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DEVELOPMENT OF THE PETROCHEMICAL INDUSTRY
IN URUGUAY^{1/}

by

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1. THE HISTORY OF INDUSTRIAL DEVELOPMENT IN URUGUAY

In 1950, a steady movement towards industrialization began in Uruguay as in several other Latin American countries. The emphasis was initially on activities directed towards meeting the basic needs of the population; it was thus that the food industries, the textile industries, the industries based on leather, and the industries related to building (Portland cement, clay materials etc.) came into being. The natural resources available naturally had a great influence on industrial development during this period.

The basic petrochemical industry does not exist in Uruguay. In order to give a general picture of the future prospects for this industrial sector and the factors hindering its development, it would seem useful briefly to describe the chemical and manufacturing industries related to the petrochemical industry by reason of the inputs used. For the purposes of this description, we shall adopt the classification of chemical products used by ECLA (Economic Commission for Latin America) in its various publications on the chemical and petrochemical industry in Latin America.

1.1 Plastic material and synthetic resins

Polyethylene, polystyrene and polyvinyl chloride are imported in the polymer state and produced by the injection method or by extrusion. The import figures for these three products in 1960 were 3,000 tonnes, 3,000 tonnes and 2,000 tonnes respectively.

A styrene polymerization plant for the manufacture of expandable polystyrene (AAS process), at the rate of 1,200 t/year has been set up but has not yet been produced. There is another project at the building stage with a capacity equal to that of the former plant, for the production of mouldable polystyrene.

The plasticizer industry supplies octyl, isocetyl and butyl phthalates and the adipates of the same origin, prepared from imported raw materials. Historic capacity is 2,000 t/year. The national industry requirements will soon be met by a new production, as a plant to produce 600 t/year from naphthalene has been established and is expected to be in operation at the end of this year.

In the field of thermoplastic and thermoplasts, there are various firms engaged in the production of general purpose formaldehyde, urea and for-

maldehyde and melamine and formaldehyde. The main raw materials for these industries are imported.

With regard to acrylic plastics, there is a capacity of 600 t/year for the polymerization of methyl methacrylate, which is moulded to give a wide range of articles (luminous signs, wind-screens and accessories for the automotive industry, orthopaedic arch supports, etc.).

Flexible polyurethane foam is produced from imported polyols and isocyanates. This industry is in the beginning stages, consumption being only 300 t/year.

1.2 The fertilizer industry

Imported rock phosphate is processed to obtain ordinary superphosphate. Uruguay's total capacity is 20,000 t/year expressed in P_2O_5 , distributed in two plants of equal dimensions. Nitrogenous and potassic fertilizers are imported, prepared according to formulae and granulated. The consumption of nitrogenous fertilizers expressed as nitrogen was 12,000 tonnes in 1968.

1.3 The synthetic detergent industry

Synthetic detergents for domestic use are produced from imported dodecylbenzene. This is sulphonated and neutralized in Uruguay. The sulphonation processes use sulphuric acid or sulphuric anhydride. In this way, 600 t/year of dodecylbenzene are processed.

Detergents and surface-active agents intended for industry are generally imported.

1.4 Synthetic fibres

Uruguay has a highly diversified textile industry with a wide range of high-quality production in the form of natural, artificial and synthetic fibres. This industry as a whole has an important place in the economic life of the country. Twenty per cent of the total value of exports comes from spinning and weaving. Synthetics occupy an important place in fibre consumption. In 1964, according to IFLA^{1/} these accounted for 6 per cent of the total (a higher percentage at that time than those recorded in Brazil, Chile and Peru). The consumption of synthetic fibres shows a marked upward tendency. The structure of textile production is characteristic of

1/ "La Industria Textil en América Latina", IV, Uruguay, 1964

the consumption of a country where purchasing power is high.

The polyamide fibres nylon-6 and nylon-66 are produced in Uruguay from imported raw materials. Two plants, each with a capacity of 420 t/year, produce continuous nylon-6 and nylon-66 fibre. Both factories are working at 100 percent and have projects for polymerization activities which have not yet materialized.

Synthetic staple fibres are not produced. Polyester and acrylic fibres are imported as such. The consumption figures for these types of fibre in 1968 were 600 t/year and 420 t/year respectively.

1.5 Rubber industry

The rubber is imported and processed in Uruguay. Imports of natural and synthetic rubber in 1968 amounted 1,145 tonnes and 1,190 tonnes respectively. The figures for synthetic rubber, broken down by type, were as follows:

styrene Butadiene rubber SBR	1,200 t
polyisoprene rubber	40 t
polybutadiene rubber	6 t
butyl rubber	122 t
neoprene rubber	85 t
polybutadiene acrylonitrile rubber	29 t

Rubber was used mainly in the manufacture of tyres and tubes for the automotive industry. 20,000 tyres a year are produced in Uruguay. About 10 per cent of this is normally exported to countries of the Area. --(The "Area" comprises those countries which have acceded to the Treaty.) It should be mentioned that 80 per cent of the imported tyre case from countries of the Area, Argentina, Brazil and Mexico were the suppliers.

In the coming years imports of stereoregular rubbers are expected partly to replace natural rubber and SBR.

1.6 The paint industry

The production of water-based paints using polyvinyl acetate is estimated at 400 t/year and the production of alkyl-based paints at 1,200 t/year. The polyvinyl acetate is imported. The alkyl resins are produced in Uruguay from pyridine succinate, which has been reported up to now, and synthetic alcohols.

This over-all survey allows the following general judgements to be made:

- The people in charge of commercial undertakings are obviously anxious to explore all fields where opportunities offer themselves.
- The import, output and consumption figures indicate the small size of the Uruguay market. Industrial planning with an eye to the regional market has not yet been attempted in Uruguay. The broadening of markets by means of machinery established by IATTA (Latin American Free Trade Association) has not given domestic industry sufficient stimulus or security to plan at the regional level. Evidence of this is provided by the phthalic anhydride plant with a capacity of 550 t/year set up by an international firm with ample technical and financial resources and considerable commercial experience.

2. FACTORS HINDERING THE DEVELOPMENT OF A PETROCHEMICAL INDUSTRY IN URUGUAY

2.1.1 Lack of natural resources

The lack of petroleum or natural gas resources is an obstacle. However, the experience of other countries (Europe and Japan) has shown that this obstacle can be surmounted at the present day as a result of the expansion and reduced cost of means of transport.

2.1.2 Market

The small size of the market presents a real difficulty under present international conditions. This, combined with the lack of natural resources, undoubtedly renders Uruguay less attractive to foreign private investors, in spite of the absence in Uruguay of institutional limitations on the free movement of capital. This is a serious point when it is borne in mind that, in many developing countries, the petrochemical industry has been initiated by international firms with adequate financial resources (which our countries lack), technology and experience in international trade.

In spite of the small market (Uruguay has only 2.7 million inhabitants), the high Gross National Product per capita and the unusually equitable distribution of income in comparison with the other Latin American countries result in Uruguay's having the highest figures for the importation of petrochemicals in Latin America, expressed in terms of dollars per inha-

bitant. In 1964, according to the report of the Study Group on the Petrochemical Industry submitted to LAFTA, Uruguay's trade balance showed a deficit of 1.5 million dollars with respect to other countries of the Area for products in this sector. In view of the fact that, at the time in question, trade within the area was very limited, the significance of petrochemical products for the national economy can be appreciated.

2.1.3 Monetary policy

The inflation in Uruguay, which caused a crisis two years ago, when it reached a maximum level of 137 per cent, has hindered the natural progress of the industrial sector, channelling financial resources towards real estate and speculative investments.

A policy of stabilization has now been introduced which may lead in the future to a restructuring of the financial system, traditionally directed towards meeting the needs of external trade, and the development of a system of medium-term and long-term credits for industrial activities.

2.1.4 Absence of a promotion policy specially designed for the petrochemical sector

The critical economic situation through which Uruguay is passing at the present time, its external indebtedness and the frontal attack being made on inflation have delayed policy-making by the Government in relation to this sector. Although there are various statutes in force on industrial promotion, no legal text has been drawn up to foster the development of the petrochemical industry specifically.

2.1.5 Technology

It need hardly be said that Uruguay lacks experience in petrochemicals. The great technological changes brought about within relatively short periods of time, with consequent dangers of obsolescence, undoubtedly hinder the development of this industry. There is a fear of the risk involved, a fear which is justified in view of the limited capital resources of Uruguay and the current attitudes of businessmen, who expect security of investment, being used to supplying a dome-

stic market protected by high tariffs. Some industrial entrepreneurs are now beginning to show signs of interest in exports.

2.2 External factors

2.2.1 Uruguay and its possibilities within IAFIA

Situated as it is between two countries with relatively large markets, Argentina and Brazil, with a tendency towards vertical integration of production and consequently towards self-sufficiency, Uruguay has only limited possibilities of penetrating these markets at the present time. There is no question as to the importance of an assured market when industries are being planned with economic capacities exceeding domestic consumption by a wide margin and consequently dependent on exports. This circumstance has been of significance in the creation of the "Andean Block" (Bloque de los Países Andinos). The Andean Sub-Regional Agreement, for the first time within IAFIA, has institutionalized the integration of the market of a number of countries. Unfortunately, Uruguay is separated from these countries by accidents of geography and has limited opportunities for success in the markets concerned in view of the cost of transport.

It has been rightly said that, if the policies adopted to promote integration were limited to the strictly commercial field, "the new investments encouraged by the expansion of markets would tend to be concentrated in the most highly industrialized areas, since the major incentive to investment is the existence of an industrial base providing the essential requisites for the development of manufacturing industry". In these circumstances, "the net result would be to institutionalize, within Latin America, a division of labour between the areas in the process of industrialization and other areas condemned to stagnation".^{1/}

To correct the present imbalance in the industrial development of the different countries, it is essential that effective instruments should be brought into being for distributing the aims set forth in resolutions 62 (II), 74 (III), 71 (III), and 100 (IV) of the Conference of

^{1/} "Bases económicas y políticas para el Mercado Común Latinoamericano", Felipe Herrera. Provisional translation from Spanish.

LAMTA, its governing body - resolutions to the effect that the benefits of integration must be fairly distributed among all the countries concerned.

3. FUTURE PROSPECTS

If the evolution of regional integration towards the establishment of a common market takes into account the need for balanced industrial development achieved through programming and planning at the regional level, Uruguay may hope to see a petrochemical project established in its territory which would enable it to correct its trade balance within the area. Uruguay can point to factors favouring this type of development, of which the following may be mentioned.

3.1 Infrastructure

Uruguay possesses the best port on the Rio de la Plata. It has 1,240km of navigable rivers, several ports on the river Uruguay giving access to Argentina and through network of roads covering more than 38,000km and connecting Uruguay with the south of Brazil.

Electricity generating capacity has provided reliable support for industrial development. The existing capacity of 400MW. will be increased in 1970 and in 1973 by the construction of two new thermal power stations each of 300MW. It is planned to invite tenders for a hydroelectric plant of 270MW capacity to begin operations in 1975.

3.2 Industrial development

Uruguay has achieved a notable degree of industrial development taking into account limitations of area and market. This is indicated by the annual per capita consumption of energy expressed in kilotonnes of petroleum and the consumption of electricity in kilowatt-hours. In order to give an over-all picture, the relevant figures for a number of Latin American countries are provided below.

<u>Country</u>	<u>Consumption of energy expressed in kg of petroleum</u>	<u>Consumption of electricity in kwh</u>
Argentina	1,060	725
Brazil	356	396
Bolivia	167	136
Paraguay	94	48
Uruguay	872	740
Latin America	580	453

Source: Inter-American Development Bank (IDB). For sectoral data for the regional Electricity Interconnection Committee, the Latin American State Oil Companies Mutual Aid Association and the United States (Statistical Bulletin).

3.3 Human resources

The literacy rate is 90.3 per cent. School attendance rates at the primary, secondary and higher levels are among the highest in Latin America and approach those prevailing in the most developed countries. The high literacy rate is attributable to a system of free and compulsory primary and secondary education. Higher education and vocational training, which are also free, have expanded greatly in recent decades. It is possible that the teaching has the defect of being unduly theoretical, but in view of the characteristics of modern industry in regard to mechanization and standardization the high levels of education reached enable the Uruguayan work force to adjust rapidly to the demands of the industrial process.

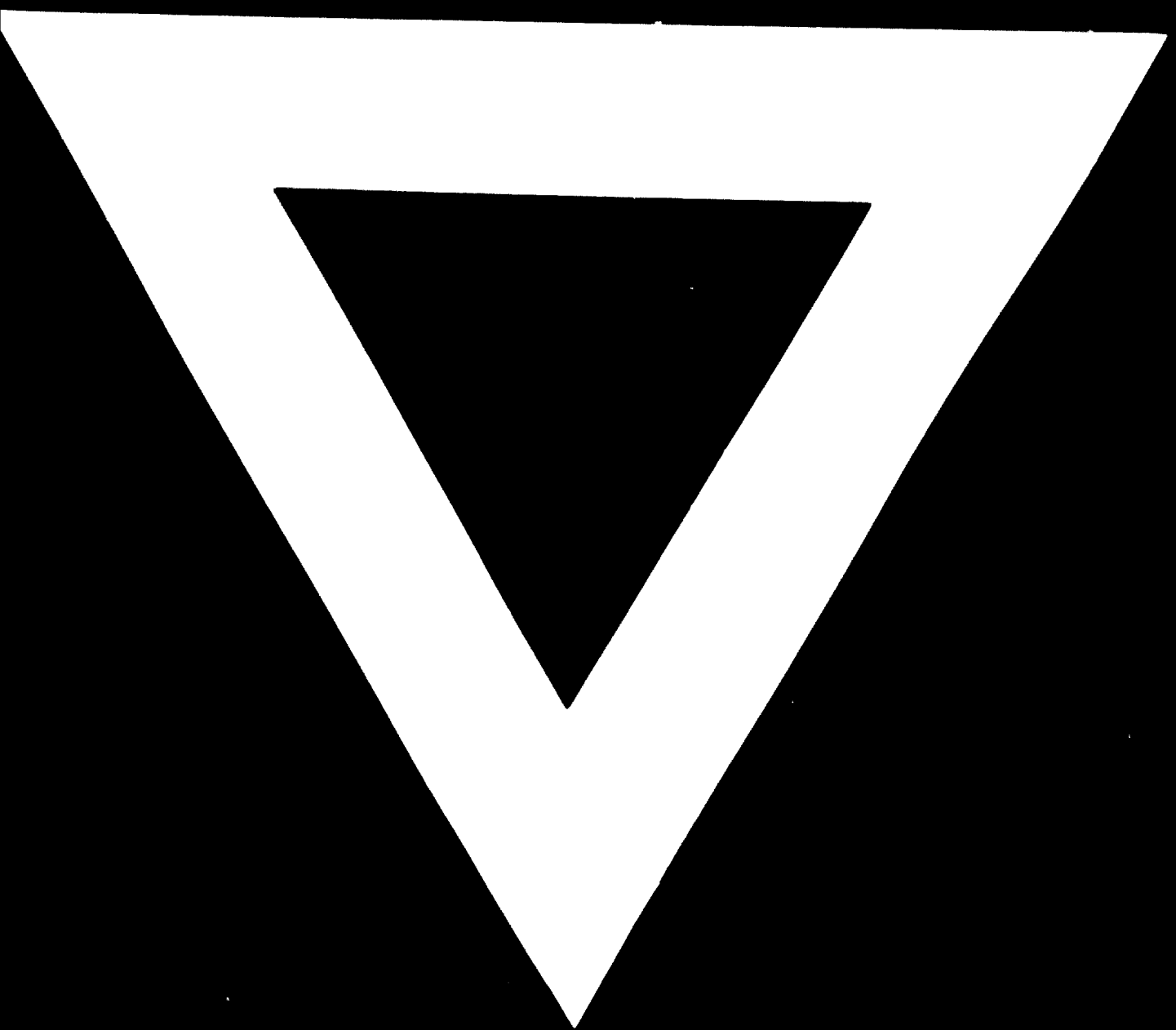
4. CONCLUSIONS

The above remarks show the situation of Uruguay both as an isolated unit and as an entity integrated with the rest of the Latin American region. The critical factors from the point of view of the development of the petrochemical industry in Uruguay are the reduced size of the market, the possibilities of obtaining financing in the present economic situation, and the acquisition of technology.

Uruguay regards the development of a petrochemical industry as necessary in view of the fact that full advantage has already been taken of the possibilities of expansion in other fields and that imports of petrochemical products have an appreciable effect on the national economy at the present time, with the prospect of an increase in the future.

Any advisory assistance from the United Nations which would help us to overcome the present difficulties would be welcome.





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