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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail. The text notes that any discrepancies or errors in the records can lead to significant complications during an audit and may result in the disallowance of certain expenses.

2. The second part of the document outlines the specific procedures that must be followed when recording transactions. It details the requirements for proper documentation, including the need for original receipts and invoices, and the importance of ensuring that all entries are supported by appropriate evidence. The text also discusses the need for regular reconciliations and the timely review of the records to identify and correct any errors as soon as possible.

3. The third part of the document addresses the issue of the classification of expenses. It explains that expenses must be properly categorized according to the applicable accounting standards and the nature of the activity. The text provides guidance on how to distinguish between different types of expenses, such as capital expenditures and operating expenses, and discusses the implications of misclassification for the financial statements.

4. The final part of the document concludes by reiterating the importance of adherence to these guidelines. It states that strict compliance with the prescribed procedures is essential for the preparation of reliable financial statements and for the successful completion of an audit. The text encourages the reader to seek professional advice if there are any uncertainties regarding the proper treatment of any particular transaction.



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of Industrial Estates in Developing Countries

Vienna, Austria, 13 - 16 December 1976

EVALUATION REPORT ON INDUSTRIAL ESTATES NO. 2 ;

OURA. 1/

by

F.G. Helm  
Consultant

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## Introduction

The following report was prepared on behalf of the United Nations Industrial Development Organization, Vienna, by:-

- Mr. J. Levitsky, UNIDO Staff Member of the Institutional Infrastructure Section, responsible for directing the study, and
- Mr. F. C. Helm, FRG, Consultant,

as part of a SIDA-financed study for the evaluation of the role and effect of industrial estates in the promotion of small and medium industry development. The Republic of Cuba was included in the group of six developing countries surveyed during the first phase of the study at the proposal of SIDA in order to have a means of comparison with a socialist country working under a system of central planning.

The mission arrived in Cuba on February 21st, 1976, and remained until March 7th, 1976.<sup>1)</sup> During this time, the team visited Havana and the Oriente Province, in particular Holguin and surrounding areas.<sup>2)</sup> The mission was assisted by the Cuban Ministry for Industrial Development which had prepared a programme of visits and meetings with the various institutions concerned and had arranged the field trip to the east of the island.

After debriefing in Vienna, the report was written by the consultant between March 10th and March 25th, 1976.

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1) Mr. Levitsky participated six days in the field survey.

2) See: Appendix I

Considering that the Cuban example differs in many respects considerably from other countries surveyed in this study, it was thought necessary to provide some background notes on the structure and situation of the Cuban economy.

## CHAPTER I : SOME BACKGROUND NOTES ON CUBA

### 1.1 General Information

The Republic of Cuba is formed by the island of Cuba, the island Isla de Pinos and some 1600 smaller isles. The total surface measures 110,992 square kilometers. It has a tropical climate with an annual mean temperature of 25.4° Centigrades and a high level of humidity which never falls below 60%.

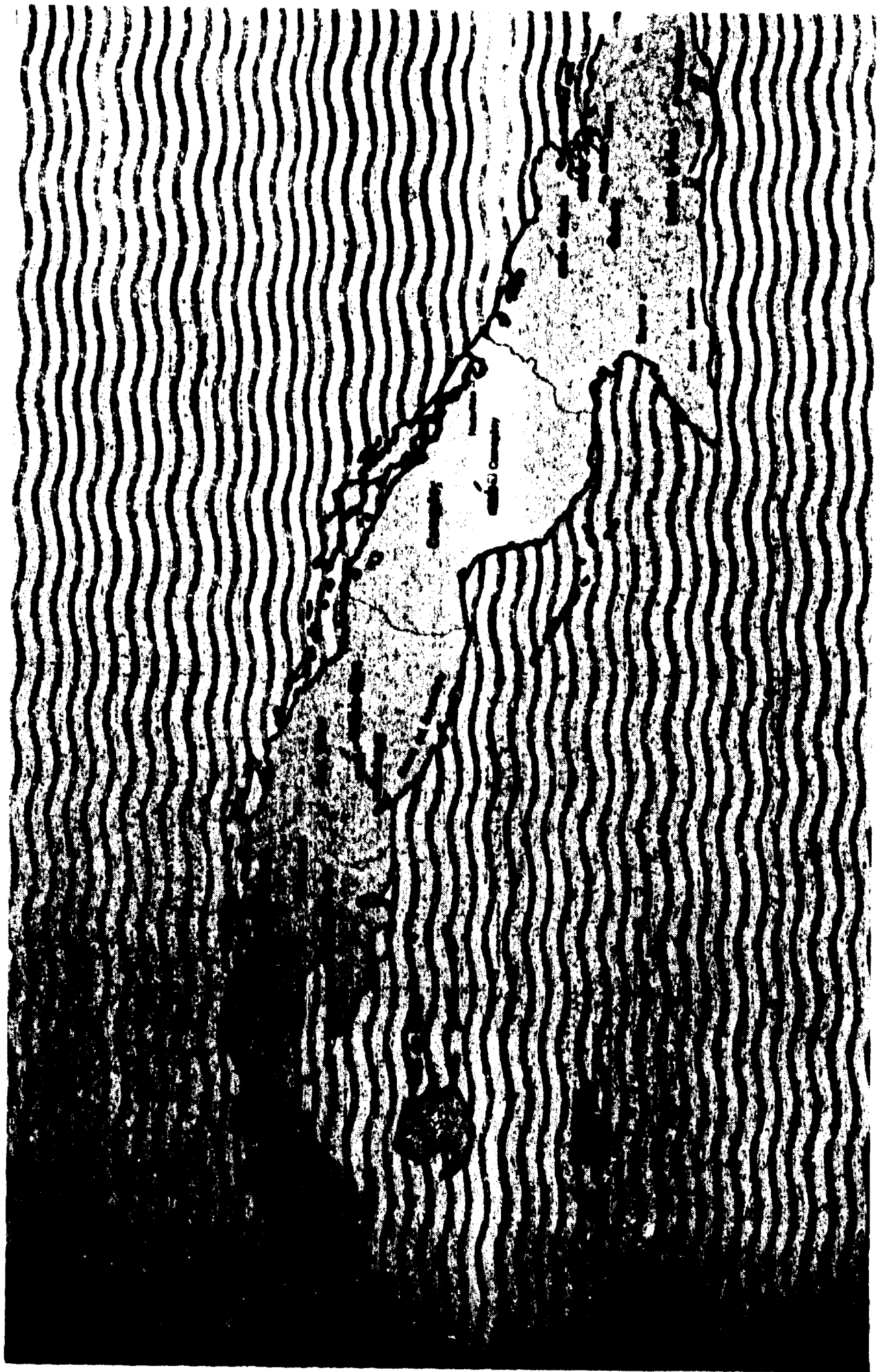
The main natural resources of the country are in agriculture (sugar cane, tobacco, citric fruits, coffee, cattle, etc.) and mining (including one of the world's greatest deposit of nickel - further: iron ore, cobalt, chrome, magnesium, kaolin, etc.).

### 1.2 Population and Employment

The population of Cuba at the end of 1975 was estimated to be 9.4 Mill. inhabitants. <sup>1)</sup> The real growth rate of the last years was given with 1.5%. The structure of the population shows a comparatively young society; more than 30% of all Cubans are below the age of 15. <sup>2)</sup> The cause for this development can probably be found in the extraordinary advance in health standards over the last 15 years whereby infantile mortality has dropped from a figure of 33.4 per thousand in 1958 to just over 27 in 1974. Undoubtedly, a further contributory factor has been the emigration of about a million Cubans after the change of regime, most of whom were in the adult age group.

1) The last (1970) census puts the figure at 8.5 Mill.

2) A 1973 estimate gives the figures as 37% for the age group below 15 and 46% for those below 20 years of age.



More than 20% of the present population is concentrated in Havana.

Since 1971 Cuba has had full employment. The total number of men and women of working age is estimated with about 4.5 Million of which approx. 50% are incorporated in the production process - the 1972 statistics give this figure as 2,125,000. The difference is made up by students, armed forces, disabled and housewives. Only 30% of the female population of working age - despite strong efforts by the Government in promoting female labour - is economically active.

Although there have been important advances in industrial development, Cuba remains primarily an agricultural country, with a majority of the population - according to 1973 estimates 36% - deriving their livelihood from agriculture. Second place is taken by employment in industry with 22% in 1973 <sup>1)</sup> - in 1974 the percentage is supposed to have increased to 27% - a fifth of which, about 90,000, are engaged in the sugar industry.

### 1.3 Organization of the Economy

The Republic of Cuba is a socialist state which operates on a basis formed by a conjunction of government departments and state enterprises. The means of production of these entities are social property. Private enterprise is not encouraged either in industry or in commerce. A certain remainder of private property exists in agriculture where about 30% of arable land is still privately owned by smallholders. They are, however, limited in the extent of land they can own and subject to controls in that they are not permitted to employ workers outside their own extended family, and are required to market their products through state corporations.

1) A 1972 figure is 21% or 438,500 workers.



All economic activity is centrally planned. The responsible body is the National Planning Board JUCEPLAN (Junta Nacional de Planificación). Up to 1975, its goals and directives were established on an annual basis but as from 1976 short-term planning has been reinforced by a medium-term projection comprising a five year period (1976-1980).

The administrative division of Cuba has been changed recently in the course of the new constitution introduced by referendum in January this year. The number of provinces has been increased from 6 to 14 abolishing the former sub-division into regions. At the same time, the provinces received a higher degree of autonomy through the constitutions of provincial assemblies (poder popular).

On the whole, the organization of the Cuban economy is at present in a period of transition which will probably result in a greater institutionalization and systematization of many, so far informal procedures.

#### 1.4 The Situation of the Cuban Economy

The development of the Cuban economy during the last five years is considered to be satisfactory. During 1970 to 1974 the Gross Social Product <sup>1)</sup> could be increased at an annual average of 12% or 8%, respectively, taking constant (=1965) prices. On the basis of 1974 figures, the main contributions have come from the following sectors:-

---

1) Due to differences in the system of National Accounts (sistema de producto material) the Gross Social Product does not directly correspond to the GNP

Sector	Mill. Pesos	%
Total	13 149,0	100
Industry (incl. sugar)	5 395,6	41
Commerce	4 318,1	33
Agriculture	1 217,9	9
Construction	1 173,2	9 <sup>1)</sup>

Within the industrial sector expansion has been especially strong in the production of construction materials - as a result of the rapid growth of building activities (see footnote) - metalurgical and mechanic industries, wood industry and textile and leather:-

#### INDUSTRIAL PRODUCTION 1970 AND 1974

(in Million Pesos at constant 1965 prices)

sector	1970	1974	in% of 1974 total	growth rate
TOTAL	4000	5396	100	7.7%
Sugar Ind.	704	618	11.5	- 3.2%
Mining Ind.	70	77	1.4	2.3%
Construction Materials	102	293	5.4	30.1%
Metal. & mechanic Ind.	222	524	9.7	23.8%
Petroleum & derivates	318	397	7.4	5.7%
Chemical Ind.	460	624	11.6	7.9%
Textile & Leather	323	521	9.7	12.7%
Food Stuffs	1031	1300	24.1	6.0%
Dev. & Tobacco	396	476	9.0	4.7%
Electric Ener.	122	150	3.0	5.3%
Wood Products	60	109	2.0	16.3%
Graphical Ind.	57	62	1.1	2.0%
Others	135	246	4.6	16.2%

1) The rythm of growth has been especially accentuated in this sector averaging 34% per year.

### 1.5 Economic Policy and Industrial Development Strategy

Even though the new Five-Year-Plan 1976-1980 has not yet been published, the following priorities seem to have been established:-

- (a) whilst during the past decade the main effort had been directed towards the creation of an adequate physical and social infrastructure and at the intensification and modernization of agriculture, the future development will have its principal focus on industry;
- (b) within the industrial sector special emphasis has been put on agro-industries providing agricultural machinery, implements and other inputs, construction materials and, increasingly, also consumer goods in order to provide an improved supply for the growing purchasing power of the population. An autonomous priority has been assigned to the expansion and improvement of the metal-mechanic industry.

The main constraints on development are considered to be the shortage of labour, especially of skilled technicians, limitations in construction capacities, the availability of foreign exchange (or rather the increase in foreign debt) and the strained organizational capacity.

The strategy pursued in the implementation of industrial development has two principal features:-

- (a) the decentralization of industry (away from the congested metropolitan area of Havana) and its even distribution over the 14 provinces with perhaps a slight priority for the provinces of the Oriente;

- (b) a far reaching mechanization and automatization of the production process in order to counteract the increasing shortage of labour,

The latter preoccupation has created a tendency towards large plants which due to their scale allow the introduction of modern production techniques and a high level of mechanization. This tendency towards the concentration of production has imposed limitations on the depth to which decentralization of industry can be pursued.

As a consequence, the geographic distribution of industrial development is - and will be - limited to a few selected development poles! Starting from the west, these are:-

- (1) Pinar del Rio
- (2) The coastal area between Havana and Mariel
- (3) Matanza
- (4) the axis Cienfuegos - Santa Clara
- (5) Camaguey
- (6) Holguin (with Moa and Nicaro as centres for the nickel industry)
- (7) a 10 km coastal strip along the Bay of Nipe (a future development)
- (8) the coastal area between Santiago and Guantanamo.

The development outside this pattern is limited to the sugar industry - with 152 sugar mills and a steadily increasing number of secondary plants for the processing of derivatives distributed throughout the country - certain agro-industries and light industry of only local significance.

### 1.6 The Role of Small-scale Industry in Cuba

As a consequence of the economic structure and the development strategy pursued, it is understandable that small-scale industry - and its promotion - has practically no meaning in this country.

When planning the size of a new production unit the decisive factor is the endeavour to come to economics of scale within the given national production target and to apply the most modern production techniques and technology available - and applicable in Cuba - and thus reach high levels of productivity. It is within keeping of this strategy that the small enterprises existing prior to 1959 in the industrial sector have all been merged into larger units.<sup>1)</sup> It was expressed, however, that in these cases the motive for merger was not only to attain a higher efficiency in the production process but also to create better working conditions for the employed.

1) The following plants visited by the consultant may be considered as typical examples for the process of horizontal integration of smaller production units:-

- (1) the garment factory "Taller Lydia Doce", Holguin, employing 360, was formed 1966 merging eight formerly private small enterprises;
- (2) the shoe factory "Comandante Manuel Fajardo", Guanabacoa, employing over 1000 workers, was formed 1965 merging 14 shoe production centres in which 1959 more than 100 small private workshops had been concentrated (it is estimated that the 8 factories existing in shoe production have been formed on the basis of about 1200 formerly small private producers);
- (3) the plant for plastic products "La Habana", Havana, employing 850, was formed 1962 by a merger of six small-scale, formerly privately owned industrial enterprises.

Smaller production units exist still in activities which require a close proximity to the consumer (bakeries, ice factories, etc.) or where either a reduced demand or limited supply of raw material does not justify production on a larger scale.

The result is that the role of small-scale industry in Cuba is completely insignificant and thus considered to be a kind of last resort if a production problem cannot be resolved in a different manner.

It reflects the insignificance of the sector that there is no official - or unofficial <sup>1)</sup> - classification or definition of what might be considered small-scale industry. Consequently, there are also no separate statistics kept regarding small-scale industries.

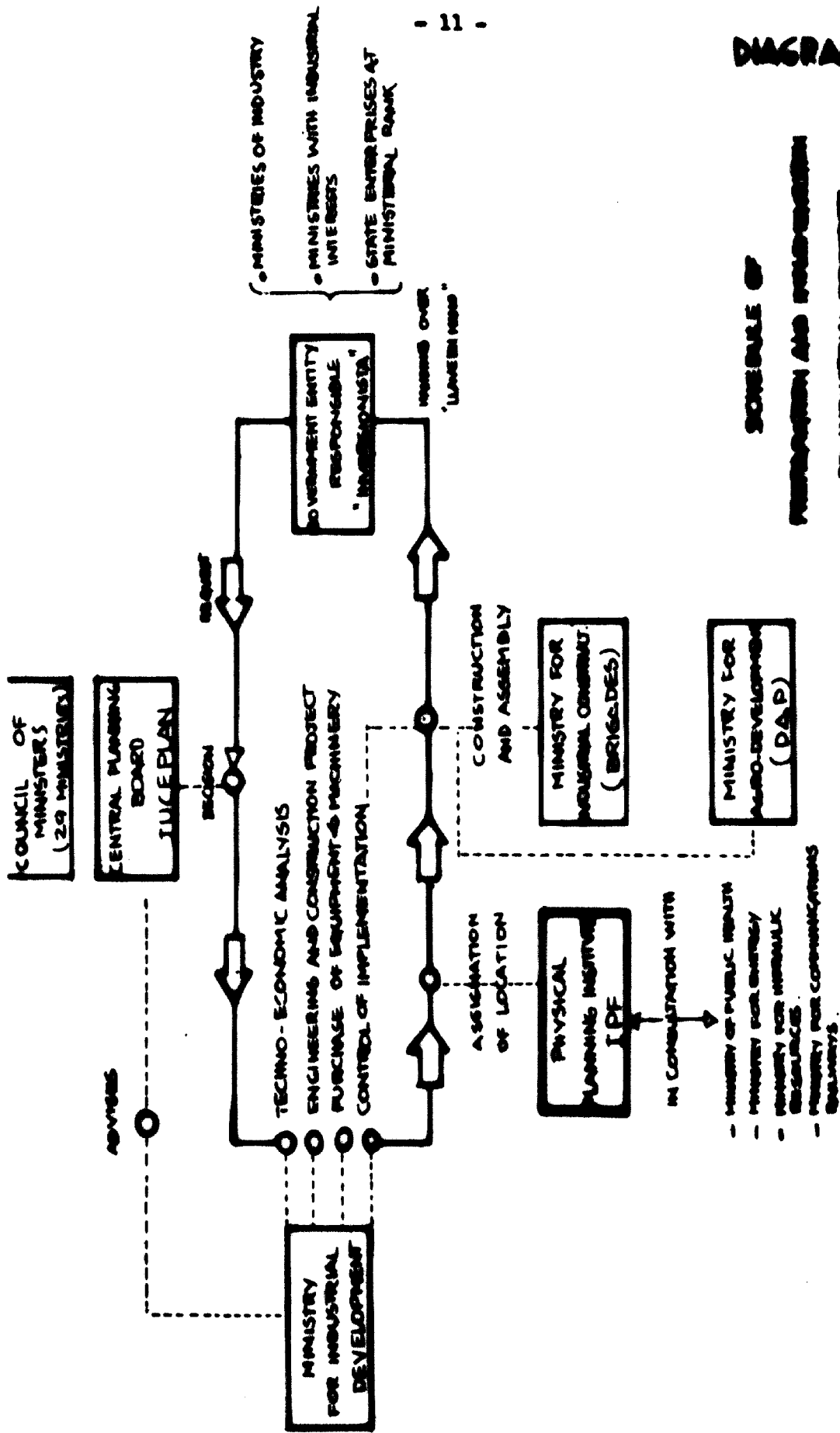
#### 1.7 Preparation and Implementation of Industrial Projects

As in other socialist countries industrial plants are set up and operated by state owned enterprises which, in the case of Cuba, may form part of:-

- (i) Ministries of the industrial sector, i.e.  
Ministry of Sugar Industry, M. of Construction Materials, M. of Light Industries, M. of Food Industries, M. of Basic Industries, M. of Mining, Fuel and Metallurgical Industries;
- (ii) Ministries of other sectors with industrial interests, e.g.
  - Ministry of Public Health (Pharmaceutical Ind.)
  - Ministry of Communications (Electronic Ind.)
  - Ministry of Education (Sport Articles) etc.
- (iii) other entities in ministerial rank, e.g.  
the Empresa Cubana del Tabaco, Instituto Cubano de Petróleo, etc.

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1) Several officials of the industrial sector when asked to define small industry within the context of the Cuban economy indicated that an employment of less than 50 might probably be qualified as small.



**DIAGRAM I**

**SCHEDULE OF PARTICIPATION AND RESPONSIBILITY OF INDUSTRIAL PROJECTS**

Any new industrial project and, to a certain degree, also major amplifications of existing plants have to be submitted by the responsible ministry to the National Planning Board (JUCEPLAN) for approval which then decides about the desirability and priority of the project. <sup>1)</sup> The principal criteria for this decision are the conformity with the economic goals established in the development plan, the available construction capacity and foreign exchange - if the project includes an import component.

Once the project has been approved by JUCEPLAN in principle it becomes subject to a rigorous techno-economic analysis (feasibility of the project and adequacy of the proposed technology) by the Ministry for Industrial Development. The Ministry also projects the necessary civil engineering and construction work, <sup>2)</sup> and arranges for the purchase of machinery, equipment or complete plants abroad. The Minister appoints for each of the projects a specific project manager who is responsible for the execution of the necessary studies, coordination with other ministries, and the supervision of project implementation until the plant is ready for normal operation. (See also Note on Ministry of Industrial Development: Appendix II)

The institution responsible for the location of industrial plants is the Institute for Physical Planning (IPP) which forms part of the "Sector de Construcción". <sup>3)</sup>

- 1) The request is usually accompanied by a project study (anteproyecto) and a request for allotment of an appropriate building site stating the size, utilities and communications required.
- 2) The Ministry also can provide assistance to those government departments lacking the facilities to prepare project studies.
- 3) This grouping of Ministries responds to one of the nine vice-premiers and includes apart from the IPP, the Ministry for Industrial Construction, Ministry for Social and Agricultural Construction, the Ministry for Public Works (DAP).



**FUNCTIONS OF  
PHYSICAL PLANNING INSTITUTE  
INSTITUTO DE PLANIFICACION FISICA  
(IPF)**

**NATIONAL HEAD  
OFFICE  
DIRECCION NACIONAL**

- PLAN NACIONAL, IN PARTICULAR ALSO  
MACRO-LOCATION OF INDUSTRIES  
IN CLOSE COORDINATION WITH JUCEPLAN
- INVENTORY OF LAND USE
- TECHNICAL ASSISTANCE TO  
PROVINCIAL IPF BRANCHES IN
  1. REGIONAL PLANNING
  2. TOWN PLANNING
  3. SPECIALIST SERVICES (RAILWAY, HIDRAULICS  
ELECTRICITY ETC.)
- ELABORATION OF STANDARDS FOR PHYSICAL  
PLANNING
- REVISION AND APPROVAL OF PLANS  
WORKED OUT BY BRANCH OFFICE
- COORDINATION WITH OTHER INSTITUTIONS  
CONCERNED

**PROVINCIAL  
BRANCH OFFICE  
DIRECCION PROVINCIAL**

- REGIONAL PLANNING, IN PARTICULAR ALSO  
MACRO LOCATION OF INDUSTRIES WITH ONLY  
PROVINCIAL OR MUNICIPAL IMPORTANCE
- TOWN PLANNING AND ZONING  
(PLAN DIRECTOR), IN PARTICULAR ALSO  
THE MICRO-LOCATION OF INDUSTRIES  
AND THE PLANNING OF INDUSTRIAL ZONES

THE INSTITUTE EMPLOYS ABOUT 200 ENGINEERS AND ARCHITECTS AT HIS HEAD OFFICE AND PROVINCIAL  
BRANCHES

The IPF, in close cooperation with JUCEPLAN, selects macro- and micro-location down to the actual building site. <sup>1)</sup> However, the Ministry of Public Health has the right to veto any chosen location. In order to facilitate the coordination of the various interests existing regarding the location of industries the Government, in 1964, set up the "Comisión Nacional de Micro-Ubicación" in which the IPF, JUCEPLAN, the Ministry of Public Health, Ministry for Hydraulic Resources, the Ministry of Energy, Railways, etc. are represented. The location of all industrial projects of:-

- (a) tipo A (of national importance) and
- (b) tipo programa (repetitive investments)

has to be approved by this commission.

Apart from the location of individual plants, the IPF is also responsible for the overall planning including town planning and zonification, thus also for the creation of industrial zones.

In practice, the IPF usually proposes two or three alternative locations for the "inversionista" to choose from. The allocation of the building site takes the form of a simple administrative act. The underlying legal construction supposes that the state enterprise responsible for the plant receives the usufructo of the site whilst the plant remains in operation. <sup>2)</sup>

The implementation of the project is the task of the Ministry of Industrial Construction which through its building brigades carries out the

- 1) In the case of large industrial complexes, the Council of Ministers might reserve the right of determining the macro-location.
- 2) In practice, this question is only of theoretical importance considering that there is no hypothecation for bank loans.

required civil engineering and construction works, assembles and sets up machinery and equipment, and carries out trial runs. 1)

## CHAPTER II : THE ROLE OF INDUSTRIAL ESTATES IN CUBA

### 2.1 General Policy

Industrial estates as known in Western and in certain developing countries in the sense of a tract of land with infrastructure and services prepared as to attract investment in industrial production, have no meaning in Cuba. As all industrial activity is planned and state operated, there is no room for individual entrepreneurship and, thus, no need for promotional measures. However, the problem of providing suitable infrastructure and services for the location of industrial plants remains:

In an attempt to find an adequate solution for this problem, planners in Cuba have adopted two measures:-

- (i) the creation of industrial zones in the areas identified as development poles;
- (ii) the concentration of industrial production by means of vertical and, in parts also, horizontal integration in compact areas to form "complejos" or "combinados". 2)

Whilst the latter represents usually a homogeneous and compact planning units on the basis of a common infrastructure and services, the industrial zones differ in their content regarding the depth of detail in planning, the provision of infrastructure and the degree of integration of the individual plant. There is some evidence that in future more attention will

- 
- 1) If the implementation of the project requires larger infrastructural works, these might have to be carried out by the Ministry of Public Works (DAP) though, in practice, there seems to be considerable flexibility in the division of work between DAP and Ind. Construction.
  - 2) These might in turn form part of an industrial zone.

be put by IPP on these aspects. At present, plans are under consideration to come to a "lotificación" of industrial zones, i.e. the division into individual sites, before 1980.

## 2.2 Objectives

As already indicated, the objectives in establishing industrial estates or zones in Cuba are merely expediency and efficiency in the physical planning of industrial location providing:-

- (a) an economical way to create the required infrastructure for the establishment of industrial plants, and
- (b) an appropriate measure to cope with a variety of ecological problems and thus to improve the quality of human life.

The provision of common services is apparently not an objective but rather a by-product of this geographical concentration of industry.

Due to the fact that industrial development is a new feature in most of the provinces where industrial zones have been established, the relocation of industry is of minor importance as an objective with the probable exception of the City of Havana which in some districts - especially the port area - are suffering from serious pollution problems.

As mentioned before, there is no promotional content in the objectives of the Government in implementing these measures.

## 2.3 Incentives

Considering that the IPP does not have to attract industrial plants to the planned industrial zones but rather directs them to assigned locations, incentives have no significance and are not considered of granted.

## 2.4 Physical Features

The industrial zones are usually established within close proximity to urban areas though sufficient care is taken to separate them in a way that avoids pollution of adjoining residential districts. It seems to be a particular feature of industrial zones in Cuba that apparently more care is taken to ensure in their planning the proximity of workers' housing and of adequate transport facilities than in the case of many industrial estates in other countries.

The location of industrial complexes - as long as they are not integrated in one of the industrial zones - is frequently oriented by its source of supply of raw material, .i.e. sugar mills, zones of agricultural production, mines, etc..

In the planning of industrial zones and complexes, the IPP and the Ministry of Industrial Development have shown, in the past, a rather generous attitude as far as the use of land is concerned. The planning standard which is supposed to be a relation of 6 to four between built-up and free-area <sup>1)</sup> seems to have been frequently surpassed in favour of the latter.

The infrastructural development of industrial zones is usually limited to the very basics, i.e. principal roads, water mains, main power lines and main sewer, details are then added on an ad hoc basis in accordance to occupancy. Ready made sites for immediate occupancy are still a development of the future but also - considering the synchronisation of planning not a major necessity.

Standard factory buildings are not part of the development of industrial zones or complexes. However, there exists a considerable degree of standardisation in industrial construction within the zone which is promoted by the following factors: -

1) including internal roads

- (a) the elaboration of all building plans and blueprints is in charge of the architects of the Ministry for Industrial Development who employ, almost exclusively, a 6 m by 2.5 m standard module or its multiple with gabled roof<sup>1)</sup> and standard designs for bathrooms, toilets, canteens, central kitchens and social facilities;
- (b) the increasing use of pre-fabricated building elements in industrial construction which grew from 6,300 cubic meters in 1970 to 46,400 cubic meters in 1974, i.e. at an average growth rate of 64% per year<sup>2)</sup>.
- (c) the construction of all industrial plants within one particular industrial zone or complex by the same "construction firm", i.e. the brigade responsible for industrial construction in the region, which, at the same time, operates the plant for pre-fabricated building elements.

The continued increase of pre-fabricated elements and the feasibility of using standard type factory sheds is, at the moment, under consideration in the Ministry of Industrial Development.

The cost of construction for industrial buildings is estimated to be 90 to 200 Pesos per square meter.

## 2.5 Common Services

Up to now, few common services have been established in industrial zones, with the probable exception of a common transport system for the workers employed in the zone. Where other common services exist, they are usually limited to serving plants which form part of the same government enterprises.

- 1) the shed-type roof is considered to be problematic in a climate with torrential rains.
- 2) during the same period, industrial construction as such increased by 24% per year.

In contrast, common services are a standard feature in "complejos" and "combinados" including, for example, machine shops, generation of steam and/or compressed air, central kitchens for canteens, medical services, children's day nurseries, social clubs, etc.. Some of these features such as the infirmary or poly-clinic are imposed by law which states that industrial complexes where more than a certain number of workers are employed must have such medical facilities and specifies the exact extent of these facilities.

## 2.6 The Industrial Zone of Holguin

In order to get a closer view of the process of regional planning, and in particular the development of industrial zones, the mission was taken on a visit to the town of Holguin.

Holguin is situated in the Oriente Province in the East of the island - about 800 km from Havana. Under the recent administrative reform, it will be the provincial capital. The town has, at the moment, about 130,000 inhabitants and is surrounded by a rich agricultural region including large sugar plantations. The region includes also Cuba's nickel mines near the towns of Nicaro and Moa.

The industrial zone of Holguin is one of the poles for industrial development in the Oriente of Cuba. Its location is in the immediate vicinity of the town limits, about 3 km from the present town centre. It has good road connections (Havana-Santiago Highway) and rail-road links to Havana and Santiago.

The master plan for Holguin foresees actually two industrial zones: one for light industry<sup>1)</sup> which is

<sup>1)</sup> At the moment, it consists of a garment factory, a bread factory, a tobacco factory, a dairy complex (in construction) and a brewery (planned).

adjoining and partly integrated in an urban development area and a second, separate zone for medium and heavy industry. The latter, for environmental reasons, is located outside the actual town limits.

As in the case of the light industry zone the intention of the planners has been integration rather than separation <sup>1)</sup>, only the zone for medium and heavy industry can be considered a planning unit in the sense of an industrial estate.

The area of the zone for medium and heavy industry comprises in its first phase about 200 ha of which 170 ha are already occupied by industrial plants and government warehouses - either in operation or in construction. At the time of the visit of the mission, the zone contained the following units:-

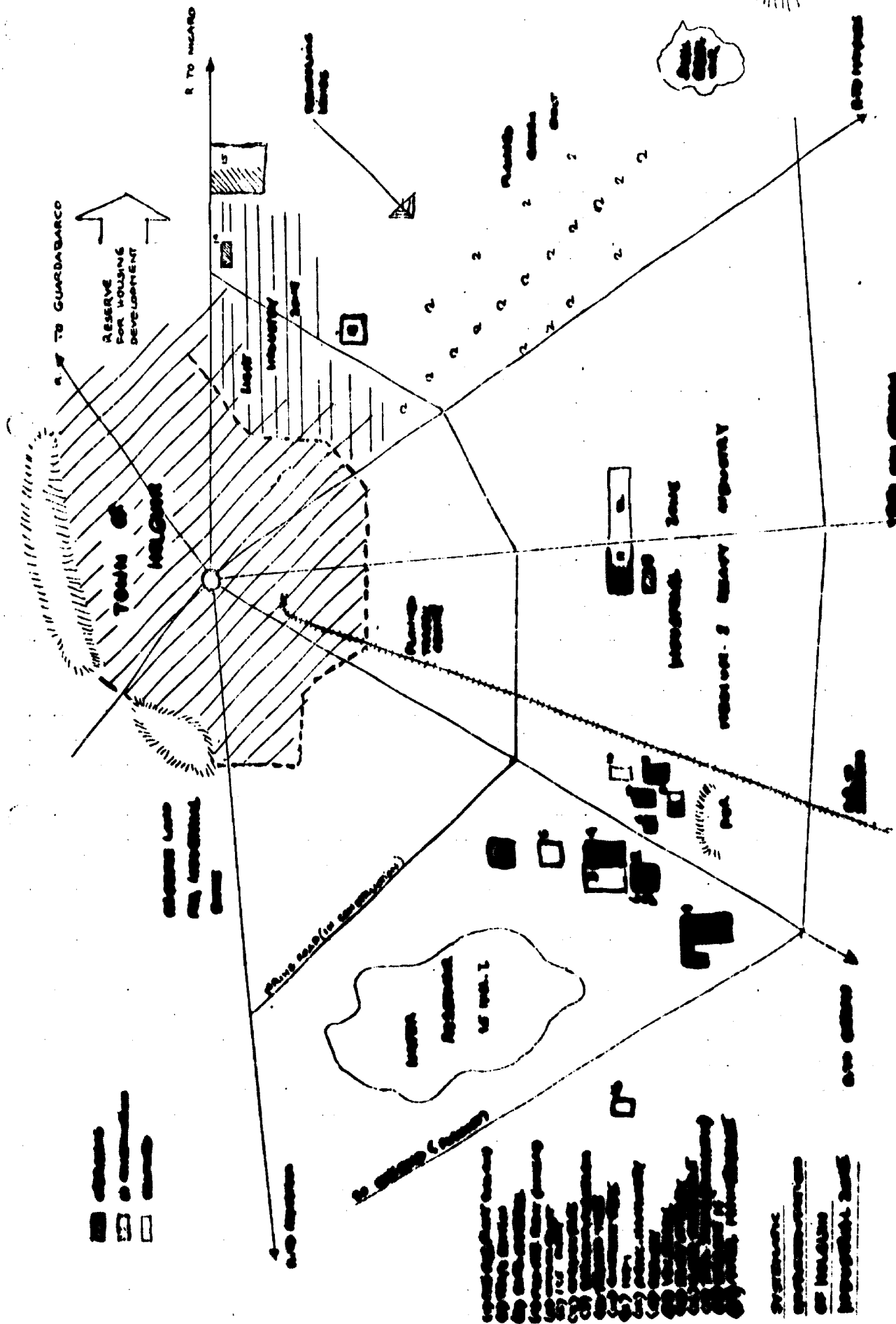
- 2 plants for the prefabrication of construction elements (in operation),
- 1 plant for terrazzo tiles (in operation),
- 1 plant for ceramic tiles (in construction),
- 1 plant for ceramic bathroom equipment (in con.)
- 1 plant for concrete tubes (construction to be started),
- 1 plant for the production of oxygen (sit in preparation),
- 1 plant for ice (in operation),
- 1 plant for the assembly of cane sugar harvesting machines (in construction) <sup>2)</sup>
- 1 plant for plastic building elements (planned)

---

1) in order to attract female labour by the easy access to the plants.

2) This plant which is scheduled to take up production this year is of particular importance to the Cuban economy. In view of the existing shortage of labour a determined effort is made to mechanize agriculture and especially, since 1970, sugar cane harvesting. It is planned to increase the level of mechanisation of harvesting in this field, with the help of the KTFI factory from the present 25% to 75% by 1980.





- 1 complex for the production of agricultural implements and components for the cane harvesting machine (planned),
- 6 automobile and truck repair shops from different government agencies with a common machine shop and forge (planned),
- 1 cold storage plant and several warehouses.

The schedule for occupation includes also three factories - a coffee curing factory, a meat processing plant and a chemical plant - which are to be relocated from their present sites in residential districts of Holguin. According to the IPF, the underlying reasons for relocation in these cases are in the protection of the environment. The strong odours emanating from these factories constitute a social irritant. In addition, the present location prevents an appropriate treatment of wastes from the meat processing factory.

The occupation of the industrial zone has been achieved according to plan. The longest deviation from schedule has been a period of six months. The causes for delays were stated to be insufficient project preparation<sup>1)</sup>, non-delivery of equipment and/or change in priorities - and, with that, in the allocation of construction capacity. The project of the industrial zone which, so far, took the longest time to mature has been the KFP1 cane harvester plant. The project study was finished and the micro-location established in 1972 whilst the commencement of operation is expected for the end of 1976.

The Holguin industrial zone is not yet a compact area; it still includes some housing units which, however, will be abolished during the next years and its inhabitants moved to new housing estates east of the city centre leaving the zone for industrial use only. Likewise, the

1) The Ministry for Industrial Development notes that often "anteproyectos" lack sufficiently detailed specifications.

infrastructure for the zone is not complete. It consists, so far, of a transformer station with one 110 kv and two 33 kv power lines , a 1.5 Million liter water reservoir with some water mains crossing the area and the beginning of a sewage system. As most of the plants existing in the industrial zone have been located at or near the main roads crossing the zone, the road network is limited to access roads. An exception is a gravel service road following the power and water mains and an internal tarmac network connecting the plants of the construction material sector which occupy within the industrial zone a compact 40 ha plot. <sup>1)</sup>

The industrial zone does not yet include common services. Plans of the IPF foresee, however, that during the next five years the establishment of a poly-clinic, a test laboratory, a commercial and service centre as well as sport facilities. Furthermore, the above mentioned car maintenance centre will include common services.

Responsible for industrial construction in the Holguin region is the Building Brigade 14 which counts with 3500 permanent workers, a huge machine park, a plant for prefabricated construction elements and its own training centre.

At present, industry in Holguin offers employment to about 10.000 workers of which about 60% work in the industrial zone. This figure is supposed to be doubled by 1980 principally due to new developments in the industrial zone. During the same period, the total population of Holguin is expected to increase from 130 000 to 185 000 inhabitants.

1) Not including the plants for prefabricated construction elements.

Additional employment in industry will be created in minor industrial zones scheduled for five other provincial towns of the Holguin region.

## 2.7 The Industrial Estate of the Escuela Vocacional V.I. Lenin

An unusual form of industrial estate was visited by the mission at the Lenin Vocational School <sup>1)</sup> near Havana. Founded in 1966 as an example of an integrated approach to education and work, this school has become meanwhile a model institution and is considered tops in secondary education. <sup>2)</sup>

Since 1973, it occupies a 70 ha site containing 24 buildings with 98 000 m<sup>2</sup> floorspace <sup>3)</sup> about 20 km outside Havana. The school provides tuition and board for about 4500 coed students (230 teachers) from the 7th to the 13th grade (from 11 to 19 years) and prepares them for an academic career.

The "active" time of the students is divided into a five hour schooling period and three hours of manual work. The latter may take the form of agricultural work on the surrounding school farms or of work in the factories of an adjoining small industrial estate particularly created for that purpose. The industries established on that estate include:-

- (1) 3 workshops producing sports wear and articles (sports dresses and uniforms, baseball equipment and volley balls); employing 483 students per shift;
- (2) 1 workshop for the assembly of digital computers (201 B) with an output of 30 units per year; employing 130 students per shift;
- (3) 1 workshop for radio assembly with an output of 110 units per day; employing 48 students per shift;

<sup>1)</sup> The term vocational school is actually a misnomer or, at least, applied in a sense different to normal usage. The school provides basically a secondary education leading up to university studies not necessarily even in technical subjects.

2) and 3) see page 23

- (4) 1 plant for dry cell batteries; employing 150 students per shift;
- (5) 1 workshop for the assembly of desk calculators; employing 40 students per shift; and
- (6) 1 workshop for TV assembly (in construction).

Under the supervision of a few skilled technicians, these plants provide, at the moment, occupation for about 2,100 students and operate, on a three-shift basis, 9 hours per day. Eventually, the estate will absorb a working force of about 3,000 students. The plants which belong to different government agencies are run on a commercial basis. Their production is sold through the government trading organizations as any other product. <sup>1)</sup>

Similar schools exist (4) or are being built in all provinces. In Holguin, for example, the "escuela vocacional" which was only finished recently houses a student population of 1,400. It is planned that the school - situated in the light industry zone - will incorporate a plant for the production of teaching aids for the Ministry of Education.

- 1) According to one of the factory supervisors the productivity of labour in these plants is equal to, if not higher than, that in comparable "normal" plants. As he put it: he would not change his student labour for anything.
- 2) footnote from page 22 : The demand for a place in the Lenin Vocational School is so high that the school authorities can afford to limit entry to only the very best primary students. Usually, it is necessary to score at least 97% out of 100 to qualify for admission. It is, therefore, not surprising that 98% of all students reach their finals within the minimum study time.
- 3) footnote from page 22 : Excluding industrial buildings.

## 2.8 Industrial Complexes

Representative of the type of compact planning mentioned in paragraph 2.1 are for example:-

(a) the pilot industrial complex established by CEDIC (Centro de Desarrollo de Industria Canero) around the Pablo Noriega sugar mill with technical assistance of UNDP and UNIDO. Although classified as a Research and Development Centre it actually involves a number of different processing plants - as yet on a pilot basis - together with laboratories and some small service units:-

- sugar and sugar cane research station;
- a sugar mill;
- processing of bagassa to paper (Cuba 9)
- processing of bagassa to celulosa and protein;
- processing of bagassa to fibre board.

(b) the automobile industry complex being built 60km from Havana comprising 16 assembly plants and factories for parts and components;

(c) the dairy complex outside Havana combining 6 plants on a 9 ha site (capacity 1 Million liters of milk per day).

Although the whole of these complexes are usually under the direction of a single management, they can be considered to constitute a form of industrial estate if one stretches the term. Here too, common social services are provided in keeping with the size of the labour force and technical needs.

### Chapter III: Conclusions

#### 3.1 General Observation

The outstanding characteristic in the development of industrial zones or estates in Cuba is their inherent limitation to a mere regulative factor in the context of a structural policy and, with that, the lack of any promotional content. This limitation results as a logical consequence from the organization of the Cuban economy under a system of central planning in which industrial development does not require promotion but is the result of the planning process.

#### 3.2 The Effects of Industrial Estates or Zones

The effects of industrial estates or zones in their relation or importance to industrial development and, further, to the community can be summarized as follows:-

- (i) Its direct influence on the growth of industrial development has been negligible; the provision of ready infrastructure did not increase the number of industrial production units established as the infrastructure was created to provide space to accommodate the industries already planned. In a wider sense, however, there are some indications that the provision of prepared building sites in industrial zones has allowed a more rapid implementation of industrial projects thus, in a way, accelerating industrial development.
- (ii) The effect on the community is seen principally in the improvement of living conditions in urban centres by avoiding pollution problems, i.e. in the general results of good town planning. The social spin-off from the establishment of industrial zones or complexes can be considered as being minimal. Within the IPP and other government agencies the opinion prevails that the provision of sufficient and adequate social services is the

task of the responsible government departments, i.e. Public Health, Education, etc., and not of the state enterprises. It is further argued that the location of industrial complexes or zones is chosen anyway under the consideration of the existence or, at least, the planification of an adequate social infrastructure in nearby urban areas. As a result of a close cooperation between the IPP and the responsible Ministries there are several examples of social services having been located near or in industrial zones; these cases, however, cannot be considered as being generated by the industrial zones but rather as location of services which would have been established anyway for the welfare of the population.

There might be a change in respect of the social benefits of industrial zones once the New Economic Order - introduced in the recent January Party Congress - is implemented. This reform will not only put more responsibility on the individual production unit but also foresees on plant level the creation of a fund to be applied in improvements of social services for its workers. This fund will receive allocations from any profits made by the production unit. It is being considered that part of these funds might be used to finance common social facilities on the estate or zone.

A particular aspect of off-site cooperation of some industrial plants in industrial zones is the joint formation of "micro-brigades" <sup>1)</sup> though similar inter-plant collaboration might be found also outside industrial zones or estates.

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1) The construction of housing estates is, by now, almost completely in the hands of micro-brigades which are formed by setting free labour from plants and offices for construction work - often as much as 5% of the total labour employed - through pledges for overtime and extra-shifts by their colleagues. As in smaller plants the number of labourers set free in this manner is not sufficient to form an individual building brigade they join in with those of one or several other plants.



### 3.3 Cost and Benefit

No total accounts were available regarding the investment in infrastructure within industrial zones. In any case, the question of imputation of costs would be difficult, as the basic infrastructure provided by DAP is often linked to elements of general town planning <sup>1)</sup> and, on the other hand, parts of the investment in infrastructure are absorbed by the sector of industrial construction on an ad hoc basis. In spite of the lack of exact figures, the IPF estimates that considerable economies are achieved by the concentration of industrial plants in limited areas not only in the investment in infrastructure but also in the cost of the supply of utilities and services once in operation. <sup>2)</sup>

### 3.4 Factors Influencing the Development of Industrial Zones and Estates

An essential factor in the successful implementation of industrial zones or estates is the far-reaching integration of the approach towards the establishment of structure and infrastructure, ideally provided for in a planned economy. In the Cuban example, the teamwork between IPF and other Government Agencies involved in the context of the planning system described in the previous chapter is certainly responsible for the successful and largely unproblematic implementation of industrial zones. But also in this example there remain some difficulties which in practice have to be overcome if full efficiency of this concept is to be reached:-

- 1) In the Holguin industrial zone, for example, water supply (reservoirs) and drainage system as well as part of the road system.
- 2) A special point was made regarding the transport cost of prefabricated elements used in industrial construction and which, as a rule, are produced in the industrial zones. Even though these elements are in some cases transported up to 100 km there is a considerable increase in cost with growing distance from the site of the plant.

(1) the realization of compact planning within the industrial zone, i.e. the minimization of investment in infrastructure for a given level of occupancy and service, is still difficult; apparently due to the following causes:-

- The IPP has only recently terminated the master-plans for the major population centres and development zones (1973/74) and it is only now that more emphasis can be put on detailed planning of industrial zones. As a consequence, up to now the development of industrial structure and infrastructure has taken, in several cases, very much a parallel course - with the IPP lagging occasionally a step behind. In part, this was also due to the fact that prior to 1975 little precise data about medium- and long-term industrial development was available. With the increase of the planning period to five years, improvements can be expected regarding the latter aspect.

- A certain conflict exists between two slightly different concepts or approaches towards the planning of industrial zones involving:-

(a) a long-term (10 to 15 years) and very systematic view aiming at maintaining within the zone separate areas for different industrial activities. As the future growth of the individual industrial sectors and, with that, the need for building sites during the planning period could not be projected or, at least, only with great uncertainty this approach resulted in the allocation of large reserve tracts of land to the various sectors and, consequently, in a degree of dispersal of industrial construction within the industrial zone and unnecessarily extended access roads and supply lines.

(b) a more flexible approach on the basis of a shorter (5 years) planning period allowing a more precise projection of occupancy and of a sectorial separation only in the case of valid technical necessity.

- A lack of emphasis, in the past, on the economic use of land <sup>1)</sup> and of either cost consciousness on the side of IPP planners or, at least, on proper costing procedures for the establishment of industrial estates.

(ii) the insufficient consideration of common services in the establishment of industrial zones. The reason for this can probably be found both in the planning of the industrial zone as a whole where the problem of common services is frequently not taken into account as well as in the planning and implementation of the individual project. Each project manager has the opportunity to consult at the planning stage with those in charge of parallel developments but, in practice, it would seem that only limited use is made of this facility where common services are concerned, especially if the plants in question pertain to different government departments. The mission was given to understand, however, that there is a study under way in the Ministry for Industrial Development investigating possible improvements in this aspect.

### 3.5 Suitability of Industrial Plants for Location in Industrial Zones or Estates

In principle, the industrial zones established in Cuba seem to admit all kind of industrial activities including repair and maintenance units as well as warehousing. Offensive and dangerous industries are not necessarily excluded though they are usually confined

<sup>1)</sup> Until 1975 land, in accordance with Marxist theory, was not considered to be a cost factor. As from this year it is supposed to be considered at opportunity cost.

to separate areas.

Among those industries considered to be less desirable for location in industrial zones are:-

- (a) industries relying mainly or to a high degree on female labour. The IPF prefers to integrate these type of plants - as far as possible under environmental aspects - with housing schemes thus facilitating the female workers easy access to their place of work; and
- (b) plants which process bulky raw materials as in mining and certain agro-industries, as in Cuba the nickel and sugar industry.

As the industrial zones are still a fairly new experience in Cuba there are not yet any known examples of a location of any particular industry within an industrial zone having proved to be unsuitable.

### 3.6 The Optimal Size of Industrial Estates or Zones

The criteria for the optimum size of a planning unit, i.e. of the area of an industrial estate for which detailed plans of occupancy are worked out <sup>1)</sup> are taken to be the following:-

- (a) the maximum distance which still permits adequate access to common facilities and service centres. In this respect a radius of 1 to 2.5 km is held to be acceptable.
- (b) the area which can be occupied within a reasonable planning period, i.e. under the present system of planning five years, <sup>2)</sup> though in the planning of some infrastructural developments a longer view is taken, e.g. sewage systems and water treatment plants have often been laid out to accommodate also future development or to permit easy amplification.

1) An industrial zone is not understood as a closed unit but as part of a long-term zoning effort.

2) Thus, the plans for the industrial zone of Pinar del Rio, West Cuba, which is projected to contain all industrial development of that area up to 1985, is based on three subsequent phases comprising a five year planning period each.

### 3.7 Justification of Investment in Industrial Zones

Considering the lack of alternative solutions, this question does not arise in this form. The establishment of industrial zones is understood as a logical and essential part of town and regional planning serving to improve the quality of human life in urban areas. It is considered this aspect already would provide sufficient justification. Furthermore, the state - in this case, the IPF - has to find a location for industrial projects anyway and provide the necessary infrastructure and, in this context, the more or less compact approach of an industrial zone is thought to be the most sensible and also the most economical solution.

#### Acknowledgement

The team would like to take the opportunity to express their appreciation for the great assistance received from the Ministry for Industrial Development and its officials, especially Mr. H. Acosta and Mrs. A. Alvarez, in the development of their mission.

APPENDIX I

SCHEDULE OF VISITS AND INTERVIEWS

DATE	MORNING	AFTERNOON
23.2.76	INTRODUCTION: - - Ministry for I d. Development - Jure Plan - University of Havana - Commission for Technical Economic and Scientific Cooperation.	VISIT TO LENIN VOCATIONAL SCHOOL, 20 km from Havana.
24.2.76	JurePlan (1st Session)	- Ministry for Public Health, Pharmaceutical Industry. - Visit to UNDP, Havana - Departure to Holguin
25.2.76	IPF - Holguin Branch and Brigade 14, Holguin	- Visit to Lenin Hospital, Holguin
26.2.76	Visit to: - Sugar Mill "Urbano Norris" - Mechanized cane Harvesting, San German	Visit to: - Escuela Vocacional, Holguin - Industrial Zone of Holguin
27.2.76	Visit to: - Agriculture Complex "Plan Vian Dero" - Tomato Processing Plant, Nansanille	Visit to: - Dairy Complex, Bayamo - Garment Factory "Lydia Dece", Holguin
28.2.76	IPF - Holguin-Branch Visit to plant for Pre-Fab Construction elements of Brigade 14, Holguin	Visit to: - Cotton Spinning Mill, Gibara Departure to Havana
29.2.76	Sunday - Free	
1.3.76	Monday: Programme Revision	University of Havana- Faculty of Economics
2.3.76	Monday: Implementation Section	-
3.3.76	- Institute for Internal Demand - Visit to SIDA-REPRES.	Visit to: - Shoe Factory, Guanaroca - Plastic Factory, Havana
4.3.76	JUCE PLAN (2nd Session) - Visit to: ICIDCA - Institute for Investigation of Sugar Derivates	Visit to: - Dairy Complex Near Havana

DATE:	MORNING	AFTERNOON
5.3.76	- Ministry of Public Health - Dept. Sanitary Engineering, - IPP - Headoffice, Havana.	- Hindey: Economic Analysis Dept. - Ministry of Education - Visit to Micro-Brigade, Acamar
6.3.76	Final Session - Hindey - JucePlan -IPP	-

Note on the Ministry of Industrial Development

The Ministry for Industrial Development was created at the end of 1973 in order to centralize certain functions of control and direction of industrial development as well as supporting facilities to sectorial institutions in that field, functions which previously were carried out mainly by JUCEPLAN and the Ministry of External Trade.

The Ministry is formed by three divisions:-

- (1) the Analytical Division, responsible for pre-investment studies and analysis of the industrial projects by the industrial sectors and of offers made by foreign suppliers of industrial equipment
- (2) the Implementation Division sub-divided into the
  - 2.1 Technical Branch, responsible for projecting civil engineering and construction work for industrial projects - if required also the production process including complete projects (llave en mano);
  - 2.2 Executive Branch, responsible for selection and purchasing of machinery, equipment or complete plants abroad and the supervision of project implementation.
- (3) the Administrative Division giving administrative support (including foreign relations and protocol).

The relation to international organizations (incl UNIDO) corresponds directly to the Office of the Minister.



Note on the System of Education in Cuba

It seems of certain importance for the understanding of paragraph 2.7 of this report to provide some background notes regarding the Cuban system of education.

The perhaps most notable features of this system are:-

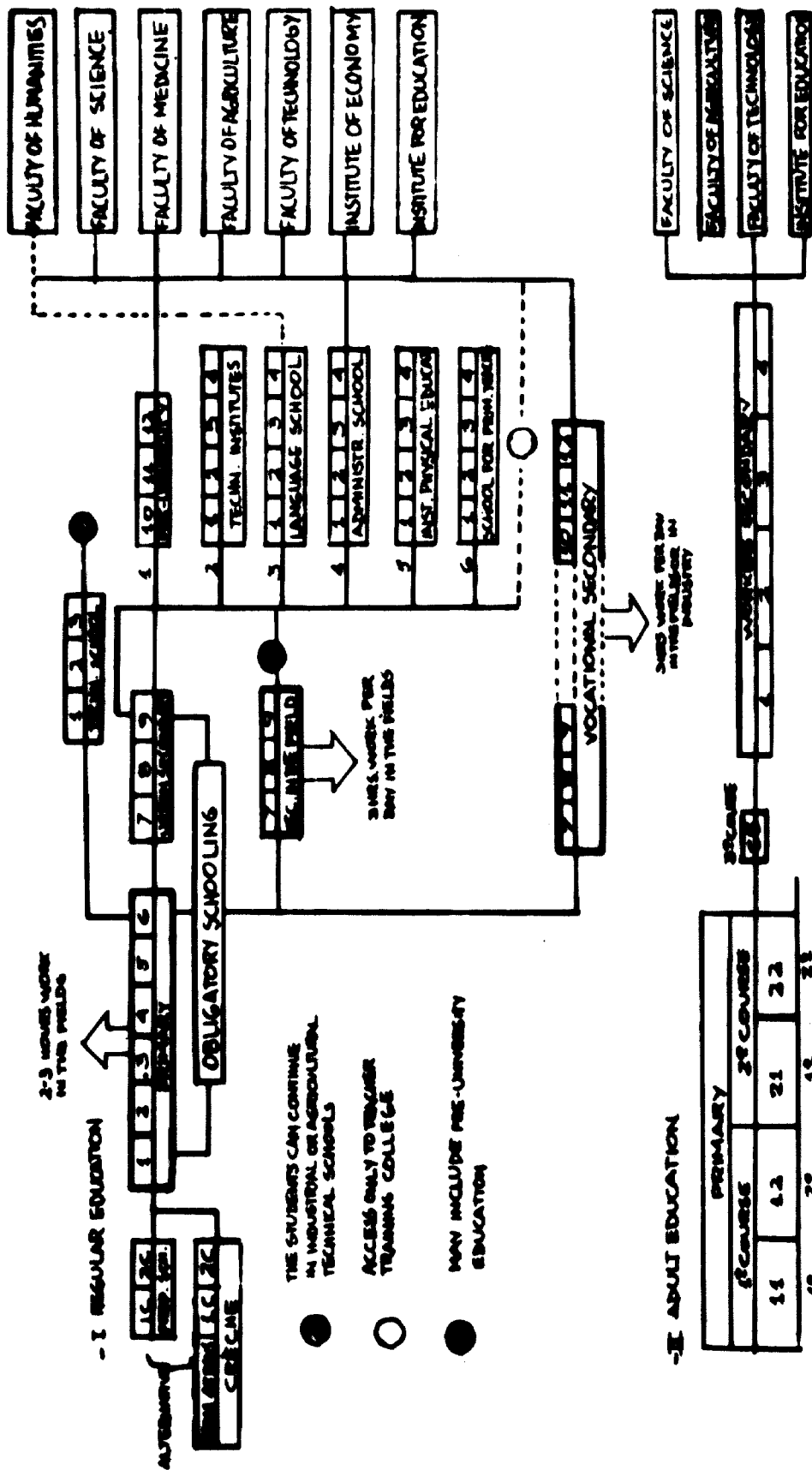
- (a) the almost total absorption of the student by the educational system especially through the increasing use of boarding school at all ages;
- (b) the early integration of the student into the production process.

In the context of this report, especially the latter is of importance. Starting from primary school, the student has to devote part of his time - usually three hours per day - to manual work in either agriculture or industry. (See: Diagram III on the following page). The intention of this practice, at least, when accompanying the normal primary and secondary education, is less to train skilled labour at an early age but rather to create a proper attitude towards work and, in particular, towards manual labour.

In practice, student labour forms meanwhile an important component in several agricultural and industrial projects, e.g.:-

- the "Plan Viandero" irrigation scheme near Manzanillo (7000 ha under cultivation) includes 12 secondary schools and 2 colleges with 6200 students who present the main labour force (next to 1200 full-time and 2800 part-time workers),
- the Brigade 14, Holguin, occupies next to 3500 regular workers 500 students who next to a 4 hour working day pursue general education and vocational training as carpenters and mechanics in an attached technical school.

DIAGRAM III



EDUCATIONAL SYSTEM OF CUBA AND ITS INTEGRATION WITH THE WORKING PROCESS

Sources of Information

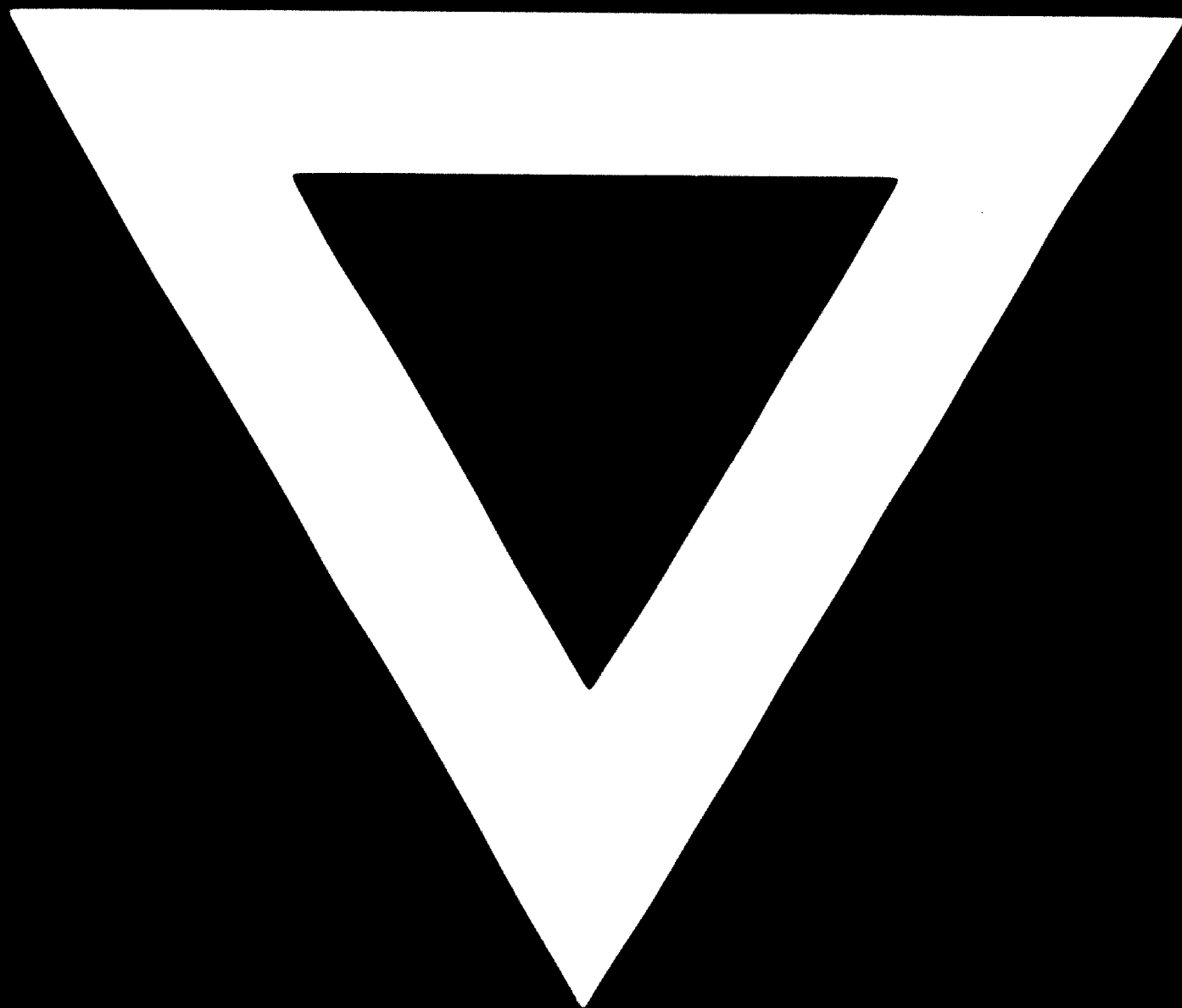
1. Written Information

- Anuario Estadístico de Cuba 1973, JUCEPLAN
- Compendio del Anuario Estadístico 1974, JUCEPLAN
- La Economía Cubana 1974, JUCEPLAN
- CUBA 1975, JUCEPLAN
- Desarrollo y perspectivas de la economía cubana, Banco Nacional de Cuba, 1975

2. Personal Information

- Arq. H. Dacosta, Ministerio de Desarrollo Industrial  
Havanna 4, Apto. 4062
- Arqa. M. Alvarez (Mrs.), as above
- Arqa. E. Lopez Garcia (Mrs.) as above, Dirección Técnica
- Ing. G. Rios. as above, Dirección Técnica
- Lic. D. Hernandez, JUCEPLAN, Havanna
- Ing. G. Gonzales, JUCEPLAN, Havanna
- Arq. E. Lopez, IPP, Havanna
- Arq. M. Ruiz Calcines, IPP, Havanna
- Arq. J. Gonzales, IPP, Holguin
- Arq. J.L.Castellanos, IPP, Holguin
- Arq. E. Perez, IPP, Holguin
- Arqa. E. Iviles, IPP, Holguin
- Sr. J.R.Lima Joya, Director, Brigade 14, Holguin
- Lic. A. Castro Tato, Vice-Dean, Economics Faculty  
University of Havanna
- Sr. I. Cartaya, National Commission for Cooperation  
in Economics, Science y Technic, Havanna
- Econ. P. Alonso, Ministerio de Trabajo, Havanna
- Dr. R. Diay Vallina, Vice-Minister for Pharma-Industry,  
Ministry of Public Health, Havanna
- Ing. Martinez Rodriguez, Ministry of Public Health
- Ing. Santos Prieto, as above
- P. Landelius, SIDA-Representative, Havanna
- the administrators of the following projects: Sugar Mill  
"Urbana Norris", San German, Plastics "La Habana", Havanna  
a.o.

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**77.06.29**