imports of short fibres are 8 cents of a dollar per kilogramme plus approximately 42 per cent of the price f.o.b. on rayon fibres and 17 cents of a dollar per kilogramme plus approximately 39 per cent of the price f.o.b. on synthetic fibres.

The future development of production of artificial and synthetic fibres depends on enlargement of the internal market by their further substitution of vegetable and animal fibres (cotton and wool) in consumption and on reduction of costs and prices of fabrics manufactured from synthetic fibres by introducing more modern techniques into the textile industry.

The synthetic filaments industry accounts for about 7.6 per cent of chemical manufacturing activity in terms of gross product. Its inputs represent 43.4 per cent of its gross production value. (See table 44.)

In 1964 approximately 800 persons were employed in this branch, with a total annual compensation of 921,000 dollars.

/Table 44

Table 44

PERU: STRUCTURE OF THE SYNTHETIC FILAMENTS INDUSTRY

(Units and thousands of dollars)

	1962	1963	1964
Establishments giving information	3	3	3
Persons employed	699	707	788
Staff	147	151	163
Workers	552	556	625
Compensation to employees	651	795	921
Salaries	216	278	300
Wages	435	517	621
Production value	4 073	4 547	5 315
Input value	1 680	1 885	2 305
Raw materials	1 466	1 635	2 036
National	110	124	135
Foreign	1 356	1 511	1 901
Accessory materials (containers, labels, etc.)	35	37	29
Electric power	45	66	79
Fuels and lubricants	134	147	161
Value added	2 393	2 662	3 010

Prepared by: BIP - INPI based on official figures.

/(d) Pharmaceutical

(d) Pharmaceutical products

The pharmaceuticals industry, which originally consisted almost entirely of import companies concerned only in packing and distributing the product, has been developing rapidly ever since Decree N° 67-60 DGS of 24 July 1960 was passed which established privileges for the installation modernization or expansion of new pharmaceutical laboratories and thus encouraged the installation of many such laboratories in the country.

The benefits granted by this decree are: (a) Right to invest up to 100 per cent of the net profits of each financial year in expansion or diversification of production capacity free of all tax, general, special or local. Investments made will be charged to untaxed profits. If the amount of the investment exceeds the amount of tax-free profit of any financial year, those of subsequent years may be employed, up to a limit of 5 years from the date of the investment. This right will remain in force for no longer than 10 years. Projects for expanding, modernizing or installing new laboratories must be approved by the Ministry of Public Health. (b) Exemption from duties and taxes for establishment of new stock companies, capital increment and share issues, for a period of 5 years.

During 1960-1964 the growth rate of the pharmaceutical industry - 25 per cent a year - was very rapid, especially when compared with that of chemical industry as a whole.

The Industrial Register of the Ministry of Development and Public Works gives 42 laboratories as functioning in 1960, and the industrial statistics 59 as being engaged in preparing and packing pharmaceutical preparations. Of this latter figure there are 13 operating under licence from foreign enterprises or as their direct subsidiaries, and these account for 35 per cent of total production.

Most of the pharmaceutical enterprises are situated in the Lima zone. Those of foreign origin, which have the largest productions, dominate the market. During 1960-1964 17 new establishments were registered.

The average enterprise is highly diversified producing large numbers of products in varying quantities and of very diverse chemical types.

/The number

The number of persons employed in this industry is continually increasing, partly as a result of the establishment of new laboratories and partly of expansions carried out in existing ones during the last few years. These were 2,900 persons in 1961 and an estimated 4,700 in 1964, most of whom were women. (See table 45.) Nevertheless production has become highly mechanized, and in terms of relative cost the importance of manpower is less than that of equipment. Except in the largest enterprises, however, this is not the case in the packing and market preparation sections which are little mechanized.

The raw materials consumed by the pharmaceuticals industry are very varied and for the most part used in small quantities. Some are specific to these uses, others are common to many different manufactures, while others are products possessing a very wide variety of structures and uses.

Analysis of the raw material consumption of the pharmaceuticals industry shows that about 89 per cent are of foreign origin, the remaining 11 per cent being produced in Peru.

These latter are limited to certain bases such as sugar, glycerine, ethyl alcohol, starches, oils, etc.

The import value of the main raw materials has been on average 1.9 million dollars a year during 1960-1964. In 1964 it was as high as 2.8 million.

There are two main causes for this dependence on foreign raw materials: they are used in very small quantities in Peru while their economical manufacture requires plants of large production capacity, much larger than Peruvian needs; their manufacture involves complex technology requiring excessively large investments in relation to the present Peruvian market.

Some products of identical composition are marketed under different trademarks, which increases the need for intensive propaganda in the form of medical samples sent, in particular, to the medical profession.

/Table 45

Table 45

PERU: STRUCTURE OF THE PHARMACEUTICAL PRODUCTS INDUSTRY

(Units and thousands of dollars)

	1961	1962	1963	1964
Establishments giving information	42	50	57	59
Persons employed	2 902	3 384	3 950	4 715
Staff	1 222	1 389	1 722	2 214
Workers	1 680	1 995	2 228	2 501
Compensation to employees	2 629	3 575	4 745	6 229
Salaries	2 084	2 780	3 704	5 013
Wages	545	795	1 041	1 216
Production value	15 064	19 290	24 314	28 017
Input value	5 243	6 240	9 974	11 401
Raw materials	3 372	4 799	6 320	7 178
Domestic	367	349	525	759
Foreign	3 005	4 450	5 795	6 419
Accessories materials (containers, labels, etc.)	1 800	2 312	3 528	4 056
Fuels	36	47	48	61
Electric power	35	82	78	106
Value added	9 821	12 050	14 340	16 616

Source: BIP-INPI, based on official figures.

The pharmaceutical industry supplies a wide range of products, including: antibiotics, analgesics, antirheumatics, anti-infective and antiparasitic preparations, antifebrile drugs, antihistaminics and desensitization drugs, antacids, tranquillisers, barbiturates, hypnotic and

/sedative drugs,

sedative drugs, antispasmodics and anticholinergics, coagulant and hemostatic agents, cardiotonics, diuretics, hormone and corticoid drugs, lipotropics, chemotherapeutics, general tonics and vitamin stimulants, serum and vaccines, and medical foods such as milk modified for child-care uses.

The progress made by this industry during the last few years has turned Peru into an exporter of medicinal preparations, to Bolivia, among other countries.

(e) Manufacture of paints

Production of paints has grown uninterruptedly throughout the period 1960-1964. Consumption has similarly increased, though at a slower rate. (See tables 46 and 47.)

Imports of manufactured paints have tended to fall since their prices in soles are too high to be competitive in the internal market and also because there has been a notable improvement in the quantity of several Peruvian brands during the last few years which have thus substituted for their more expensive foreign equivalents. The increasing prices of foreign paints has been partly due to raised customs duties. Except for those well-known foreign brands, foreign paints have ceased to appear on the Peruvian market, and it is likely that in future the sole imports will consist of certain special products which it is against the interests of domestic industry to produce.

In 1964 imports of paints consisted chiefly of pyroxylin lacquers, bituminous paints, special paints (e.g. antifouling) and water paints for use in decorating leather, together amounting to 302 tons in volume, 70.9 per cent of total imports for this industry and 0.3 million dollars in value. Of this latter total 49 per cent (150 tons at a value of 0.1 million dollars) consisted of water paints for leather decoration.

At present Peru has 16 paint factories all of which are in the Lima-Callao zone. One, of these factories accounts for 31.7 per cent of production, a further 5, for 53.7 per cent and the remainder for only 14.6 per cent. In 1964 these factories sold about 7.7 million dollars worth of products as against 6.7 million in the previous year.

/Table 46

Table 46

PERU: APPARENT CONSUMPTION OF PAINTS

(Metric tons)

Years	Production	Imports	Apparent consumption
1960	9 725	495	10 220
1961	9 943	581	10 524
1962	10 149	612	10 761
1963	11 995	601	12 596
1964	12 326	426	12 752

Source: BIP-INPI, from official figures.

Table 47

PERU: PRODUCTION OF PAINTS BY TYPES, 1961-1964

(Tons and percentages)

	Absolute figures				Relative figures			
	1961	1962	1963	1964	1961	1962	1963	1964
Water	5 671	5 777	7 165	7 012	57.0	56.9	59.7	56.9
Oil	1 521	1 373	1 573	1 343	15.3	13.5	13.1	10.9
Pyroxylin	234	268	352	472	2.3	2.6	3.0	3.8
Rubber base	983	894	913	1 196	9.9	8.8	7.6	9.7
Lacquer paints	985	1 305	1 211	1 371	9.9	12.9	10.1	11.1
Non-corrosive	192	167	418	459	2.0	1.7	3.5	3.7
Special	357	365	363	473	3.6	3.6	3.0	3.9
Total	9 943	10 149	11 995	12 326	100.0	100.0	100.0	100.0

Source: BIP-INPI, based on official figures.

/There is

There is a shortage of data on the production capacities of the different factories, but it is certain that they are considerably greater than actual production. One indication of this is the fact that the relation of electric power consumption during 1964 to the installed power of the electric motors of the factories would give a coefficient of 50 per cent for an 8 hour working-day.

Paint production could clearly be greatly increased without any significant addition to present production capacity.

The fixed assets of the paints factories according to the books as on 31 December 1964 were 2.6 million dollars, of which 60.5 per cent corresponded to machinery and equipment. It is a fact well worth mentioning that between 1961 and 1964 the nominal fixed assets of the whole group of enterprises increased by some 356.6 per cent, owing, primarily, to purchases of new equipment by the largest factories. Some of these even tripled the value of their installations.

The 16 factories employ 337 staff and 480 workers. In 1964 the average annual salary of the former was 2.6 thousand dollars and the wages of the latter 0.8 thousand dollars. (See table 48.)

The number of workers in the different factories ranges from 3 in the smallest to 81 in the largest.

A large proportion of the raw materials on which the paints industry depends is imported. In 1964 consumption of these materials amount to 3.4 million dollars, of which 89 per cent was imported. With regard to the physical volume of raw materials, however, the proportions are inverted: out of 9.8 thousand tons 5.4 per cent was of domestic origin. This indicates that the domestic products used by the industry are generally of low unit price.

This heavy dependence on foreign sources of raw materials means that the incidence of the latter in the sales price of paints is very heavy - 43.7 per cent in 1964 - which is perhaps one reason for the high price of the domestic product.

/Table 48

Table 48

PERU: STRUCTURE OF THE PAINTS INDUSTRY

(Units and thousands of dollars)

	1961	1962	1963	1964
Number of establishments	11	12	13	16
Persons employed	628	653	725	817
Staff	244	257	297	337
Workers	384	396	428	480
Compensations to employees	673	790	953	1 237
Salaries	463	533	646	867
Wages	210	257	307	370
Production value	5 095	5 767	6 535	7 678
Input value	2 892	3 060	3 378	3 867
Raw materials	2 534	2 663	2 913	3 364
Domestic	277	204	347	369
Foreign	2 257	2 459	2 566	2 995
Accessory materials (containers, labels, etc.)	332	367	428	461
Electric power	12	15	19	21
Fuels and lubricants	14	15	18	21
Value added	2 203	2 707	3 157	3 811

Imports consist of colouring matters and pigments; oils (except for fish oil), varnishes, certain drying agents, gum spirits of turpentine, butyl alcohol and other organic solvents except for ethyl alcohol and turpentine substitute; synthetic resins, lithopone and "Titanox", kieselguhr (diatomite); pyroxylin and other lacquers; ground and chipped mica; large quantities of talcum and whiting, colophony, latex solutions; casein; emulsifiers and plasticizers.

/Domestically produced

Domestically produced raw materials are: fish oil, ethyl alcohol, turpentine substitute, a certain quantity of talcum and whiting, kaolin, zinc oxide, lead oxides, barium sulphate, and a certain quantity of diatomites. Containers are also produced in the country.

The quality of domestically produced paints has greatly improved in the last few years, and the installations and equipment of several of the most important factories have been largely renewed. This has resulted in decreasing imports and the constant extension of national production to new lines of production.

During 1964 a new paints factory, the Sherwin Williams, began to operate in Peru. This possesses modern machinery and will provide special paints for every use, from motor cars to domestic appliances. It has been built at a cost of 250 thousand dollars and will have an initial production of 40,000 gallons of different kinds of paints a month.

9. Basic metal industries

In 1964 the basic metal industries registered an increase in physical production volume of 1.3 per cent on the previous year. The most important activity within this division in terms of production volume is metal founding. (See table 49.)

Iron and steel industry

The chief iron and steel works in Peru is situated at Chimbote, to the North of Lima. It began to operate in 1956 and in 1964 produced 75,213 metric tons of steel ingots and 27,208 tons of pig iron. (See table 50.)

During 1960-1964 apparent consumption of iron and steel products increased at an average rate of 11.1 per cent a year.[5/] Domestic production of finished iron and steel was distributed as follows: non-flat products, 79.5 per cent; flat products, 2.0 per cent; pipe products, 10.8 per cent, giving a total of 90,593 tons, which amounts to 36.0 per cent of demand. (See table 51.)

5/ Tube products manufactured in Peru are produced with imported skelps. The miscellaneous iron products are manufactured from scrap.

Table 49

PERU: INDUSTRIAL PRODUCTION OF BASIC METALS

	1960	1961	1962	1963	1964
Gold (Kilogrammes)	2 622	2 504	2 183	1 891	1 745
Refined bars	1 316	1 581	1 454	1 359	1 189
Silver bars	1 065	695	590	237	279
Copper bars	141	128	39	39	38
Washed gold	100	100	100	256	239
Silver (Kilogrammes)	518 648	599 251	576 440	667 248	695 153
Refined bars	420 484	496 268	504 759	593 491	640 862
Copper bars	47 674	47 353	24 413	25 150	23 544
Gold bars	14 777	16 176	13 926	14 894	10 382
Sterling	21 425	24 804	19 208	19 129	20 365
Matte	14 288	14 650	14 134	14 584	-
Copper (Metric tons)	165 966	183 330	150 849	158 726	153 592
Refined bars	29 938	33 798	34 419	36 913	37 811
Blister	133 552	146 712	113 414	118 295	114 246
Matte	1 300	1 561	1 778	2 285	-
Sulphates	298	397	365	468	668
In cements	878	862	873	765	867
Lead (Metric tons)	74 141	76 433	68 362	81 126	89 724
Refined bars	73 767	76 147	67 922	80 772	89 466
Bars with antimony	356	216	406	298	227
Bars with bismuth	18	53	34	56	31
Bars with tin-antimony	-	17	-	-	-
Zinc (Metric tons)	32 523	31 874	33 076	55 754	61 920
Refined bars	32 397	31 757	32 753	54 698	60 664
Sulphate	176	117	137	191	217
Copper and aluminium bars	-	-	186	865	1 039
Antimony (Kilogrammes)	375 807	429 044	284 136	381 460	384 058
Refined bars	323 456	400 302	242 462	351 997	359 310
Lead bars	52 351	27 145	41 674	29 463	24 748
Lead and tin bars	-	1 597	-	-	-
Bismuth (Kilogrammes)	407 697	466 735	488 929	559 891	721 147
Refined	380 587	387 950	436 811	475 730	674 770
Lead bars	27 110	78 785	51 512	84 161	46 377
Cadmion (Kilogrammes)	83 696	105 240	106 507	173 359	197 105
Refined	83 696	105 240	106 507	173 359	197 105
Steel (Metric tons)	59 878	75 544	72 893	73 410	75 213

Source: Mines Department, Ministry of Development and Public Works.

/Table 50

Table 50

PERU: PRODUCTION OF THE CHIMBOTE IRON AND STEEL WORKS, 1964

	Metric tons
A. Pig iron	27 208
B. Steel ingots	75 213
C. Finished products	65 225
Bars	50 944
Wire rod	8 452
Angles	4 393
Plates	1 436
Blade plates	-
D. Pig iron consumed by the steel works	24 246
E. Steel consumed in production of finished products	73 887
F. Semi-finished products	135 403
Production (billets)	64 126 a/
Tonnage converted into finished products	71 277

Source: The Producer.

a/ 7,564 tons of billets were imported.

/Table 51

Table 51

PERU: CONSUMPTION OF IRON AND STEEL PRODUCTS IN 1964

(Metric tons)

Products	Production	Imports	Consumption
Non-flat products			
Concrete bars	49 738	1 272	51 010
Bars for other purposes	1 206	9 820	11 026
Wire rod and derivatives	8 452	7 394	15 846
Light shapes	5 829	11 750	17 579
Heavy shapes	-	2 602	2 602
Rails and accessories	-	18 888	18 888
Steel balls for milling	6 747	4 100	10 847
Special steels	-	75	75
Semi-finished ingots	-	7 742	7 742
Subtotal	71 972	63 643	135 615
Flat products			
Plates up to 5.00 mm	-	16 622	16 622
Plates over 5.00 mm	-	13 398	13 398
Strips	-	8 814	8 814
Tin plate	-	24 822	24 822
Galvanized plates	1 000	16 303	17 303
Special plates and plates not elsewhere specified	-	589	589
Protective plating for mills	843	120	963
Subtotal	1 843	80 668	82 511
Tube products			
Seamed steel tubes	6 950	2 376	9 326
Seamless steel tubes	-	11 393	11 393
Unspecified tubing	-	102	102
Subtotal	6 950	13 871	20 821
Total for steel products	80 765	158 182	238 947
Iron products			
Iron castings	8 788	1 167	9 955
Ferro-alloys	135	1 269	1 404
Tubes and accessories	905	719	1 624
Subtotal	9 828	3 155	12 983
General total	90 593	161 337	251 930

Source: The Producer.

/A recent

A recent study of the iron and steel market in Peru ("Estudio del Mercado Siderúrgico del Peru") estimates that in 1970 iron and steel consumption will reach a total of 423 thousands of rolled products, distributed as follows: non-flat products 189 thousand tons, flat products 166 thousand, tube products 43 thousand, and iron products 25 thousand. The Chimbote Iron and Steel Works (SOGESA) - the sole important supplier - estimates that with the extra capacity resulting from expansion works now being planned it will supply 65 per cent of non-flat products and 90 per cent of flat products in that year.

The main non-flat products produced will be: bars, of which domestic production will supply 86 per cent of the market, and wire rod, of which it will supply 88 per cent. National production of tight shapes is expected to supply only 18 per cent of demand.

As regards flat products, SOGESA will provide 96 per cent of plates up to 5 mm and 95 per cent of plates over 5 mm. It will also supply 90 per cent of the plates used in tin plate production and 70 per cent of galvanized plates.

The study of the iron and steel market in Peru mentioned above was jointly produced by SOGESA, the National Planning Institute, the Central Reserve Bank, the National Institute of Industrial Promotion and the Stanford Research Institute at the point when the works reached maximum production. It concluded that consumption of iron and steel products in the country has reached a stage of solid expansion, because the rapid and widespread process of industrialization which is now being achieved in the country must result in the growth of all sectors of production and hence in increasing demand for steel products. The industrial sector is the largest consumer of these products (34.4 per cent of total domestic consumption in 1964) followed by building (17.9 per cent) and mining (17.8 per cent). In 1964 this consumption consisted mainly - 70.0 per cent - of imports.

On the strength of these conclusions it was recommended that the company should carry out a project along the following lines: The Chimbote works will be built up on three groups of installations:

/(1) the

(1) the original works, consisting of the installations set up in 1957, which have been in operation ever since. These comprise a steel-foundry consisting mainly of electric furnaces for pig iron and steel production, and a rolling mill. They have a capacity of approximately 65 thousand tons a year of rolled products; (2) partial expansion of the foundry, involving the installations needed to increase steel capacity to 350 thousand tons a year of ingots. The main installation works and equipment involved in this would be: installation of a blast furnace with a capacity of 200 thousand tons a year of steel, of a continuous casting mill of 90 thousand tons a year of billets, and of auxiliary equipment and fixtures; (3) expansion of the rolling mill, providing it with the capacity needed to convert the extra steel produced by expanding foundry into finished products. This will comprise two parts, the first being expansion of the non-flat products installations by modifying the present mill, which will increase its end capacity from 65 thousand to 120 thousand tons a year of bars, wire rod and light shapes, and the second, a new flat products mill for production of hot rolled plates 1/4 to 1 1/4 inches thick and up to 7 feet wide, hot rolled light plates 1/8 to 3/8 of inches thick and up to 4 feet wide, and cold rolled plates up to 35 guage, including galvanized plates. The plane products mill as a whole would produce 150 thousand tons in 1970. The estimated cost of the two sets of expansion works for the rolling mill is 2.7 million dollars for the first and 40.2 million dollars for the second.

Taken as a whole, the project will undoubtedly give a tremendous boost to the Peruvian economy, since it concerns a basic industry whose development has large multiplier effects. The direct effects will consist chiefly of an increase of the gross industrial product, of foreign exchange saved by import substitution (about 20 million dollars a year), and of a further 1,900 persons directly employed.

10. Metal-transforming industries

These industries account for 9.1 per cent of factory activity gross product terms. Artisan production has a high relative importance in these branches, accounting for about 30 per cent of the gross production value of the factory and artisan sectors taken together.

The factory sector has four branches: metal products, non-electrical machinery, electrical machinery and appliances, and transport material. The most important is the branch of transport material manufacture, which represents 44.6 per cent of the division, after which comes metal products, with 29.6 per cent. The other branches are of comparatively little importance, particularly that of manufacture of electrical machinery, apparatus, appliances and supplies, whose development in Peru has scarcely begun.

The import value of the metal-transforming industries amounts to about 50 per cent of their gross production value. Nearly 4 per cent of the total input value corresponds to electric power, fuels and accessory materials, and the remainder to raw materials. Over 75 per cent of these latter are of foreign origin which shows that these industries are poorly integrated into the rest of the economy and domestic supplies of their materials deficient in all respects. The largest quota of imported inputs occurs in the machinery manufacturing branch.

The main intermediate goods inputs of the metal products branch are flat and non-flat steel and aluminium products and tin-plated lead.

The most important of such inputs in the non-electrical machinery branch are iron castings and flat and non-flat steel products.

The most important of the electrical goods branch are copper wire, lead in ingots and other forms, sealed refrigeration units, and electric transformers.

Lastly, among the inputs of the transport material branch are flat and non-flat steel products, tyres, paints, combustion engines and body work.

The industries of this sector employ some 37,800 persons with a total annual compensation of 24.1 million dollars. These employees are

/distributed among

distributed among 950 establisments of an average size - 30 persons per establishment - slightly less than the factory average. The transport material and machinery manufacturing branches have the smallest establishments and lowest manpower productivity since they include large numbers of small-scale and technically undeveloped repair workshops. The metal products industries, which include certain large and technically advanced factories, are the best off in both these respects.

As can be seen in table 52, imports of metal-transforming products are extremely large. During 1960-1964 their value c.i.f. was as high as 228.3 million dollars a year on average.

Table 52

PERU: IMPORTS OF MANUFACTURES OF COMMON METALS, ELECTRICAL AND NON-ELECTRICAL MACHINERY AND TRANSPORT MATERIAL

(Millions of dollars)

Items	1960	1961	1962	1963	1964
Manufactures of common metals	16.3	20.1	21.9	23.0	23.3
Non-electrical machinery and apparatus	66.7	90.3	115.6	111.9	108.4
Electrical machinery and apparatus	25.2	33.5	43.9	47.7	44.4
Vehicles and transport equipment	48.5	68.3	69.1	78.5	82.3
Total	156.7	212.2	250.5	261.1	258.3
Total imported by Peru	374.8	469.4	537.0	557.1	579.6

Source: Foreign Trade Statistics.

The metal products and transport material industries show the best prospects within this division.

/Many different

Many different projects have been put forward in connexion with the metal-transforming industries; they are expected to grow rapidly during the next few years, for once the Chimbote Iron and Steel Works rolling mill begins production they will have a sure supply of raw materials which will encourage them to expand.

The transport material industry has reached an extremely interesting stage of development. Until 1963 there were only 3 assembly enterprises operating in Peru, mainly producing lorries and vans. A government decision to promote the development and integration of the motor vehicle industry of the country was the first step towards changing this situation.

To this effect, and partly as a result of the benefits granted by Decree 80 in the form of tax exemptions for this industry, towards the end of that year the parent companies authorized the installation of four new motor vehicle assembly plants.

These are: General Motors of Peru, with an investment of approximately 5 million dollars and an assembly capacity of 5,000 vehicles a year after the American, German and British General Motors designs; Motor Peru S.A., with an investment of 2.4 million dollars and a capacity of 5,000 Mercedes Benz and Volkswagen vehicles; Maquinarias S.A., representing Nissan Motors Co. of Japan, with an investment of 740,000 dollars and a capacity of 1,500 units of the Nissan and Datsun makes; Ford Motor Co., with an investment of nearly 6 million dollars and a capacity of 10,000 units a year.

There are also, among other plans for this industry, projects under study for installation of assembly plants for the following makes: Rambler, Morris, Renault, by the Anglo-Peruvian Motor Vehicle Company; Triumph Herald by the Anglo-Peruvian Auto Service; Dodge, De Soto, Fargo, Plymouth by the Chrysler Corporation; Scania Vabis, by Diesel Motors; International, by International Harvester Co., which may also include assembly of tractors, agricultural equipment and other types of motorized vehicles manufactured by this company. In addition to this, a Peruvian firm with a capital of 1.0 million dollars has installed a plant for manufacture of diesel engines, with an initial production of 200 units a year.

/It is

It is considered that the development of this branch of industry will create important sources of employment and will improve the technical level of manpower working in connexion with it.

One of its sectors, the Peruvian industry for manufacture of metal bodywork for passenger vehicles, has reached a high degree of development during the last few years and there are now several industrial plants engaged in this manufacture.

Analysis of import and consumption of metals used by the metal-transforming industries shows that in this respect they have undergone a cumulative annual growth of 10.6 per cent a year between 1960 and 1964.

The most encouraging feature of this branch of industry is the high degree of development of the industries manufacturing mining and fishing boat equipment, electric refrigerators, electric motors, steel office and household furniture, non-insulated and plastic insulated electric wires and cables, tin cars, aluminium extensions, structural metalwork, etc.

Tin can manufacture, which began in 1945, is now able to supply the needs of domestic fish preserving canning and of most other preserved goods industries as well as most of the containers required for fuels and other products. The most important branch of this particular group has three high-speed automatic production lines and one semi-automatic. The branch includes manufacture of compressible tubes for tooth paste, cosmetics and medicinal products, whose high quality has enabled them to be exported. During 1964 foreign sales of this product were 71 tons at a value of 0.2 million dollars. Manufacture of crown bottle tops is also developing rapidly as a result of growing exports, mainly to Bolivia and Chile. During 1965 91 tons of this product were exported.

Consumption of refined copper by domestic industry rose from 1,147 tons in 1960 to 1,340 in 1964. As in previous years the heaviest demand came from manufacturers of electric conductors. The Peruvian enterprise engaged in this manufacture, now that it covers practically the whole demand for low-tension wires and cables, has decided also to produce underground cables which can similarly be manufactured from

domestic raw materials and will thus have some chance of competing with foreign markets. Copper is also consumed by tube and shape manufacturing, some of which is carried out by domestic metal-transforming industry.

The expansion of steel furniture manufacture has fallen off considerably but the quality of its production has been greatly improved.

Manufacture of metal structures and structural metal working continues to expand. It supplies practically the whole market for light products and for the different types of door and window fixtures, including those of aluminium. This industry also assembles imported heavy structures, chiefly for use in buildings and bridges.

Manufacture of aluminium ware and cooking utensils has resulted in the installation of rolling and extension plants for aluminium ingots.

The rapid development of the fishing sector has led to the establishment of metal boat manufacture and to the rapid development of manufacture of tanks, conveyor belts, lifts, etc.

For use in this sector Peru also manufactures single and double screw presses, steam cookers, direct and indirect fire driers, boilers, fans, cyclones, and equipment for treating liquid glue, and assembles centrifuges under licence from an important enterprise in the United States.

Manufacture of equipment for the mining industry - particularly graders and flotation chambers, and, on a smaller scale, ball mills - has continued to advance, though at a smaller rate than that achieved during the greatest boom period in mining production.

In 1964 one of the largest metal products factories announced a forthcoming expansion of its installations for manufacture of machinery for the fishing, mining and industrial sectors. In the same year work was completed on several important industrial plants and various new investment plans were announced. Among these events it is worth mentioning: capital increase on the part of a large factory producing electric and gas cooking stoves and refrigerators, for the purpose of expanding its production; the project of a Peruvian firm for investment of 1.1 million dollars in building an assembly factory for manufacturing

/bicycles under

bicycles under licence from a well-known French firm; the opening of a metallurgic plant, built at a cost of nearly 4 million dollars, for producing iron and steel castings; installation of two plants for manufacturing electric switchers; establishment of a company for manufacturing motor vehicle radiators, which will have an initial production of 2,400 honeycomb radiators per month; announcement by an electronic company of construction of an assembly plant for radio and television apparatus, on an investment of 2.1 million dollars; opening of a plant for manufacturing galvanized sheets - 1,000 per month - under assistance from Japanese firms; opening of a steel products plant, in which about 0.4 million dollars has been invested and which will increase stranded wire production from 5,000 to 12,000 tons; installation of a factory for manufacturing tubes for metal furniture, on an investment of 0.5 million dollars; announcement of construction of a plant for manufacture of dry cell batteries; opening of a plant for producing extensions of aluminium, copper, bronze and other metals, in which 0.3 million dollars has been invested and which will operate with technical assistance from certain American firms.

11. Miscellaneous manufacturing industries

This section comprises manufacture of professional, musical and measuring instruments, etc. watch repairs, manufacture of jewellery and related articles, plastics moulding, and the production of a large class of articles which cannot legitimately be classified under any of the industrial sectors described above. Within this heterogeneous group of activities a special description may be given of the plastics moulding industry, which during the last few years has had one of the highest rates of expansion in the industrial sector.

From a consumption of raw materials of 1.6 million dollars in 1960 demand rose to 4.6 million in 1964, distributed over 62 enterprises giving information, covering the different fields of application of plastic resins.[6/]

6/ Plastic resin based components used in paint manufacture are not included in this study, since these consist of emulsified products which really form a group apart.

/The compounds

The compounds for which industrial consumption is highest are those based on polyrinyl chlorine, which in 1964 accounted for 24 per cent of total demand. After these come those based on polyethylene (23 per cent), on polyester (12 per cent), and on urea formaldehyde (3 per cent).

The other compounds used by the industry altogether represented just 38 per cent of domestic consumption.

In spite of the large number of enterprises, 53 per cent of total production is concentrated in only 7.

Imports of plastic resin compounds have undergone an extraordinary expansion between 1960 and 1964. On the strength of the figures of the Foreign Trade Statistics this appears to have been by almost six times. It can also be observed that polyvining chlorine and its compound forms the bulk of the products imported under tariff item 776. The suppliers are: United States (34.8 per cent), West Germany 7.0 per cent) Great Britain (12.8 per cent), Italy 4.1 per cent), and other countries (21.3 per cent).

Imports of manufactured products of plastic materials must be added to those of moulding compounds for a proper appreciation of the size of the domestic market for this division.

Domestic manufacture of plastic products covers a varied range of articles, as can be seen in table 53, and has grown (in constant dollars of 1960) from 3.9 million in 1961 to 9.5 million in 1964, that is by 141.1 per cent. The most important articles produced are plastic tape with or without reels, plastic material, articles for domestic and personal use, tableware and tubes.

/Table 53

Table 53

PERU: PLASTIC PRODUCTS INDUSTRY PRODUCTION

Items	1961	1962	1963	1964
Articles for domestic use	458	612	1 037	961
Articles for personal use	326	458	961	906
Bags and wrapping	263	388	419	392
Buttons	9	147	130	123
Combs	87	178	117	131
Containers and casing	163	212	110	305
Hoses	36	59	63	193
Lids and stoppers	178	169	218	248
Miscellaneous products	248	357	698	1 524
Payments from third parties	12	34	22	49
Plastic heels	11	21	88	3
Plastic material	254	704	1 107	845
Plastic tape with or without reels	320	510	1 276	1 755
Sheet plastic	53	54	138	251
Sockets	27	40	39	42
Tableware	483	586	795	797
Toys	298	420	524	524
Tubes	515	595	817	1 138
Vinyl flooring	323	277	415	567
Total	4 064	5 821	8 974	10 754

Source: BIP-INPI, from official figures.

According to the industrial statistics of the Ministry of Development, in 1964 there were 62 enterprises in operation employing 575 technical and administrative staff and 1 396 workers. (See table 54.) Their balance sheets showed total fixed assets of 5.3 million dollars of which 79.4 per cent corresponded to machinery and equipment.

/Nominal investment

Nominal investment in machinery per worker was 3 thousand dollars, which is considerably above the industrial average and is chiefly due to the recent establishment of the installations.

Table 54

PERU: STRUCTURE OF THE PLASTIC MOULDING INDUSTRY

(Units and thousands of dollars)

	1962	1963	1964
Establishments giving information	43	52	62
Persons employed	1 239	1 632	1 971
Staff	261	424	575
Workers	978	1 208	1 396
Compensations to employees	952	1 461	1 927
Salaries	471	825	1 150
Wages	481	636	777
Production value	5 820	8 767	10 756
Input value	2 901	3 940	4 520
Raw materials	2 778	3 727	4 310
Domestic	147	178	293
Foreign	2 631	3 549	4 017
Accessory materials (containers, labels, etc.)	40	82	66
Electric power	65	98	107
Fuels and lubricants	18	33	37
Value added	2 919	4 827	6 236

Source: BIP-INPI, based on official figures.

/In the

In the same year consumption of plastic resin compounds reached 4.0 million dollars, which amounted to 48 per cent of the sales of the enterprises giving information.

24 per cent - 1 359 tons - of the moulding products consumed by the country were compounds of polyvinyl chlorine. But these figures do not give the exact quantity of consumption of polyvinyl chlorine, since the context of this substance in any compound varies according to the purpose for which the compound is intended.

In the case of compounds for manufacture of gramophone records, tiles and sockets, but in no others the resin is a copolymer of chlorine and polyvinyl acetate. In all other cases it is pure polyvinyl chlorine.

Consumption of polyvinyl chlorine in Peru, as in other countries, is showing a trend towards rapid growth, owing to the particular advantages of the products manufactured from it.

In a country like Peru, where enormous ground remains to be covered in connexion with housing, water and drainage works for settlements - particularly in regions to which transport of traditional materials such as iron and "Eternit" (an asbestos concrete mixture) is expensive - irrigation and field drainage projects, electrification, and mining development, and where a growing population cries out ever more loudly for a higher standard of living. The prospective applications of polyvinyl chlorine are obviously immense.

The plastic market has grown up during the last few years through substitution of such traditional materials as paper, wood, metal, leather, glass, etc. In some cases the substitution is already firmly established, use of synthetic materials in manufacture of toys, buttons, containers, tubing and for many other purposes being now generally accepted. In these fields consumption of plastic materials continues to increase relative to the growing number of consumers and rising levels of income. At the same time the replacement of traditional by synthetic materials in many productions of goods for use in building and industry is being actively pursued. Constant technological progress ensures that this process, which is carried out through continual readjustment of the

/relations between

relations between the prices of the traditional materials and of the many new products introduced to replace them, will not be stifled by lack of further scope for development. Technological progress also tends to reduce the costs and prices of synthetic materials.

To sum up the factors involved in the formation and growth of this market, it may be remarked that consumption of plastics is developing as a function of three main variables: substitutions of traditional materials, population growth, and the growth of income per inhabitant. It may be said that of these three variables the first has so far been of greatest importance. On the other hand substitution of many traditional materials is being carried out much more rapidly in those countries which have a generally higher level of income than that of Peru.

As regards projects for polyvinyl chlorine manufacture, it has been announced that a factory with a capacity of 5 to 6 thousand tons a year is to be established. Part of its production will be intended for export. For this project, which is to be carried out by an international enterprise, an investment of 5 million dollars is envisaged.

V. POLITICAL MEASURES FOR INDUSTRIAL DEVELOPMENT

1. Government action for industrial promotion

Peru possesses a body of legal provisions concerned with industrial development contained, for the most part, in Law 13270 of Industrial Promotion. This, however, left standing the earlier and more simple Law 9140 of June 1940, which has led to the promotion of several important industries.

Law 13270 of Industrial Promotion, which entered into force on 30 November 1959, supports established industries as well as those about to be established, whether or not the products of the former count as basic goods. There are, however, differences in the treatment of the two kinds of industries in the form of greater or less tax benefits.

The chief privileges granted by this law are: total or part exemption from import duties on machinery and equipment, as long as these are neither produced in the country nor compete with equivalents produced in the country, and are new; the same treatment for imports of raw materials and semi-products; right to direct purchase or lease of state lands, including riverines, needed by the industrial enterprise; exemption from taxes during the first years of establishment of the enterprise the amount depending on whether it is situated in the Lima-Callao zone, the Costa, the Sierra, or the Selva; right of tax free reinvestment of from 30 to 100 per cent of profits depending on the geographical location of the enterprise; and many other incentives.

The law lays down that its provisions are to be carried out by the Executive, through the Department of Industries and Electricity of the Ministry of Development and Public Works; it sets up the Supreme Council of Industries as an advisory body in connexion with promotion activities and questions of industrial properties; it also established the National Institute of Industrial Promotion and the Institute of Technical Industrial Standards and Quality Control.

In drawing up Law 13270 care was taken not to annul its precursor, Law 9140, since this had served as a valuable aid to several important earlier industrial projects. Thus, this law includes a clause to the

effect that in agreements made to protect and stimulate the industrialization of the country the State may grant exemptions from tax and customs duties. On the basis of this provision several important industries have been set up in the country - synthetic nitrogenous fertilizers, artificial fibres, metal-transforming, preserving, etc. - and the extractive fishing sector has been greatly stimulated; industrial enterprises operating in the Selva have been granted total exemption from tax for a period of 10 years; general provisions have been established in aid of the motor vehicle, apparatus and equipment assembling industries; and establishment of industrial development groupings in the provinces is being encouraged.

Law 9140 thus favoured the development of important industries. But the effects of Law 13270 appear to be considerably more widespread. The fact that from 1959 the growth rate of industrial production rose appreciably until reaching slightly over 8 per cent would be somewhat surprising without this to explain it. The period 1960-1964 also saw the creation of 2,540 new enterprises, on a total investment of 72.6 million dollars.

However, it is only fair to point out that at the time of the introduction of this law conditions favourable to industrial development had already arisen in Peru. It had just emerged from a serious financial crisis - primarily caused by external factors - which had resulted in a currency devaluation of 40 per cent; to counteract the effects of this it had become necessary to cut down imports by means of large increases in tariff rates, which created a powerful stimulus to the establisment or expansion of industrial enterprises. The Economic Commission for Latin America's study on industrial development in Peru, which set forth in no uncertain terms the immediate need to stimulate the development of that part of the industrial sector for which there were adequate available resources, had been completed. And in Lima the meeting of experts, preliminary to the Montevideo conference where the formation of the Latin American Free Trade Association (ALALC) was to take shape as a reality, thus emphasizing the urgency of developing a national industry capable of competing within the Free Trade Zone, had just broken up. The law concerning industrial promotion was, therefore, the corollary of a process of industrialization already under way.

/The state

The state industrial enterprises have been set up by some of the state corporations referred to in chapter III. There are also, however, two activities - tobacco and salt - directly owned and managed by the State.

The most important state and semi-public enterprises are, in brief, as follows:

(i) The Chimbote Iron and Steel Company (La Sociedad Siderúrgica de Chimbote) was originally a mixed company in which the Peruvian Santa Corporation held 30 per cent of the shares. When financing was needed to expand the works it became necessary to increase the capital of the company and the Corporation had to provide the new contribution. The Corporation later purchased the small proportion of shares owned by the private sector, and has thus now become the sole owner of the company.

The Chimbote Company runs the only integrated iron and steel centre in the country. At present it provides approximately 35 per cent of the country's requirements of rolled products and it is expected that in another two or three years it will be in a position to supply the total demand for bars, shapes and plates of standard steel.

Present production is small and extremely costly, for which reason it has been necessary to establish tariff protection to enable the Company's products to find a sale in the national market; this has meant that the prices of rolled products in this market are higher than those obtaining elsewhere. It has been suggested that this situation could be improved by the introduction of calculated average prices, as has been done in the case of synthetic nitrogenous fertilizers.

(ii) The State Petroleum Enterprise (La Empresa Petrolera Fiscal) - EPF - is also an autonomous enterprise although more directly tied to the State, which is the sole owner of the whole of its capital. Its finances are derived from sales of its crude petroleum production at home and abroad, from the 10 per cent royalty paid by the English company, Lobitos Oilfield Co., on the crude petroleum it extracts from its concessions in the department of Piura, and from budget allocations.

This enterprise accounts for an almost negligible proportion of national production and would not be mentioned here but for the fact that it has decided to establish first, a refinery, for which a tender has already been accepted, and afterwards, a synthetic nitrogenous fertilizer plant.

/(iii) The

(iii) The Cuzco Fertilizers Factory (Fábrica de Fertilizantes del Cuzco) is an enterprise which does not as yet possess legal status. It will perhaps be exploited by a mixed company in which the government will be associated either directly, or indirectly through the Cuzco Reconstruction and Development Corporation, with private capital. Meanwhile all investments and expenditure preliminary to its entry into production are carried out by the state through the Department of Industries and Electricity.

This factory is a typical case of an installation set up for the purpose of justifying an ambitious project, such as, in this case, the Machupichu Hydroelectric Station. Cuzco city does not have the capacity for the 40,000 kilowatts which will be generated, and with the installation of the power station already under way it was considered that the surplus power might conveniently be used by a fertilizer factory, which in this case will consume 24,149 kilowatts.7/

(iv) The State Tobacco Monopoly (Estanco del Tabaco), owned by the State, is the only producer of cigars, cigarettes and cut tobacco existing in the country. In 1955 the monopoly itself was abolished, but the industry remained under state ownership. It is only in the last year that private capital has begun seriously to consider the possibility of financing manufacture of tobacco products.

The whole capital of the monopoly belongs to the State. It operates under conditions of poor efficiency and has a growing number of employees. The quality of its production is susceptible of improvement, and can be improved if special efforts are made to improve the production and marketing systems of the tobacco growers.

In spite of this the monopoly produces profits for the State through the successive taxes on tobacco products.

(v) The State Salt Monopoly (Estanco de la Sal) is also soon to be abolished. For many years the State has been the sole producer and refiner of salt for internal consumption.

7/ Approximately 85 per cent of the total power used will be consumed by the electrolytic process by which hydrogen is produced.

/The plant

The plant operated by the monopoly is out of date. At one time its production was as high as 15 to 17 tons a day, but because its equipment has never been renewed its present production fluctuates around 5 tons a day. On account of the poor quality and presentation of the product the government has decided to abolish the monopoly and invite private capital to exploit production of refined salt within the country.

Contact between the State and the Tobacco and Salt monopolies is maintained through the Deposits and Shipments Bank which is at present owned by the State and supplies the place of a national bank.

(vi) The National Fertilizers Corporation (Corporación Nacional de Fertilizantes) intends to begin producing chemical fertilizers during the next few years. For the moment its activities are confined to gathering island guano and preparing balanced mixtures in which guano is the basic ingredient. It possesses an efficient plant and, in spite of the depressed prices of the internal market, makes a profit.

(vii) The Army Factories (Fábricas de Ejército) have been set up by the State for the exclusive supply of the armed forces. They are: footwear factories, including tanneries, shirt factories, munitions factories, and several others. Concerning the operations of these plants nothing more is known.

2. Taxation policy and its effects on industrial development

On several occasions in earlier chapters mention has been made of various aspects of taxation relating to manufacturing activity. Nevertheless it is necessary to make some further remarks on this important subject.

(a) Taxation policy measures are applied throughout all sectors. The special provisions in aid of industrial development are largely contained in the Law of Industrial Promotion which establishes the privileges and benefits available to established industries or those about to be established for the purpose of producing basic goods.

Privileges and benefits are granted to the industrial development groupings by particular decrees for each of the groupings established.

Tax exemptions and other benefits for the Selva region were granted by Law 1560 of 25 August 1965.

/Privileges and

Privileges and benefits for the machinery and apparatus and motor vehicle assembling industries were granted by decree and endorsed by Law 9140.

Lastly, privileges and benefits have been granted in aid of particular activities such as pharmaceuticals, fishing, ship building, preserving of fish for human consumption, fishing development, preserving of non-fish foods for human consumption, nutritional supplement products, tobacco industry, exploitation, industrialization and trade of salt, and several others.

Since the introduction of the Industrial Promotion Law industry has been one of the sectors of economic activity most liberally treated as regards taxation.

In referring above to the general provisions in aid of industrial development a list was given of the principal tax exemptions granted to industry by law.

Perhaps this body of provisions is not as generous with regard to tax reliefs as the Mining Code or the Petroleum Law. On the other hand, manufacturing industry is better placed in this respect than agriculture.

This comparative neglect of agriculture in respect of legal provisions is scarcely fair; but in Peru, as in other Latin American countries, the actual development of agriculture, particularly that producing for internal consumption, has also been neglected.

(b) Peru has not attempted in its legislation to direct industrial activity by means of taxation policy. The Industrial Promotion Law discriminates in its treatment of different industries in respect of tax exemptions on reinvested profits, but does so in relation to geographical location, so as to promote decentralization, and not with the intention of dictating the specific aims and purposes of any industry.

Perhaps the sole exception to this is the discrimination in respect of tariff reliefs on imports of machinery and industrial raw materials and semi-products, these being more generous for industries contributing most extensively to the process of import substitution, or to manpower employment, or to foreign exchange resources, than for industries of smaller importance to the economic development of the country. This

/inducement, however,

inducement, however, is of very feeble influence in guiding industrial activity in the proper direction, as also have been the tax reliefs favouring industries established outside the capital. Apparently the advantages which Lima offers as the chief centre of consumption, as the most convenient place for obtaining raw materials, as the zone where trained personnel are most readily available and where the services are most efficient, etc., counteract and outweigh any tax relief.

(c) That part of the taxation system constituted by the tariff and the so-called luxury tax, makes distinctions between different manufactured products.

The tariff in force up to half way through 1964 imposed relatively excessive rates on machinery and equipment, while giving little protection against articles competing with those produced within the country. Certain types of semi-products were also subject to heavy duties.

The new Customs Tariff, which passed into law on 23 July 1964, is technically more adequate but does not entirely avoid the weaknesses of its predecessor.

The luxury tax and the prices established for manufactured products weigh primarily on imported luxury manufactures, but also on certain domestic products such as jewels, silverware, etc. Its incidence is heavy - up to 10 per cent of the value of the product - and this undoubtedly limits the market.

The sales tax, except in the case of certain foods, fertilizers, minerals, part of petroleum production and a few other products is generally 4.5 per cent on the value of the article sold and applies equally to raw materials, semi-products and finished products in such a way as be due on each different transaction of the same product or material. From the point of view of tax returns this is highly effective, but it hinders industrial development by increasing the costs of production in the internal market, discourages exports of manufactured goods and is inequitably applied. A metal produced in the country, for example, is exempted from the sales tax by the Mining Code, while a product manufactured in the country from that metal is not, since the Industrial Promotion Law makes no provision for such exemptions. The situation is still worse for industrial exports, which have sometimes had to be suspended because this tax made it impossible for them to be competitively priced.

3. Promotion policy for exports of manufactures

The measures of promotion policy for exports of manufactures are contained in the Industrial Promotion Law whose over-all principle in this connexion is that exports of finished or semi-finished goods which have undergone a process of transformation in the country to the extent defined in the report of the Department of Industries, are exempt from payment of export duties.

A project is at present being developed for a law specifically concerned with promotion measures for exports of non-traditional products and, in particular, with promoting sales of such products to the Latin American common market.

4. Provisions relative to small-scale industry

There is no precise criterion for determining the class of small-scale manufacturing establishments. The industrial census did not attempt more than to classify them by employment size and took as the group of artisan or small-scale industrial establishments those employing up to 5 persons.

The Industrial Bank, so as better to channel its loans into small-scale industry, has defined it as consisting of enterprises having a small number of employees and whose capital is no greater than 800,000 soles (29,800 dollars) and gross annual income than 2,400,000 soles (89,500 soles).

It has been possible to give experimental proofs of the need to set up credit aid programmes for small- and medium-scale industry. The lack of access of the industrialists of these types of industry and the absence of effective development instruments for providing adequate technical and financial assistance before and after the loan is obtained have made it obvious that if the State promotion organizations are to achieve more co-ordinated and efficient methods of joint action their present working system must be thoroughly overhauled.

Among the institutions at the national level responsible for carrying out development programmes in aid of small-scale industry are the Industrial Bank, which has created a department specializing in the affairs of this sector, and the National Institute of Industrial Promotion, which is beginning to make promotion work for the sector one of its major concerns.

/Among the

Among the institutions at the regional level are the development corporations and councils and, on their own account or sometimes acting on behalf of the Industrial Bank, the regional banks.

The conditions on which loans are granted are different in every case and no joint forms of action have yet been considered.

The board of directors of the Industrial Bank has lately laid down new rulings for loans to small-scale industry and artisan activity providing for the extension of supervised loans to a maximum limit of 250,000.00 soles (9,320 dollars) and bringing loanees of this type within its rules for discounting of bills.

There is now a private sector project for forming a co-operative organization for providing technical and financial aid to small-scale industrialists in the metal-transforming branches. This has at present advanced no further than the preliminary stage of research into the most urgent needs of the industry and the most effective means for providing the assistance envisaged. This will consist basically of technical advisory services, guarantees and financing for working capital and arrangements for wholesale purchase of the basic raw material inputs of the branches concerned. These services, once functioning, will be extended to other branches of industry.

5. Regional industrial development policy

(a) The regional development corporations are preparing projects for assisting the Industrial Bank in its loan programme in aid of small-scale industry. The assistance needed, which is to be provided by the technical staff of these organizations, will consist in:

(i) Promotion of the interest of small-scale industrialists in applying for loans by providing at a regional level selected opportunities for uses of loans.

(ii) Financial, economic and technical assessments for potential loans.

(iii) Supervision of and technical and administrative assistance to loanees.

(iv) Collection and compilation of statistical information on production and markets, at the regional level.

/(b) The

(b) The industrial development groupings, which are points of convergence for common services, technical assistance, etc., situated in specific departments or regions where there exists the basic infrastructure on which to develop industries by means of tax stimuli and other incentives or exemptions, have each been created by a law or decree specifically for the purpose.

The Arequipa grouping, created by decree on the 5th June 1964, is in the process of being organized. The decree granted it, among other privileges, a 15 year exemption from payment of the following taxes:

- Export duties and special charges.
- Tax on overdrafts and interest on movable capital.
- Excise and value increase tax on property transfers.
- Patents tax.
- Tax on establishment of companies, share issues, capital increase and share transactions.
- Stamp tax on credit letters and instruments.
- Stamp tax on sales of manufactures (at present 5 per cent of the value of the sales.

(c) Regional industrial development policy is aimed basically at decentralizing manufacturing activity by creating foci of development in selected areas of the country where particular branches of industry can be developed on the basis of the natural resources there available, the existence of regional markets, or the presence of comparatively advantageous conditions of infrastructure.

Strategic measures recommended for this purpose are as follows:

(i) The state should concentrate its efforts on the centres having priority mentioned above, increasing industrial facilities (chiefly power, water supplies and drainage, technical schools and administrative facilities) as well as making direct investments.

(ii) Industries installed in the centres and playing a part in the development programmes for the region concerned should have priority with regard to state credits.

(iii) Existing tax incentives should be revised in such a way as to provide discriminatory benefits substantially favouring these areas.

(iv) Parallel

(iv) Parallel with the development of the industrial centres, the establishment within agricultural areas (preferably those falling under the Agrarian Reform measures of plants for transforming, packing, preserving, etc., the products of the areas should be promoted.

6. Manpower training programmes

The entities responsible for training and developing industrial manpower are, in the private sector: SENATI, the Franco Peruvian Centre, the National Productivity Centre (CENIP), the Work Studies Centre of Peru, and the School of Technology of the Engineering University. Each of these is engaged in forming trained manpower for different levels of industrial activity. SENATI, which is financed by contributions from private enterprises, is the only one of these organizations which provides manpower training schemes continuously and in direct relation to the enterprises subsequently employing the personnel trained or sending their personnel to be trained. The others provide specialized instruction courses at the technical and professional level.

In the public sector there are: the Army Industrial Training Centre which trains recruits so as to qualify them to earn a useful living on leaving military service; and the industrial and artisan educational institutions run by the Ministry of Education.

There are 117 of these institutions for industrial and 88 for artisan instruction. A table appears below giving the number of pupils matriculated in them in 1965, by subjects of instruction. (See table 55.)

The graduates of these institutions subsequently themselves become instructors or work independently.

In recent years an average of 1,000 technicians has graduated from them every year.

The satisfactory volume of demand for trained workers for industry in 1980, taking as a basis a growth rate of 2.9 per cent a year and a replacement quota of 4 per cent is estimated at 72,000 trained workers, of which SENATI will train only about 10,000, having a deficit of 62,000.

/Table 55

Table 55

PERU: NUMBER OF PUPILS MATRICULATING IN THE STATE INSTITUTES OF INDUSTRIAL EDUCATION (FOR MEN) IN 1965, BY EDUCATIONAL LEVELS AND BY SUBJECTS OF INSTRUCTION

Subjects of instruction	Total	Day classes					Night classes a/
		Year (1)	Year (2)	Year (3)	Year (4)	Year (5)	
1965 Total	12 123	4 898	2 915	1 952	1 254	1 104	1 115
1. Motor vehicles	2 928	1 179	750	436	287	276	194
2. Carpentry	2 725	1 097	656	454	281	237	113
3. Electricity	2 398	893	589	409	290	217	251
4. General mechanics	2 396	846	541	445	290	274	175
5. Radio and television (Electronics)	1 110	593	261	130	69	57	280
6. Combustion engines	210	105	68	31	1	5	-
7. Typesetting	123	81	16	14	7	5	-
8. Printing, publishing and allied activities	107	41	19	23	13	11	-
9. Metal casting	84	43	11	8	7	15	33
10. Welding	42	20	4	2	9	7	69

Source: Ministry of Public Education - Department of Education Statistics.

a/ These figures are for the specialized training cycles.

/The estimated

The estimated demand for technicians working in the industrial sphere in 1980 is 21,800, but as by this period the state instruction centres will have produced 36,000 and the School of Technology 1,800, there will be a surplus of 16,000.

The demand for professionals in the industrial sphere for the same year is estimated at 11,000, to meet which 3,600 engineers and 12,600 other types of professionals are expected to be trained in fields relating to industry, thus producing a surplus of 5,200.

As has been said above, SENATI is financed mainly by contributions from private industrial enterprises, the system being that all enterprises having more than 20 workers contribute 1 per cent of the sums appearing in their wage sheets. The Franco-Peruvian Centre is financed under a co-operation agreement between the Peruvian and French governments.

The state and the remaining private institutions receive contributions from the State Budget, those of the latter being supplemented by supplies granted under international co-operation agreements.

SENATI is the sole institution directly connected to private industries and providing training specifically for their personnel. It is a private organization; it was created by law in 1961 and began to operate in July 1962. Its main object is to improve the qualifications of industrial manpower. It is financed by a special contribution of 1 per cent on the sums given in the wage sheets of all firms employing more than 20 workers. 80 per cent of this income must be spent in the regions from which it derives, but the rest is at the free disposal of the organization which can thus spend more in regions not yet extensively industrialized than the receipts from them. The main types of training falling within SENATI's sphere of activity are: (1) basic adult education; (2) apprentice training and short courses for training young persons for new jobs; (3) specialized training for raising the standards of workers and foremen already possessing jobs.

SENATI will in future train apprentices in its own centre (now being built on the outskirts of Lima) and provide general education courses (mainly in night classes), but its programme will put most emphasis on training within enterprises. For this purpose instructors will be trained

/in its

in its centre and in the National Instructors Training Institute (INFI) at Huancayo for work in individual enterprises where they will be expected to form internal training units. More than 70 potential instructors have received or are receiving this type of training abroad and a further 25 are now being trained at INFI.

SENATI estimated at the end of 1962 that its operations embraced some 1,200 or 1,300 firms, employing nearly 13,000 persons. At the moment it has no intention of including small-scale firms within its activities, although a considerable proportion of medium-scale factories will eventually benefit from them. For the moment also, being still in the stage of development, it is concentrating on the Lima-Callao area. This is apparently strictly temporary, but, although it is reported that it has completed plans for modifying its organization so as to cover firms of 15 to 20 workers, it may be some time before the provinces receive the full benefit of its activities.

7. Technical assistance for industry

There are some enterprises which, with foreign technical assistance, are operating with great efficiency and with the most modern methods - but at the private level. The assistance is usually paid for by agreements on production royalties.

The forms of technical assistance given to private industry by official institutions may be briefly listed as follows:

(a) Technical assistance in accounting and legal matters granted by the Industrial Bank of Peru. All credits granted by the Bank necessarily involve some degree of supervision. This carries with it forms of assistance which, though very inconsiderable from the technical point of view cover thoroughly enough the limited field involved - from a shortage of trained personnel, which the number and diversity of the cases involved makes it impossible to supply, the Bank cannot possibly provide full-scale technical assistance. Accounting assistance is designed to encourage industrialists to use accounting systems of costs based on regular stock-taking; the legal assistance is also important, particularly for small- and medium-scale entrepreneurs.

/(b) Technical

(b) Technical assistance provided by CENIP. The National Productivity Centre (CENIP), one of whose functions is defined as the diminution of costs of production, distribution and management, is doing valuable work in the field of technical assistance through its Advisory and Consulting Department. It is at the moment carrying out work of this kind in several industrial sectors simultaneously.

(c) Technical assistance provided by SENATI. The National Apprenticeship and Industrial Labour Service carries out training of industrial workers of all levels. From the time of its creation - December 1961 - it has been doing valuable work in the field of industrial training, through scholarships for workers to train abroad and through its training centres in the country. A national centre is now being built for it which will house the equipment needed for its different courses.

(d) Technical assistance provided by the National Engineering University. This provides assistance for industry through:

(i) The Textile Institute, which was founded in 1957 with the co-operation of North Carolina University and with economic aid from what was then called the International Co-operative Administration. It is run by the faculties of industrial engineering and mechanics and electricity and possesses modern equipment which may be used for carrying out tests on behalf of the textile industry as well as for teaching and research.

(ii) The Institute of Technology, which has the task of training technicians for intermediate level posts where they complete and integrate the work of industrial engineers. These are given over one year 7 months of practical training in industry and 5 months of study at the Institute.

(e) The National Institute of Industrial Technical Standards and Quality Control (INANTIC) was created by the Industrial Promotion Law to study and control technical standards with a view to promoting and co-ordinating the whole group of efforts tending towards improvement in the quality of products commonly bought, used, transformed, manufactured or sold.

INANTIC provides indirect technical assistance by establishing standards for norms and sizes, as well as quality and operational standards.

/(f) Technical

(f) Technical assistance provided by the National Institute of Industrial Promotion. This technical organization was created by the Industrial Promotion Law to develop industrial promotion programmes. Among its chief functions are those of carrying out research and making studies on the industrial resources of the country of preparing programmes properly co-ordinated with national economic policy for the industrial development of Peru on the basis of its own research and of previous studies, and of studying the present situation and future prospects of the economic development of the country.

In carrying out these tasks the Institute has itself operated under the guidance of a group of economists chosen by the Stanford Research Institute and working as part of the United States International Development Agency's aid programme. At present the Institute works in close co-ordination with the Industrial Bank.

(g) Technical assistance provided by other Peruvian universities. Other Peruvian universities such as the San Marcos University of Lima and the Universities of Trujillo and Cuzco provide a certain amount of technical assistance through their faculties of industrial engineering or industrial chemistry. But this involves no more than isolated cases and has no importance for Peruvian industry as a whole.

8. Technological research

Peru has achieved little in the field of technological research. This is due to present levels of industrial development, to the inadequate resources and shortages of trained staff of the research institutions, and to the easy availability of the results of research into all fields of industry carried out in more advanced countries. In spite of there being several institutions equipped for technological research, little has so far been done.8/ Lately, however, the universities have begun to be concerned over this.

8/ The National Institute of Industrial Promotion has as its main function research into and study of resources for industrial use, with a view to increasing scientific knowledge of these and improving their exploitation and use.

9. Part played by the industrial development organizations in providing basic services for industry

The results of the work done in this field do not have much importance within the total national supply of electric power or fuels, but it is undeniable that it is work of this type which has constituted the major achievement of some of the organizations. Thus, the Reconstruction and Development Corporation of Cuzco must chiefly pride itself on the building of the Machupichu Hydroelectric Power Station, whose power will mostly be used for the industrial development of the department. The Tacna Development Corporation has concentrated its labours on providing irrigation works combined with hydroelectric installations. The main work of the Department of Industries and Electricity has been the installation of electric generating stations in the provinces, which will partly be used for industrial production. The State Petroleum Enterprise through its crude petroleum production indirectly supplies a small proportion of industrial fuel requirements. Lastly, the Mining Bank of Peru may be mentioned; this in the past was active in promoting coal production by direct means and by credits. The results of this fell far short of expectation, but something was accomplished for that sector of industry which consumes nationally produced anthracite.

10. Treatment of foreign capital

The most important contributions of foreign capital to the industrial development of Peru have occurred as extensions of the exploitation of primary activities. Thus, the metallurgic installations of Oroya are no more than a single part of the assets of an enterprise primarily concerned with mining; the Talara refinery constitutes the industrial centre of a petroleum complex; the Paramonga pulp and paper factory is an extension of sugar manufacture and thus, in turn, is related to the cane cultivating activities of the same enterprise; meanwhile pulp production has resulted in the establishment of electrolytic production of caustic soda and this in a project, now being carried out, for production of polyvinyl chlorine resin.

There are, of course, exceptions, but much fewer than the cases to which the rule applies. Examples of these are: the establishment of pharmaceutical laboratories as branches of the great international

/enterprises of

enterprises of this sector, the creation of certain textile mills, particularly for cotton, and the installation of motor vehicle assembly plants, again as subsidiaries of some of the largest foreign companies.

During the last few years, however, foreign capital has entered primarily in the form of external credit granted by international organizations and private banks and, more especially, by supplies of industrial machinery, equipment and semi-products.

(a) Direct foreign investments

Direct investments of foreign capital in industry do not reach any great figure. It is estimated that they amount to 10.8 per cent of total investment in the manufacturing sector, which, compared with the equivalent proportions in other Latin American countries, is relatively small, in spite of the fact that in several of these foreign capital is subject to much harsher conditions than those obtaining in Peru. This shows that foreign investors, while naturally desiring a liberal economic régime, are primarily interested in the existence of a market capable of justifying their investment; and from this point of view the Peruvian market holds few attractions. The hope felt in some quarters that Peru might serve as a nucleus of attraction for foreign industrial capital intending gradually to introduce its production into the Free Trade Zone has also remained unfulfilled. Perhaps this purpose is better served by expansion or improvement of existing installations in more developed Latin American countries than by creation of new enterprises in a country which offers every kind of security against loss on the investment.

In the past foreign investment was applied only to particular industrial activity. But recently it has tended to act in association with national capital, obviously for the sake of greater stability.

In Peru the largest direct investments of foreign capital in industry are made in connexion with the fields of petroleum and non-ferrous metals. Electric power generation, in which it also plays a large part, is not here considered.

There is some foreign investment in other types of industry but this does not altogether exceed 14 per cent of the whole foreign investment in the industrial sector. This partly brings out the magnitude of the investment in petroleum (refining) and in metallurgic industry for non-ferrous metals, but also emphasizes the relative insignificance of the whole conjunction of the remaining sectors.

/There is

There is considerable scope for foreign capital in Peru, especially in relatively unexploited sectors such as the chemical and metal-transforming industries.

Foreign enterprises have no special legal status. They are subject to the standing legislation in the same way as their Peruvian counterparts. They need no special permission to establish themselves and are not required to provide securities for profits or interest sent abroad.

Foreign enterprises often suffer from the problem of double taxation; but this is the concern of the country of origin not of that in which they have established operations.

They are usually subsidiary to foreign firms. But there are cases of companies originating as independent enterprises in Peru and in the course of time, thanks to excellent returns on the sums invested in them, establishing their chief centre of operations in the country of origin of their owner or owners and then branching out into other Latin American countries.

In certain cases foreign investment has resulted from some special contact with the State. This was so, for example, in the case of copper production in the Toquepala metallurgic plant. Similarly, a contract involving special stimuli and privileges was granted to a well-known manufacturer of heavy road machinery for establishing operations in the Selva. This has produced no positive economic benefits for the country as from the point of view of foreign exchange revenues, as that made with the Southern Peru Mining Co., which mines the copper ores of Toquepala, Quellaveco and Cuajone and converts them into blister.

Foreign enterprises originally had the practise of reinvesting part of their profits within their own special sphere of activity. Their growth was largely, therefore, the effect of the development of their activities within the country. But lately there has been a trend towards balancing this vertical growth by horizontal expansion; the method chosen to achieve this is in many cases the formation of mixed enterprises in association with domestic capital, and entry into new activities related to the primary

/activity of

activity of the enterprise. This has been the case with the industries manufacturing copper electric cables and wires, explosive-proof bricks, alkalis, balls and protective plating for mills, and certain others.

Originally foreign capital established industries in Peru mainly with a view to export. Afterwards, however, the growth of the internal market and the establishment of tariff barriers made obvious the value of directing production towards internal demand. It is possible that but for the national market, several foreign enterprises could be unable to sell their products at all, since competition abroad has developed more rapidly than their own resources and methods and involves economies on a scale unfavourable to the costs and scales of production in Peru. Doubtless there are still exceptions to this, such as non-ferrous metals, fish meal and fish oil, but they are very few.

Foreign enterprises established in Peru have greatly changed their policies in the last few years. They have adapted themselves, or are in the process of doing so, to the new climate prevailing in the country and are attempting to integrate themselves as far as possible into the rest of the economy. The change also has a social aspect. These enterprises are now largely directed and managed by Peruvians. Their provisions for their workers have also become more comprehensive though it remains uncertain whether this has not been more the result of trade union activities than of a change of heart among the foreign owners.

The law requires that at least 80 per cent of the employees of any company be Peruvian, and the actual proportion is usually very much more.

There has also appeared a trend towards maximum possible use of national manufactures as the raw materials and semi-products in the manufacturing activities of foreign enterprises. This has a beneficial effect on the industrial development of the country, not only on account of the market thus created, but because these uses require standardization of industrial products, which tends to raise their quality.

VI. EXTERNAL ASSISTANCE FOR INDUSTRIAL DEVELOPMENT

1. Technical assistance

During the last two years technical assistance has been primarily supplied by the IDA (International Development Agency) in the form of technicians and experts working under contract in various fields connected with industry and as consultants for regional plans and programmes. These services have represented an approximate expenditure of over one million dollars and have operated mainly in aid of the technical development organizations and the institutions, such as INPI and CENIP, which make special studies of matters relating to industrial development. They have also provided advice for the regional development agencies set up by the development corporations.

Technical assistance has also been received from the technical organizations of the United States and from certain foreign governments, such as those of Japan, France, England, etc. This aid has taken the form of technicians contracted for short periods to make and advise on specific studies on fertilizers, industrializations of coal, electric power, sponge iron, hard fibres, etc.

Applications for technical assistance made by state organizations are co-ordinated by a special department of the National Planning Institute. They usually request emergency assistance at short notice and without preliminary planning of studies to result from it; this means that it is often difficult to make them fit in with the programmes and budgets of the organizations applied to, which generally make their plans on a long term basis.

2. Financial assistance

This subject has already been treated at some length in the section "Financing of industrial development". The following remarks are intended only to fill in the points made then.

External loans to the industrial sector amount to 18 per cent of the total of private and public credits contracted abroad. This percentage does not include suppliers credits (such as those granted to SOGESA by a German firm, for example).

/The largest

The largest sources of credit for industry are international institutions, such as the International Bank for Reconstruction and Development, the United States International Development Agency, the Inter-American Development Bank, the Export and Import Bank of Washington, the International Finance Corporation, the Kreditanstalt of Germany, and the Export and Import Bank of Japan. A certain number of the loans granted by those institutions have been arranged directly with industrial enterprises, but they now show a marked preference for carrying them out through the relevant bank organization of the country, that is, by establishing credit lines for the Industrial Bank of Peru. Besides thus making the Bank responsible for loans granted in this way, the guarantee of the State is required as a further security.

The amount of each transaction made by the Bank on the basis of these credit lines may not exceed 50 per cent of the total investment of the enterprise. Any deficit must be covered by the enterprise or from the resources of the Bank itself.

The use of the credit lines for refinancing is not permitted, so as to prevent the substitution of investment on the part of international bank or credit agencies for other types of loans. However, the industrial owners, being well acquainted with this rule, never place purchase orders for equipment without first securing their loan. This procedure gives them the further advantage of a discount for cash payment of their purchase.

The International Finance Corporation, which is affiliated to the International Bank for Reconstruction and Development, has carried out several transactions, mostly in the form of loans involving a share of the profits and the right to subscribe to the shares of the enterprise concerned.

The loans of the United States and Japanese Export and Import Banks are confined to financing for equipment or services purchased in their respective countries. Credit lines from the Eximbank of Washington are obtained with comparative ease but the procedures for the corresponding sub-loans tend to be lengthy. On the other hand sub-loan transactions with the International Bank for Reconstruction and Development or the

Inter-American Development Bank are rapidly executed and have the great advantage that they can be arranged with a large number of different countries indiscriminately. This freedom of choice enables the industrialist receiving a sub-loan to benefit from the competition of price and quality between countries able to supply equipment.

A large proportion of financial assistance for industry is channelled through the Industrial Bank of Peru, but there are also credit lines through private banks, as well as, particular agreements between private enterprises and international finance banks or institutions.

With regard to financial assistance entering through the Industrial Bank of Peru, it can be shown that beginning in 1962, when the Export and Import Bank of Washington's credit line for 2,500,000 dollars was renewed, the channelling of external credits towards industry for purchase of machinery, equipment and building materials and contracting services, all of American origin, has entered a new stage. This loan carries an interest of 5.75 per cent a year on a revolving credit basis. The operations may have their terms deferred to June 1969 and are subject to the specific condition that only credits of up to 100,000 dollars each may be granted on the sole authorization of the Industrial Bank, while those of greater sums must be expressly approved by Eximbank.

In the same year the Inter-American Development Bank approved a loan of 2,500,000 dollars for financing specific industrial projects in the private sector by providing credits for purchase of machinery and equipment from Europe, the United States, Japan and other countries. The term of the loan is 12 years and the interest 5.75 per cent a year on a revolving credit basis. Credits up to 200,000 dollars may be granted on the sole authorization of the Industrial Bank, why those above this sum, up to the limit of 500,000 dollars, must be expressly approved by the Inter-American Bank.

In 1963 loans to the sum of 17,500,000 dollars were obtained, most of which was for use in consolidating the financial position of the national fish industry. In 1964 the loans approved amounted to 24,500,000 and were largely for use in the fish and cotton textiles industries. In 1965 the amount was 33,550,000 dollars, of which

/14,000,000 dollars

14,000,000 dollars consisted of direct loans and 21,550,000 dollars of credit lines. Part of this total has been used in imports of capital goods and services and 1,000,000 dollars in financing exports of manufactures produced by Peruvian enterprises. A further large proportion was used again to consolidate the finances of fishing activity.

Suppliers credits are easy to obtain but involve onerous conditions, since they not only tend to add surcharges to the basic price of the product, but to carry, besides the interest for the supplier or insurance company representing him, a commission on the guarantee - always required in those cases - of an industrial or commercial bank of the purchasing country.

3. Other means of transfer of technology

As a result of the active research carried out in the great industrial centres, the contribution of foreign capital does not or should not, only take the form of total or partial financing for the projects which it launches. It is, or should be, a decisive factor in transfer of technology. In some cases this transfer is all that is needed for national capital, unaided except in this respect, to set up important operations on its own account.

Many manufacturing enterprises in Peru operate with foreign assistance, under their own or a foreign trademark. This arrangement is based on a royalty which in some cases consists of a fixed annual sum and in others of a percentage on the costs or profits of the enterprises. These royalties are taxed within the country at a rate of 16 per cent.

The results, from a technical point of view, of this sort of co-operation by foreign capital are truly eloquent. Peru has had several important projects ruined for waste of technical assistance, while those which have received foreign aid of this type have almost without exception been successful. In spite of the additional cost involved in the royalties the long term saving for the domestic enterprise is beyond doubt; moreover, the introduction of manufactured articles into the market is made considerably easier if they are supported by the prestige of an internationally reputed trademark.

VII. OTHER ASPECTS OF INDUSTRIAL DEVELOPMENT

In continuing the analysis of the institutional framework of industrial development below it is necessary to mention various factors which are none the less important for being placed last in the present discussion.

(a) The entrepreneur class

The industrial director class, of the sort which unceasingly seeks new markets and production lines and is therefore constantly engaged in projects for expanding, improving and diversifying installations, is not large in Peru. However, it may be unhesitatingly asserted that, while limited in numbers, it is energetic in its conduct of affairs. This combination of factors gives rise to the system, whereby the same persons are concerned in several of the most important industrial undertakings of the country at once.

This type of entrepreneur appeared in Peru more or less at the beginning of the 40's, and it is partly for this reason that several of the older sectors, such as traditional fibre textiles, tanning, footwear and wood, to mention only a few, are much less dynamic than, for instance, the chemical and metal-transforming industries.

The energy displayed by the entrepreneurs of the fish industry deserves special mention. They have started for the most part, on a modest scale, but thanks to the stimuli of a constantly growing market, to the enormous fish resources of the litoral, to persistant activity in making reinvestments, and to a daring policy in accepting bank and suppliers' credits, they have made the fish industry the most important industrial activity of the country.

Peruvian entrepreneurs have shown themselves receptive to industrial development stimuli.

(b) The working class

The Peruvian worker is potentially efficient. He lacks the necessary level of technical education and manual skill and needs to be taught a sense of responsibility, but is clever and quick to learn.

/In absolute

In absolute terms wage levels are low, but as productivity is also generally low the incidence of the former on production costs continues for a large number of industries to be considerable.

Owing to the annual growth in the numbers of manpower there is a large supply of labour; and since the number of jobs is limited, the process of industrial development being slow, the worker tends to defend the stability of his job, considering its possession his permanent right. Unfortunately this attitude is inconsistent with modernization and productivity increase. It has particularly serious effects in the textile industry where it is reinforced by one of the strongest workers' syndicates. In this sector many programmes for renewing equipment have failed as a result of the resistance of the workers to any reduction in their work loads. This fact may be mentioned as one of the main causes of the high production costs of textiles in Peru. The problem has no easy solution; only the achievement of a faster rate of industrial development with the corresponding increase in the number of jobs for the working classes can give any possibility of overcoming it absolutely.

To sum up: the attitude and situation of manpower has so far been unfavourable to the industrial development of Peru, as was seen above in the discussion of the development of the chemical industry. There exists the basis for forming an efficient labour force, but the training involved in the development of this basis requires time. Both private entreprise and the State have important parts to play in this matter, the forms through voluntary and compulsory contributions towards the maintenance of instruction and advanced training centres, and the latter through its policy for general and industrial education, which is now being fully carried out.

(c) Raw material resources

Peru is endowed with a reasonable variety of industrial raw materials. It is not a large supplier, except of some few natural resources. But it possesses a good many materials existing in quantities which, though generally two small to have much importance for the world raw materials market, are sufficient to supply domestic industry.

/It is

It is estimated that an average of 71.5 per cent of the raw materials and semi-products used in industry are of domestic origin. This percentage is high in comparison with those of other Latin American countries.

In some cases, however, an account of the small scales and, occasionally, great difficulties of production, extraction or manufacturing costs are high and the industrialist is forced to operate under the disadvantage of expensive raw materials.

It is also worth remarking that the industrialist sometimes has more difficulty in obtaining national than imported raw materials. Thus, the latter can be obtained in batches over the course of the financial year, care being taken to maintain at every amount a prudential reserve assuring the continuity of operations. In the case of the forms, however, since they generally consist of articles for which there is also an export market and this sometimes provides more attractive opportunities for the producers than the domestic market, the industrialist must assure his supply for the whole year - this is so with cotton and wool for example. This in certain situations can immovilize a large part of his working capital and more generally results in heavy interest charges from the banks or the exporter-producers themselves.

(d) Power resources

Electric power supplies are not a limiting factor for the industrial development of Peru. Nevertheless the supply for public use by private or state enterprises is not equally efficient throughout the country. This usually forces industries in the provinces to rely on their own generating stations which have a capacity limited to their own needs and, consequently, high running costs.

But the power sold by the enterprises producing for the public benefit is scarcely less expensive owing primarily to the relatively high incidence of their fixed assets on the limited quantities of power which they usually produce. The resulting price of power per kilowatt in Peru, whether generated by industrial enterprises for their own use or purchased form generating enterprises, has discouraged several projects such as for electro-chemical industries producing ferro-alloys, for which the country possesses raw materials in sufficient quantities and of excellent quality.

/To prevent

To prevent electric power supplies from limiting the industrial development of the country the Electric Industry Law, which sets up special incentives for the exploitation of this field by private enterprises, was introduced in 1955. The benefits resulting from the application of this law to the economy have already become apparent.

The situation as regards fuels is similarly unproblematic except in the case of coking coal, and some particularly of bituminous coal for producing high grade coke for iron and steel founding, for which no adequate deposits have yet been discovered.

The supply of liquid fuels, on the other hand, is satisfactory in spite of the fact that internal demand now absorbs practically the whole domestic production of crude petroleum and derivatives, tested and developed reserves ensure a normal supply of liquid fuels for several years; and this is apart from the possibility of discovering and developing new petroleum and domestic gas reserves for present fields of production in areas so far unprospected.

VIII. PERUVIAN INDUSTRY AND THE PROSPECTS OF LATIN AMERICAN INTEGRATION

In spite of the acknowledged need for Latin American integration and for industrial complementarity no concrete steps have yet been made in this field. The industrialists have sporadically engaged in various projects involving international co-operation, some of which have materialized, but there is no machinery for ensuring the continuity of such efforts. It may be said that the fishing industry has shown itself in this matter the most energetic of Peruvian factory activities and offers the best prospects of an active approach to this important problem. It has been from the start concerned primarily with export trade, and if it has been capable of gaining markets in North America, Europe and Asia, it is also capable of making an impact in the Free Trade Zone, especially if the market is opened to it by the lowered tariffs specified in the treaty.

The attitude of almost all the other sectors is cautious in the extreme. But anyone who has been successively present at the four negotiation sessions of ALALC will be able to confirm that this is by no means exclusive to Peruvian industrial entrepreneurs. It appears to an equal extent among the entrepreneurs of other countries, including those of the most industrially advanced of the region.

In the first negotiations the calculated average of the tariffs established by the treaty was reduced by the inclusion, in particular, of articles already forming the staple of commercial exchange (most of these being products which, previous to export, undergo a very small degree of manufacture). Trade in new industrial products is still meagre and, as the list of these articles is already practically exhausted, it has become necessary that the governments concerned make a political more providing further stimuli for new forms of trade, and that under this encouragement the forces of production converge towards a real integration of Latin America.

/Foreign capital

Foreign capital has not responded, by making larger investments in Peru, to the possibilities of new industrial undertakings opened to it by the Zone, and there are no grounds for believing that the other countries of the region have fared much better in this respect. Perhaps this is quite justly due to the great extent to which the Zone falls short of being a genuine regional market capable of assuring a sufficient demand for the productions of large-scale installations, which must have markets over several countries if they are to operate at full capacity. Perhaps it is also due to the fact that the investment opportunities provided by countries in other regions such as Western Europe or Canada still remain more profitable and seem to investors to involve less risks for foreign capital.

The domestic organizations acting as a central office for contacts between the domestic economy and ALALC is the Peruvian Free Trade Association, which is made up of representatives from both public and private sectors. The industrialists, represented by the National Society of Industries, also take part in discussions on lists of orders and supplies. Lastly, an ALALC department has been set up within the National Institute - an organization linked to the Industrial Bank of Peru - which is designed to provide technical assistance for industrialists and to look out for projects channelled through INPI or the Industrial Bank conceived on a regional rather than domestic basis.

So far the efforts made towards establishing new or extending existing industrial plants with the intention of gaining the markets of the Zone have been very slight.

The creation of the Free Trade Zone has had repercussions on the re-equipment of domestic industry. Many entrepreneurs, to defend themselves against, as they thought, the imminent competition of the more advanced countries of the Zone, stepped up their plans for reinvestment in modern machinery of larger capacity. This has been particularly apparent in the textile, pulp and paper, and edible fats and oils industries, and in some of the preserving industries. It is very difficult, however, to estimate to what extent this process is due to the influence of the establishment of the Zone and to what extent simply to internal competition.

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