PN-ABH-456
70598

GUATEMALA: Preliminary Assessment of the Manufacturing Sector

FINAL REPORT

Bureau for Private Enterprise
U.S. Agency for International Development

Prepared for: *USAID / Guatemala Office of Private Sector Programs (O/PSP)*

Prepared by: *Ernst & Young*

Sponsored by: *Private Enterprise Development Support Project II*
Project Number 940-2028.03
Prime Contractor: Ernst & Young

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EXECUTIVE SUMMARY

GUATEMALA: PRELIMINARY ASSESSMENT OF THE MANUFACTURING SECTOR

EXECUTIVE SUMMARY

I. Introduction

The private sector of Guatemala, which accounts for 85 percent of gross domestic product (GDP), is a critical player in the future economic growth and development of the country. The USAID/Guatemala Office of Private Sector Programs has decided to make private initiative the key vehicle of its economic development programs in Guatemala. To that end, USAID commissioned a preliminary assessment of the manufacturing sector that would provide it with the necessary information to evaluate the role of this sector in the Guatemalan economy and produce a manufacturing sector strategy.

The design of the study consisted of two separate, but complementary tasks. The first task was to survey existing manufacturing-related data collecting centers, both private and governmental, which operate in Guatemala. The objective of this task was to identify and evaluate current sources of data and information on the manufacturing sector, and to make recommendations for improvements of those sources. The second task required assessing the principal strengths and weaknesses of the manufacturing sector in Guatemala and recommending crucial areas for AID action.

The primary approach to assessing the manufacturing industry in Guatemala was to interview a sample of private sector manufacturers. These interviews were unrestricted, open discussions based on a formal questionnaire and effected with complete anonymity. The interviews usually included a tour of the manufacturing facility in order to obtain a first-hand view of the operation.

Although the assessment was to be of the manufacturing sector of Guatemala in general, it was determined early on in the field work that this approach was too broad. For this reason, specific criteria were developed to narrow the scope of analysis and provide a more focused approach. The chosen company criteria were: export potential, medium to large, local and foreign, labor intensive, some CORFINA-owned. A total of twenty-three manufacturing companies were interviewed.

In addition to manufacturing companies, a number of other interviews were conducted with banks, industrial parks, training institutions, support services, private sector business organizations, consultants, and business leaders. A "working cocktail party" was held with Guatemalans from both the public and

private sector in attendance. At this session, preliminary assessment observations were presented and discussed.

Research and identification of current sources of data on the manufacturing sector involved interviews with close to 40 people in 12 different public and private sector institutions, as well as research in a number of libraries and documentation centers.

II. Preliminary Manufacturing Sector Assessement

The companies visited provided some examples of very well managed, sophisticated manufacturing operations and some examples of companies in need of a great deal of improvement. Almost all of the companies indicated that they were in the middle of expanding or that they had plans to expand, even though most manufacturers expressed concern regarding the degree of stability of the economy. These expansion activities or plans are a very good indication of the current economic situation in Guatemala and of the attitude of manufacturers concerning their operations in Guatemala .

A. Strengths

The following strengths of the Guatemalan manufacturing industry are assessed from the perspective of a U.S. foreign investor who has the option of setting up an operation in Guatemala or having his product made in any part of the world. This investor has no native nationalistic prejudices. These strengths are the comparative and competitive advantages of Guatemala.

1. Available Work Force: Labor is not the least expensive in the world but it is less expensive than the United States. In addition, the work force is already partially industrialized.

2. Location: Proximity to the United States and involvement with the Caribbean Basin Initiative are major advantages.

3. Investment Capital Available: Almost all the companies were either expanding or had plans to expand, indicating that funds are available.

4. Climate: High altitude climate is very good from a manufacturing industry viewpoint.

5. Electricity: There is adequate availability and it is low cost.

6. Incentives for Industrial Export Enterprises: Decree-Law 21-84 provides incentives which are basically equal to those provided by almost all developing nations. The law

is also a clear indication of the attitude of the Government of Guatemala towards export-oriented manufacturing operations.

7. Maquila Industry: The current garment maquila companies demonstrate that this kind of contract manufacturing can be successful in Guatemala.

8. Available Manufacturing Capacity and Capability: There is a large cadre of skilled manufacturing management personnel, along with a wide variety of technical manufacturing capabilities.

9. City Size and Layout: The ease of being able to move about Guatemala City means that an investment analysis/fact finding trip to Guatemala can be short, efficient and effective.

B. Constraints and Recommendations

The principal constraints to growth identified by the manufacturing sector assessment and the corresponding recommendations to eliminate or reduce each constraint are presented below in five general categories.

1. Technical Training

Constraint: Although there is an abundant source of manufacturing direct labor, there is definitely a shortage of skilled workers.

Recommendation No. 1: Continue Development of Skills Training Assistance Project
USAID should continue to develop the specific skills training options identified in the June 1988 detailed assessment of skills training needs.

Constraint: One training need is the lack of production management courses outside of the full-time university curriculum.

Recommendation No. 2: Encourage Production Management at AGG
The USAID Private Enterprise Development Project (PED) should be more focused on practical, basic, manufacturing management skills development.

Constraint: Current training programs in Guatemala lack applicability.

Recommendation No. 3: Establish Cámara/Gremial as Forum for Coordination of Private Sector and Training Institutions
The Chamber of Industry should take the lead role in establishing an on-going study team to develop programs to improve the

coordination between the private sector and the training institutions, and to improve the over-all technical capability of the manufacturing industry in Guatemala.

Recommendation No. 4: Strengthen Co-op Program at University of San Carlos
USAID should assist the University in increasing support for their co-op type program. This support can come in the form of financial assistance for program administration positions and in the form of encouraging the private sector to support the program.

Recommendation No. 5: Utilize International Executive Service Corps (IESC)
USAID should encourage the private sector to utilize the IESC consulting services and the IESC manufacturing operations management seminars.

2. Marketing

Constraint: There is a lack of in-house marketing skills, first hand knowledge of foreign markets, and exposure to international competition without preferential tariff or quota protection.

Recommendation No. 6: Expand Marketing Training and Assistance in "How To" Market in the United States
Courses should be developed to improve the level of understanding among Guatemalan entrepreneurs of export marketing techniques and practices. Financial assistance should be given for foreign market research and for participation in foreign trade shows.

Constraint: An active, clearly defined foreign investment promotion effort is lacking.

Recommendation No. 7: Improve International Promoting Capabilities at Gremial (with O/RD Agri-Business Development Program)
The Non Traditional Products Exporters Guild, known as the "Gremial", should have the responsibility of foreign investment promotion. The USAID O/PSP PED project and the USAID Guatemala Office of Rural Development (O/RD) Agri-business Development Program are both to work with the Gremial in export promotion. These two projects should be coordinated to include: investment promotion training, development of professional promotional materials, development of a computerized tracking system, and use of technical experts in the specific targeted markets.

Recommendation No. 8: Promote Current Local Export Capabilities
The Gremial should be assisting current Guatemalan export industries in marketing their products and capabilities with the use of trade shows, promotional materials, advertising, and follow-up.

Recommendation No. 9: Target Foreign Investment

The Gremial should be seeking foreign manufacturers who are looking for a lower cost manufacturing location. Since Guatemala has available capital, the type of foreign investment sought is marketing capability and manufacturing technology. This type of foreign investment promotion involves identification, follow-up, and follow-through.

Recommendation No. 10: Develop Maquila in Other Industries
The Gremial also needs to develop local maquila or subcontracting capability in new industries (i.e. electronics, woodworking, metal mechanics, plastics molding, and data entry). An in-depth look at the development of an electronics maquila industry is included in Appendix A.

3. Infrastructure

Constraint: The greatest infrastructure constraint to manufacturing in Guatemala is the poor telephone service. This assessment supports the recommendation of the USAID study on telecommunications in May 1987, but has not analyzed the problem in enough depth to offer further recommendations.

Constraint: There is a lack of manufacturing support services in Guatemala (i.e. mechanical and electrical repair, calibration, tool and die work, precision plastic molding shops, and sourcing or purchasing services).

Recommendation No. 11: Promote Development of Manufacturing Support Services and Industries
These manufacturing support industries provide an improvement to Guatemala's balance of payments and they improve the investment climate fc other foreign investors.

Constraint: Transportation services are not bad, but neither are they a strong advantage. Relative to other Caribbean and Central American countries, all transportation means in Guatemala are relatively expensive, with air freight being the most costly. The June 1987 USAID study on Central American transportation provided a series of recommendations. In addition to these, the following recommendations should be considered:

Recommendation No. 12: Encourage "Open Skies"
A policy of "open skies" encourages the establishment of air routes to be dependent on the requirements of the market. As the manufacturing sector in Guatemala grows, the increased competition will cause freight rates to decrease.

Recommendation No. 13: Educate on Use of Broker
Companies which use a freight broker to both import and export material expressed significantly fewer transportation and customs problems.

4. Government Policy

Constraint: There is a perceived personal security problem in Guatemala. Because of its location, Guatemala is associated with all the political unrest and guerrilla warfare occurring in Central America.

Recommendation No. 14: Review Ratings of Guatemala
The United States Embassy ratings should be reviewed with an understanding of the positive and negative consequences of these ratings. The United States Embassy, USAID, the GOG and the Gremial should attempt to ensure that independent ratings (such as Frost and Sullivan) are as accurate as possible.

Recommendation No. 15: Promote Guatemalan Tourism in the United States
A major advertising campaign in the United States promoting tourism in Guatemala would attract tourism (a sector of the economy with high priority) and would give the United States public an impression of the positive aspects of Guatemala.

Constraint: There are a number of current GOG policies and regulations which are not in the best interest of developing the manufacturing industrial sector of Guatemala.

Recommendation No. 16: Policy Dialogue
USAID should promote policy dialogue with the appropriate Office or Ministry of the GOG concerning six specific policy areas:

- Incentives for Export Producing Companies Decree-Law 21-84
- Free Trade Zone Law 22-73 amended by Decree 15-79
- Export Tax Decree No. 23-86
- Value-Added Tax Decree No. 72-83 with amendments 120-83, 97-84, 66-85 and 103-85.
- Patent and Trademark Laws
- Forestry (Decree 58-74)

Constraint: The operation and usefulness of CORFINA is severely hindered by the large number of companies currently in their portfolio which are non-operational.

Recommendation No. 17: Assist In Selling CORFINA Companies
USAID and the Gremial should promote the sale of these CORFINA companies to the private sector.

5. Government Bureaucracy

Constraint: There are two major problem areas with the bureaucracy of the GOG as it pertains to the industrial sector -- paperwork and the customs agency (Aduana). The over burden of paperwork creates a situation where private sector time and resources are utilized

to fulfill control requirements, which GOG resources cannot manage.

Recommendation No. 18: Assist with Fiscal Management Reforms
USAID should develop a project to assist the GOG in analyzing, implementing and maintaining fiscal policy.

Recommendation No. 19: Encourage training of Aduana Officials
This involves improving the manufacturing technical capability of the Aduana and helping its personnel obtain a better understanding of the overall objective of import tariff regulations and industrial development objectives.

III. Survey of Existing Manufacturing-Related Data Collecting Centers

The principal sources of primary data on the manufacturing sector are public sector institutions. The Instituto Nacional de Estadística (INE) and the Banco de Guatemala, in particular, are the primary gatherers of raw data on this sector. Other public offices, such as the Dirección de Política Industrial and the Unidad Sectorial de Planificación y Programación (USPLAME), which are directly involved in manufacturing-related activities, could also play an important role in data collection but are currently very limited by the lack of resources and personnel.

Among the private sector institutions in Guatemala, the systematic collection of primary data on the manufacturing sector is most notable by its absence. Nevertheless, occasional publications by the Chamber of Industry of Guatemala and the Non-Traditional Products Exporters Guild are useful sources of information.

A. Limitations of Available Data

The principal weaknesses or limitations of statistical series on the manufacturing sector are the following:

1. Limited Degree of Confidence: There is limited degree of confidence in the statistics due to problems with methodology, processing and production of the data.

2. Inconsistencies: Inconsistencies exist both within the same source of information and across different sources of information.

3. Limited Coverage: Coverage of the censuses of manufacturing is limited to establishments of five or more employees, in effect excluding the microenterprise sector so important in the Guatemalan economy.

4. Timeliness: Lag time in the publication of statistical series by public sector institutions is a common problem.

5. Information Gaps: INE's annual survey of manufacturing is the only source of information on operating costs. The 1985 survey is the most recent one available.

B. Principal Constraints to Data Collection

1. Lack of Resources: Production of timely information on the manufacturing sector and new statistical series is limited by the lack of resources.

2. Inadequate Infrastructure: Data collecting agencies in the public sector lack the necessary equipment (i.e. typewriters, computers, filing cabinets) to collect information on a systematic and timely basis.

3. Limited Training of Personnel: Shortage of personnel qualified to undertake specialized statistical activities is a problem in INE and in the national statistical system as a whole.

4. Distrust of Data Collection Agents: Concerns that data may be used for tax-collecting purposes sometimes leads to the provision of inaccurate and inadequate data. Distrust of data collecting efforts by private sector organizations arises from concerns that information may be used by competitors.

5. Limited Awareness of Importance of Data Collection Efforts: Difficulties in compiling accurate and complete information also result from lack of awareness among the general population of the importance of compiling statistics that can support analyses of the economy and guide decision-makers in the formulation of policies.

C. Current Efforts to Strengthen Sources of Information

A number of efforts to strengthen current sources of statistics at the national and regional level are being undertaken by domestic as well as bilateral and multilateral institutions. The most important programs are the following:

1. National Statistical Plan (PEN) 1988-92: This is a new and important undertaking to consolidate the national statistical system (SEN) at the central, sectorial and regional levels with the objective of improving the efficiency of statistical collecting activities and the quality and timeliness of statistical series.

2. National Program for Statistical Training: This program was initiated in 1986 with financial assistance from the United Nations Development Program (Proyecto GUA/84/015 - PNUD/DTCD/CEPAL).

3. INE - CIG Proposal to Conduct Census of Manufacturing Sector: INE is working with the Chamber of Industry, UNIDO, and the Dirección de Política Industrial on a proposal to conduct a census of manufacturing which has not been undertaken since 1978.

4. Regional Efforts: The Secretaría Permanente del Tratado General de Integración Económica Centroamericana (SIECA) is receiving assistance from UNIDO in support of improvements in the compilation of statistical information on the manufacturing and other sectors of the economies of Central America.

D. Recommendations

For the most part, the following recommendations would require relatively small amounts of resource outlays on the part of the Private Sector Office. Some recommendations could be undertaken with resources already allocated under the PED project, while others could rely on Economic Support Funds or PL 480 funds.

Short-term Recommendations

Recommendation No. 1: Support the Joint INE - CIG Proposal to Conduct a Census of the Manufacturing Sector
The census will provide the frame of reference for the annual and quarterly surveys of manufacturing and will serve as the benchmark for measuring the growth of this sector in years to come. It also offers an important opportunity for private and public sector representatives to work together.

Recommendation No. 2: Coordinate Activities with Other AID Offices and with Other Bilateral and Multilateral Institutions
Because a number of efforts by other international agencies are currently underway, AID should coordinate any activities in support of improvements in data collection in order to avoid duplication.

Medium-term Recommendations

In the medium-term, any significant improvements in the quality and availability of statistics on the manufacturing and other sectors in Guatemala will depend on the strength and capabilities of the public or private sector institutions responsible for these activities. Thus, the impact AID can have on the long-term improvement of manufacturing sector data requires support of the following complementary set of actions:

Recommendation No. 3: Support Institutional Strengthening of Public and Private Sector Entities with PED Project and Economic Support Funds
AID should utilize PED project and Economic Support Funds to strengthen the capabilities of the Dirección de Política Industrial, the Cámara Empresarial, the Gremial, and the Chamber of Industry to undertake data collecting activities.

Recommendation No. 4: Capitalize on Information System Links Developed under the PED Project
AID should capitalize on the information system links established under the PED project to support collection, tabulation, and analysis of information on the manufacturing sector by private sector entities.

Recommendation No. 5: Support Training of SEN Personnel
Support for training of personnel in the national statistical system is an area where AID can have a significant impact, especially if its activities are coordinated with those of other international agencies.

Recommendation No. 6: Support Promotion/Educational Campaign
AID should support a campaign to create awareness of the important uses of statistical information and to build confidence about the confidentiality of data.

Recommendation No. 7: Support Diffusion of Information
AID should consider supporting the creation of government documentation centers at university libraries and public and private libraries, analogous to those in the United States.

Long-term Recommendations

Recommendation No. 8: Private Sector Center for Information and Industrial/Economic Planning
Under the New Private Sector Initiatives component of the PED project, AID should consider providing initial support of a research center, associated with a university, or semi-independent of the Chamber of Industry. The purpose of the center would be to serve as "third party" surveyor and collector of statistical data on different sectors of the economy and as a "think tank" on economic policy and planning in Guatemala.

I. INTRODUCTION

A. Purpose and Objectives of the Report

The primary objective of this study is to produce a preliminary assessment of the manufacturing sector in Guatemala for the USAID/Guatemala Office of Private Sector Programs (O/PSP). After years of steady economic growth, the Guatemalan economy has suffered a decline in growth since the early 1980's which has dampened hopes for rapid economic development. However, the experiences of other nations, particularly those in East Asia, have focused attention on the potentially decisive role of the manufacturing sector in economic development and of the opportunities for growth through export promotion of non-traditional products.

Against this background, the Office of Private Sector Programs is interested in identifying the principal policy and operational constraints affecting key industries in Guatemala as well as the opportunities for strengthening the role of the manufacturing sector in support of an accelerated growth strategy. The purpose of this report, therefore, is to provide the O/PSP with the necessary information to evaluate the potential role of the manufacturing sector and to produce a manufacturing sector strategy that will complement AID/Guatemala's support of private enterprise development and economic democratization in Guatemala.

B. Study Approach/Methodology

The scope of work called for two primary tasks in conducting the preliminary assessment of the manufacturing sector. The first task was to survey existing manufacturing-related data collecting centers, both private and governmental, which operate in Guatemala. The objective of this task was to identify and evaluate current sources of data and information on the manufacturing sector, and to make recommendations for improvements of those sources. The second task required identifying key constraints to manufacturing sector growth as well as opportunities for new investments in manufacturing. Its objective was to produce a preliminary manufacturing assessment document outlining the status of the manufacturing sector in the economy and recommending crucial areas for AID action.

The primary approach to assessing the manufacturing industry in Guatemala was to interview a sample of private sector manufacturers. These interviews were unrestricted, open discussions and were done with complete anonymity. A formal questionnaire, provided in Appendix E, was utilized in order to assure that all subjects were covered and to give a formatted approach to the results. The questionnaire was not given to the companies. The degree of manufacturing sophistication varied as did the specific function and knowledge of the person being

interviewed. Nevertheless, each interview (and questionnaire) tried to include a discussion of the following:

- Company history and description
- Production labor
- Technical/management personnel
- Training/education/technology
- Materials
- Manufacturing capabilities
- Investment/revenue
- Production problems
- Freight
- Utilities
- Foreign/parent company assistance/joint venture
- Analysis of outside services
- Direct labor content and value added
- Markets
- Marketing policies and practices
- Government relations
- Public sector regulatory and support framework
- Expansion plans
- Factors limiting expansion
- Technology transfer
- Data base needs
- Operational cost data

The interviews usually included a tour of the manufacturing facility in order to obtain a first-hand view of the operation. These shop tours were conducted to acquire a sense of the productivity, quality, capacity and management of the operation rather than to seek specific opportunities for improvement or change.

Although the assessment was to be of the manufacturing sector of Guatemala in general, it was determined early on in discussions with O/PSP representatives that this approach was too broad. For this reason, specific criteria were developed to narrow the scope of analysis and to provide a more focused study. These criteria were discussed with and agreed to by USAID during the development of the project work plan. The criteria chosen were as follows:

Export Potential - Guatemala has a significant shortage of foreign currency and increased exports are a key method of resolving that. For this reason, companies which are currently exporting or which have the potential to export in the future were selected.

Medium to Large - In light of the fact that a recent USAID study focused on the micro business sector and its role in development, it was decided not to include microenterprises in this study. It was also felt that the medium to large companies would be more sophisticated and, therefore, more

able to respond to the multi-topic assessment. In addition, it was noted that the impact of improving the growth rate of a large company can have more rapid results on the country in total.

Local and Foreign Owned - The problems, needs and attitudes of local and foreign-owned companies can often be quite different. The sample selected, therefore, included both.

Labor Intensive - Labor intensive operations have a greater impact on increasing the desired "productive employment". Capital intensive industries, on the other hand, have a much longer investment/change cycle.

Some CORFINA Owned - The CORFINA owned companies are indirectly owned by the Government of Guatemala. It was felt that an assessment of at least one of these companies would be beneficial.

Choosing the specific companies to be interviewed involved talking with USAID and the Commercial Attache's office in the US Embassy. Names were suggested and communicated to members of the Cámara de Industria de Guatemala who established the schedule of interviews. A total of twenty-three manufacturing companies were interviewed. The industries visited plus the number of companies in each are as follows:

- Maquila - garments (4)
- Food Processing (4)
- Electronics (3)
- Pharmaceuticals (3)
- Textiles (3)
- Woodworking (2)
- Shoes (2)
- Ceramics (1)
- Tin Cans (1)

In addition to manufacturing companies, a number of other interviews were held with banks, industrial parks, training institutions, support services, private sector business organizations, consultants, and business leaders. A "working cocktail party" was held with Guatemalans from both the public and private sector in attendance. At this session, preliminary assessment observations were presented and discussed.

Research and identification of current sources of data on the manufacturing sector involved interviews with close to 40 people in 12 different public and private sector institutions. The interviews focused on identifying the following:

- Current sources of systematic data on the manufacturing sector

- Types of data available
- Specific strengths and weaknesses of available data
- Information gaps
- Key problems associated with data compilation activities, including availability of financial resources, office infrastructure, trained personnel, and other less tangible constraints such as employee morale and distrust of data collectors
- Current sources of support, including ongoing or future projects, and assistance by international donor agencies
- Principal needs of data collection entities
- Database activities and plans within the Chamber of Industry

In addition, a search of available reports and studies on the manufacturing sector in Guatemala was conducted in a number of libraries and documentation centers in Guatemala and Washington, D.C. The list of sources is provided in Chapter IV, and is complemented by appendices C and D.

A complete list of manufacturing companies and public and private sector institutions, with the names of the specific people interviewed is provided in Appendix B. This appendix also includes the names of attendees at the "working cocktail party".

Throughout the assessment period in Guatemala, there was a constant "give and take" with USAID officers. There were six status meetings with USAID in the four week period of field work to review problems, results, observations and recommendations, including a mid-term and a final de-briefing.

C. Acknowledgments

The authors of the report wish to thank the representatives of the O/PSP, especially Felipe Manteiga, Elaine Murphy, and Bill Rogers for their interest in supporting this study and their enthusiasm for the results of the report. Chuck Ford, Commercial Attache of the US Embassy/Guatemala provided encouragement and support throughout the study and his presence at the major de-briefings is greatly appreciated.

The Chamber of Industry provided invaluable support in setting up the company interviews. In addition, the interviewees in public and private sector institutions, and in the manufacturing companies, were open and interested, and provided the information without which the report could not have been written.

Finally, the authors wish to thank the Bureau for Private Enterprise (PRE) for its contribution to this report under the PEDS Contract managed by Arthur Young.

D. Organization of the Report

In addition to this introductory chapter, the report is organized in three major chapters. Chapter II provides the setting of the report and includes background information on the structure and evolution of the manufacturing sector in Guatemala.

Chapter III provides the preliminary asssessment of the manufacturing sector. It begins with a general overview of the manufacturing sector after which it concentrates on presenting the principal strengths and weakness of the sector. Each weakness or constraint is followed by the corresponding recommendations for AID action.

Chapter IV focuses on the sources and types of data currently available on the manufacturing sector in Guatemala. It identifies the principal limitations of available data and the constraints on data collection activities. The chapter concludes with a series of recommendations for improving the quantity and quality of manufacturing sector data.

A series of appendices complement the information provided in the body of the report. These include a review of the electronics maquila industry, an analysis of cost data, and a list with abstracts of available reports and studies on the manufacturing sector in Guatemala.

II. BACKGROUND

A. Overview of the Manufacturing Sector

The manufacturing industry in Guatemala grew significantly in the 1960s and 1970s under the protection afforded by the Central American Common Market (CACM). As a result, the structure of this sector is heavily biased towards import-substitution industries and its growth has been heavily dependent on the availability of regional demand. The decline in vitality of the CACM in the 1980s, arising from a complex array of international and domestic political and economic developments, led to a significant decline in the growth of this sector and of the economy in general. According to statistics of the Bank of Guatemala, the annual real growth in manufacturing declined from 7.7% in the 1975-80 period to a negative 2.2% in 1980-85, while GDP at market prices fell at an annual average rate of 1.4% in 1980-85 compared to annual growth rates of close to 6% in the 1970s.

This situation has aroused considerable interest in favor of promoting the export of non-traditional products to markets outside the Central American region. For this purpose, the Government of Guatemala has adopted or is planning to adopt a number of positive measures, including the establishment of a one-stop export window (ventanilla única), revision of the laws for free zones and maquila operations, and revision of fiscal incentives to export, which will be discussed further in Chapter III.

B. Evolution of the Manufacturing Sector

1. Patterns of Growth

The importance of the manufacturing sector to the Guatemalan economy is evident from its contribution to GDP which in the 1985-87 period averaged 15.8%, according to Bank of Guatemala statistics. As indicated above, the growth of the manufacturing sector prior to 1980 was very dynamic, with growth rates ranging between 3.5% and 10.7% in the years 1965-80. Since 1980, however, the sector has suffered a severe contraction, although a slight recovery was reported for 1987, from a negative rate of 0.01% in 1985 to 0.7% in 1986 and 1.5% in 1987.

The dynamism of the manufacturing sector in Guatemala over the past two decades has been tied fundamentally to the implementation of diverse incentives under the CACM and to the growth of regional demand. This high degree of dependence on CACM protection and sales, has made the contraction of manufactured exports in the 1980s particularly sharp. According to Bank of Guatemala and World Bank estimates, manufactured exports fell by almost 40% between 1980 and 1985. While the decline of the CACM was clearly the most

important cause, depressed domestic investment activity also contributed to the fall. (See Tables 1 and 2 in Appendix H.)

Appendix H provides a series of tables which are indicative of the pattern of growth of the manufacturing sector in Guatemala and of its current structure and composition.

2. Structure and Composition

According to the National Institute of Statistics (INE), in 1987 there were 2,188 manufacturing establishments employing 5 or more workers. Of these, 62.2% employed less than 19 workers. Only 392, or 18% employed 51 or more persons. The majority, 35%, were small establishments with 5 to 9 workers. (See Table 3.)

The distribution of these establishments according to type of manufacturing industry is heavily weighted towards basic consumer goods such as food processing, beverages and tobacco, and textiles and other garments. In 1987, these constituted 1,079 establishments or 49% of the total. The industries with the next largest number of establishments were chemicals and chemical products with 11.4% or 249 establishments, and wood and wood products with 10.7% or 234 establishments, as shown in Table 4.

The concentration of production into consumer goods, particularly food processing, textiles and garments is also evident from an examination of their contribution to value added. In 1987, an estimated 78.7% of value added in manufacturing came from consumer goods industries, while intermediate and capital goods contributed 12.2% and 9.1%, respectively. Moreover, as shown in Tables 5 and 6, only modest changes have taken place in the composition of the value added in manufacturing over the last decade.

The vast majority of manufacturing establishments continue to be concentrated in the Department of Guatemala, despite government efforts, including the establishment in 1975 of a free trade and industry zone at Santo Tomás de Castilla, to encourage industries to locate in other, more remote areas of the country. The most recent statistics available indicate that in 1985, 1,348 of the 2,055 (or 66%) establishments were found in this Department. Table 7 shows the geographical distribution of manufacturing establishments in the remaining departments for the 1980-85 period. The reasons for this concentration continue to be the greater availability of skilled labor, transportation and general infrastructure, and water and other facilities in Guatemala over other departments of the country.

C. Employment of Resources in Manufacturing

1. Labor

An employment survey conducted by INE in 1986/87 reveals that the manufacturing sector employed 334,721 individuals, or 12.6% of the economically active population of Guatemala. In comparison, the agricultural sector employed 51.9% and commerce 13.7%.

In the period 1980-85, as shown in Table 8, there was a significant decline in the number of workers employed in manufacturing establishments with 5 or more employees, which was most visible in 1981-83. In 1980, manufacturing employed 85,000 workers, compared to 73,200 in 1983 and 78,400 in 1985. In 1985, the distribution of employees in major branches of manufacturing was as follows: food processing (23,500); chemical products (11,200); textiles (10,900); metal-mechanics (5,700); shoes (5,000); and non-metallic minerals (4,400). Together, the six branches employed 60,700 or 77.4% of total workers in manufacturing establishments with 5 or more employees. Tables 9 and 10 also show the median salaries of employees in manufacturing establishments with 5 or more workers and the average per capita salaries and wages by branch of activity for 1980-85.

2. Fixed Investment

In the 1980-85 period for which statistics from INE are available, the total value of fixed assets invested in the manufacturing industry ranged from Q 687 million to Q 978 million. As shown in Table 11, Q 487 million, or 49.8% of total fixed investment, were absorbed by manufacturing industries producing consumer products, most notably food processing and beverages. The remaining Q 491 million were apportioned as follows: 43.2% for the production of intermediate goods, especially textiles and chemical products, and 7% for capital and consumer durable goods industries.

3. Credit

In the 1980-85 period, the manufacturing sector has received on average 34.2% of the loans available from credit institutions in Guatemala. As shown in Table 12, this amounted to Q 2142.8 million. The largest proportion of available credits have gone to cover operating expenses. The decline in credit available for capital investments relative to operating expenses has been most dramatic since 1982. For 1985, 94.9% of the loans to the manufacturing sector were for working capital and only 4.9% for capital investments. (See Table 13.)

This situation concurs with a recent study on capital markets prepared by Arthur Young for the Regional Office on Central America and Panama (ROCAP) which highlighted the difficulties of obtaining long-term capital for expansion or new investments, given the

banking sector's bias toward short-term credits and the absence of investment-oriented institutions. According to a 1987 World Bank report, long-term credit for manufacturing industries in Guatemala could become a problem if current low levels of investment revive, particularly at a time when CORFINA, the industrial finance agency, is unable to lend because approximately 90% of its operations are in arrears. Moreover, in 1987 CORFINA was intervened by the Monetary Board and a commission was set up to "clean up" its portfolio.

III. PRELIMINARY MANUFACTURING SECTOR ASSESSMENT

A. Introduction

The manufacturing sector assessment is a combination of real and perceived opportunities and problems. Some of the ideas stated by manufacturers were in direct conflict with statements made by other manufacturers. It was not possible to research these conflicts, but the nature of the conflicts was more subjective than objective. All the companies included in the assignment were located in the Guatemala City area; two were in Antigua, only 30 miles from Guatemala City. Thus, rural or other urban areas were not included. Another restricting factor stems from the fact that only twenty-three companies in nine industries were interviewed and these companies are all members of the Cámara de Industria. Almost all of these limitations arose because of the brief nature of the assessment and the fact that it is a preliminary assessment. Nonetheless, it is felt that these factors have not altered the basic nature of the observations, the assessment of strengths and weaknesses, or the recommendations presented in this chapter.

B. Overview of the Manufacturing Sector

The companies visited provided some examples of very well managed, sophisticated manufacturing operations. There were also some examples of companies in need of a great deal of improvement. Some of these companies were in industries that would shut them down if they were operating in the United States, but there is little or no policing of industries by either the Government of Guatemala or by the industry itself.

Almost all of the companies stated that they were in the middle of expanding or that they had plans to expand, even though most manufacturers expressed a feeling of economic instability within the country. This expansion took the form of new factory buildings, new production equipment (both for expanded capacity and new capabilities), new products, and entry into new markets. These expansion activities or plans are a very good indication of the current economic situation in Guatemala and of the attitude of manufacturers concerning their operations in Guatemala.

1. Strengths

One of the primary outcomes of a manufacturing sector assessment should be a determination of the strengths and weaknesses of the sector, compared to other areas of the industrial world. In the case of Guatemala, the analysis of these attributes is based on the conversations with manufacturing company representatives and their responses to the question, "Why would someone want to invest in a manufacturing operation in Guatemala?" Most

people could talk at great length about the problems in Guatemala, but had to stop and think about the benefits. The following strengths are assessed from the perspective of a United States foreign investor who has the option of setting up an operation or having his product made in any part of the world. This investor has no native nationalistic prejudices. These strengths are the comparative and competitive advantages of Guatemala.

a. Available Work Force

The first and most important strength always stated during interviews in Guatemala is low cost labor. This is a relative term, however, and low cost by itself is not a strength of Guatemala. In Guatemala the labor is less expensive than labor in the United States but it is more expensive than in many other countries. The cost data obtained in this study indicates that an average direct labor hour with fringe benefits is approximately $0.93 ($0.53 salary plus $0.43 for fringes). There is detailed cost information in Appendix F. A recent study by Bobbin Consulting Group indicates that the cost is $0.93 per hour including fringes for garment manufacturers, so the current sampling is probably fairly representative. This Bobbin study also states that the cost in Haiti is $0.58 per hour and Grenada is $0.75 per hour. There are countries in the Far East that offer costs below $0.40 per hour (Sri Lanka and Bangladesh). This means that, even though Guatemala has cheaper labor costs than the United States, it is not close to having the most inexpensive labor costs in the world.

The advantage of the Guatemalan work force lies in the quality of the labor. Guatemala took advantage of the Central American Common Market founded in 1960 to develop a manufacturing sector. As a result, a large section of the population of Guatemala has gone through the transition from being agriculturally oriented to being industrially oriented. This means that there is a work force that is accustomed to manufacturing - i.e. working in a factory five days a week at specific hours, at specific production rates and quality levels. This work force, although basically unskilled, has proven itself to be very trainable and productive. It has also demonstrated a low absenteeism rate and a very low turnover rate (number of employees voluntarily leaving the company). This turnover rate is a very important criteria since a stable work force is required to maintain high quality and productivity levels. Some countries are experiencing severe problems in this area.

b. Location

Guatemala's proximity to the United States is advantageous for three reasons. First, it is close to one of the world's largest end product markets for both agricultural and manufactured goods. This means shipping of freight to and from the United States does not take two months (as it does from the Far East). This reduces inventory and, therefore, lowers working capital requirements.

Even perishable goods can be easily transported to the United States. It also means that shipping costs should be very competitive.

Second, it is close to a major source of foreign investment. The foreign investor from the United States can more easily work with a country that is only a 2 1/2 hour flight from Miami and is in the same time zone as the central half of the United States. There are daily direct flights to the United States mainland with United States and Guatemalan carriers. A businessman can work a half day in his office in New York City and still be in Guatemala in time for dinner. Since Guatemala is in the Central Time Zone, there is no major jet lag problem. The similarity in time zone also allows communication between the United States and Guatemala during normal business hours. There is no need to receive calls in the middle of the night.

Third, the U.S. Government has made this area of the world (Caribbean and Central America) a focal point of U.S. foreign investment with the Caribbean Basin Initiative. This legislation has made it easier for manufactured goods from this region to enter the United States duty free. In fact, it is easier for goods to enter the United States duty free from the Caribbean than from any other part of the world, with the exception of Canada.

c. Investment Capital Available

The question of availability of capital did not receive a unanimous response. The majority of companies did think that capital was available. The fact that almost all the companies were either expanding or had plans to expand, indicates that funds were available. This capital exists both in lending institutions and in personal accounts held both in Guatemala and outside of the country. Part of the perceived problem of lack of availability of capital involves an unwillingness to pay the current interest rates and collateral requirements. Another part of the perceived problem centers around a lack of confidence in the current economic and political situation in Guatemala and, therefore, a certain amount of hesitancy to invest personal funds. This lack of confidence seems to have been created by the recent fiscal changes made by the Government of Guatemala and the fear or uncertainty of what changes will be made next.

Some companies did seem cash poor and expressed this as a problem, but the problem was usually more than merely the lack of availability of capital.

d. Climate

The diverse climates of Guatemala are excellent for the variety of agricultural products grown in the country. The high altitude climate is also very good from a manufacturing industry

viewpoint. The foreign investor finds visiting Guatemala very pleasant. The ex-patriate managers living in Guatemala said they enjoyed the climate very much. These are nice factors, but there is also a cost advantage to the high altitude climate. Temperature and humidity control in a manufacturing operation can be very expensive in a hot tropical environment. That is not the case in Guatemala. Although many operations need to have air conditioning equipment, this equipment does not need to be run on a constant basis.

e. Electricity

The availability and cost of electricity is an advantage for Guatemala. Many countries outgrow their capability to produce electricity. Blackouts and high costs are often the result. This forces manufacturing operations to have back up generators to supplement their needs. In Guatemala, most manufacturers do not have back up generators because they are not needed. Although electrical costs were thought to be high, when compared with other areas of the world, including the United States, the electrical costs in Guatemala are actually low.

f. Incentives for Industrial Export Enterprises

In 1984 the Government of Guatemala passed Decree-Law 21-84. The purpose of this law is to give incentives to industrial operations which export at least a portion of their production to countries outside of the Central American Common Market. The incentives offered in this law basically include the standard incentives extended by almost all developing nations. These include duty free entry of raw materials to be exported; duty free entry of machinery, equipment, samples, instructions and tooling necessary for the production of the goods to be exported; and total exemption from income taxes for a period of ten years. This type of incentive package is no longer a major advantage since almost all countries have similar incentives. However, the law is a direct indication of the attitude of the Government of Guatemala towards export oriented manufacturing operations and this is an important message for foreign investors to hear.

g. Maquila Industry

A maquila industry takes its name from the Mexican border operations which import materials from the United States, perform some labor to these materials and then export 100% of the production back to the United States. There currently exists in Guatemala a fairly well developed maquila industry for garments, with approximately 100 companies. These companies are both locally and foreign owned. The foreign owners are both from the United States and the Far East, primarily Korea. These companies demonstrate that this kind of contract manufacturing can be successful in Guatemala. An investor seeking to establish a

contract manufacturing business does not have to be an industrial pioneer in Guatemala.

h. Available Manufacturing Capacity and Capability

The growth of Guatemala's manufacturing industry in the early 1970's created a large cadre of skilled manufacturing management personnel, together with a wide variety of technical manufacturing capabilities. Along with the growth of the manufacturing companies also came the development of manufacturing support services. These are services such as machine shops, repair companies, freight brokers, and general business services.

The development of the manufacturing industry in the early 1970's was geared to service the Central American Common Market (CACM). The decline of the CACM in the last nine years has meant that major portions of this regional market are no longer available to Guatemalan companies. As a result, there currently exists an overcapacity condition and many companies have excess factory space and too many workers for their current markets. These companies must assess their strengths and find new ways to utilize these strengths. This presents an opportunity for foreign investors interested in establishing a joint venture or leasing a part of their operations to a local company. Unfortunately, the stagnation of the manufacturing industry in the 1980's has also slowed the development of the support services industry.

i. City Size and Layout

The ease of being able to move about in a foreign country or city is important to a foreign investor. This is especially true if the language is not familiar to the investor. Guatemala City is laid out logically, accurate maps are available, and street signs and building numbers are prevalent. This means that an investor can become familiar with Guatemala in a short period of time. Thus, an investment analysis/fact finding trip to Guatemala can be short, efficient and effective.

2. Weaknesses/Constraints

The weaknesses or constraints to growth can be categorized into five major areas as follows:

- Technical Training
- Marketing
- Infrastructure
- Government Policy
- Government Bureaucracy

In order to more properly establish the need and setting for the recommendations, a detailed discussion of each of the areas of constraint will be presented in the next section. Each constraint

will be discussed in detail, followed by the corresponding recommendations.

C. Recommendations

This section of the report provides a discussion of the principal constraints to growth in the manufacturing sector and the recommended actions to eliminate or diminish each constraint. There are five general areas of constraints.

1. Technical Training

a. Constraint

Although there is an abundant source of direct labor for manufacturing activities, there is definitely a shortage of skilled workers. In the industries interviewed these skill shortages occur in woodworking, operation of shoe manufacturing equipment, garment sewing, metal working, and electronic assembly. Each manufacturer interviewed maintains some type of training program in the plant. Some companies have very formal programs with a manager in charge of nothing but training. Other companies used the "shadow" technique of training (the trainee follows around behind another worker and learns by watching). The time needed to train an operator varied from 3 weeks to 9 months. This training time variance indicates a difference in the degree of skill necessary before an operator can be a fully productive worker. Most companies hire people with skills closely related to those required and then train them for the specific requirements. This policy is appropriate for unskilled and low skill jobs, but in the case of specialized skills, for example, tool and die makers, plastic mold set-up, and maintenance, a training period of several years is required. Most companies can not afford this type of training.

Many of the companies had used the Instituto Técnico de Capacitación y Productividad (INTECAP) for training their workers, but most indicated that INTECAP could not provide training in the specific skills required. INTECAP was also used more for advanced training (basic supervision) and less for entry level operator training. The operator skills in which workers did receive INTECAP training were in general electrical and mechanical areas and not in the specific skills which companies needed.

A training institution mentioned positively was KINAL. This is a Catholic sponsored organization offering skill improvement programs. Though smaller than INTECAP, this institution was thought to provide more appropriate skill development training.

An idea frequently voiced during interviews focused on reducing the emphasis on high school education and increasing the attention given to vocational education. There are a number of

vocational schools in Guatemala but they seem to be inadequate to meet the skills training needs.

Recommendation No. 1: Continue Development of Skills Training Assistance Project

USAID received a detailed report assessing the institutional capabilities for meeting the skills training needs of Guatemala's private sector in June 1988. This report laid out three options which needed to be further analyzed, but the overall strategy was clear: USAID should be:

> ". . . investing in risk insurance and preventive medicine. The purpose is to invest in Guatemala's skill training system now, to meet future needs, rather than to jeopardize Guatemala's economic recovery by waiting to address skills needs at some future point when shortages become acute.
>
> Furthermore, USAID's leadership and assistance can take advantage of an environment more favorable now to rebuilding Guatemala's skills training facilities."[1]

At the present time, the private sector is able to struggle along with current public and private training programs while relying heavily on their own in-plant training capabilities. USAID should continue to develop the specific skills training options identified in the detailed assessment. Special emphasis should be given to the identification of the specific skills needed by the private sector and to assure that the training programs are practical.

b. Constraint

A training need that became apparent very early in the interviewing process was the lack of production management courses outside of the full time university curriculum. The need for this capability was also very apparent in discussions and observations concerning the operations of the different companies. The specific disciplines needed are:

- Quality Control - designing and implementing systems and processes to control the quality of the product at an

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[1] Assessment of Institutional Capabilities for Meeting the Skills Training Needs of Guatemala's Private Sector, Contract # LAC-0000-C-00-6074-00. (June 1988), p. 19.

economical cost (not merely final inspection of the product)

- o Production Control - developing a master schedule of finished products to meet the needs of Marketing and then establishing and implementing a detailed production schedule to meet that master schedule

- o Inventory Control - determining the quantity of each raw material required, while minimizing the total value of the inventory without jeopardizing the production schedule or at least defining the risks involved with meeting the schedule

- o Purchasing - developing and qualifying vendors, and placing orders and assuring delivery for the "right material" in the "right amounts" for delivery at the "right time" and at the "right price" as determined by inventory control

- o Traffic Management - controlling in-bound and out-bound shipment of materials, including route, carrier and cost determination

- o Cost Accounting - establishing and maintaining production cost collection systems and utilizing this data to assist in managing the operation more effectively

Outside of the University of San Carlos' full time engineering curriculum, this type of production management training does not exist in Guatemala. It is also not the type of training that can be accomplished with in-plant training programs because the basic skill capability currently does not exist in the companies. Training courses are needed to develop the initial capability in companies.

Recommendation No. 2: Encourage Production Management Courses At AGG

The USAID Private Enterprise Development Project (PED) has a component that will support the development of a Small and Medium Enterprise (SME) Development Center in the Asociación de Gerentes de Guatemala (AGG). This Center will, among other things, provide assistance to SMEs through training, and will assist individuals and firms in the private sector to develop the capability to provide training and technical assistance to meet SME needs. This training is currently being focused on business/strategic planning type courses. It should, however, be more focused on practical, basic manufacturing management skills development.

As a part of this project, the management training needs of the manufacturing sector are currently being assessed. Caution should be taken that this assessment is not too academic at the expense of practicality. Strategic planning is needed, but only for the very top level of management (i.e. owner, president, general manager, CEO). There are numerous management development needs of middle (hands-on) manufacturing management.

c. Constraint

The final constraint in the area of technical training pertains to the lack of applicability of the training programs that currently exist in Guatemala. This does not mean that all training is not practical, but an all too common assessment of university graduates and training course graduates is that they lack practical experience and applicable knowledge. It is not unusual for the private sector to feel this way, but in Guatemala this concern seems very strong and well founded. One manager of a training institution said that they would always skip application in order not to lose any part of the theory of the subject. One institution said that they could not teach production management courses (see prior constraint) because they did not have the laboratory facilities. This not only exhibits a lack of understanding of the courses needed, but also misses the fact that every company provides a perfect "laboratory" for these subjects.

Recommendation No. 3: Establish Cámara/Gremial As Forum for Coordination of Private Sector and Training Institutions

The manufacturing industry in Guatemala is very well organized with a well developed Cámara de Industria and the various industry specialized Guilds (Gremiales). The Cámara should take the lead role in establishing an on-going study team to develop programs to improve the coordination between the private sector and the training institutions, and to improve the over-all technical capability of the manufacturing industry in Guatemala. The team should be led by the Cámara with members of the academic and training community, manufacturing private sector (both local and foreign), and other pertinent government agencies and institutions.

Some of the areas requiring attention are as follows:

- Hands-On-Training - One way to create hands-on-training is to coordinate programs between the universities and the manufacturing private sector. These programs would include summer interns and co-op students.

A summer intern program takes a student during the summer vacation and gives him a meaningful junior technician or junior engineer job with a manufacturing firm. There is no future commitment by either the employee or employer, but both have a good opportunity to become acquainted and to prove themselves. The university can make one summer intern job plus a written report on the job, a requirement for graduation. Many students are currently working either part time or full time, but this work rarely pertains to their course of study.

A co-op student program is more complicated. This program involves five to six years of six months of classroom study followed by six months of on-the-job experience. This type of curriculum stretches out the university education but allows a student to become very familiar with the practical applications of his/her specific area of study. The University of San Carlos has recently started a program somewhat similar to this. (See **Recommendation No. 4.**)

- Technical Seminars - Communication within a growing industry is always a problem. The Cámara led technology team should act as a clearing house for technical seminars to communicate what seminars are taking place. The team can also encourage seminars on such subjects as: obtaining Underwriters Laboratory (UL) approval; utilization of locally sourced chemicals; and basic materials. These seminars could be sponsored by the U.S. government and U.L., private sector chemical companies, and universities, respectively.

- Metrology Services - As the manufacturing industry continues to grow, the need for metrology standards, and equipment calibration services increases. Some of this can be accomplished by private calibration companies. Basic standards may be established and maintained in the university community or by the Central American Research Institute for Industry (ICAITI). Examples of the needs are: testing of plating thickness, chemical analysis service, and testing and calibration of electronics calibration and test equipment. The standards need not be developed anew but rather should include the basic world wide standards such as Underwriters Laboratory -- U.S., United States Military Specifications -- U.S., and British Standards -- U.K.

- Vendor Search - With more new investors starting manufacturing operations in Guatemala, the opportunity to purchase materials locally increases. The problem is communication between buyers and sellers. The development of a detailed industrial products directory is

needed (similar to the Thomas's Register in the United States). To maintain current data, this directory should be computerized. It can be paid for with advertisements from the private sector. The Cámara de Industria's Directorio Industrial does this, but it only includes members of the Cámara.

Another mechanism to promote vendor search outside of Guatemala is to utilize customs information. In order to maintain privacy of information regulations, perhaps only generic product descriptions would be allowed. The type of information that could help is the following:

- Identify the names of possible vendors and their products
- Make vendor pricing information public so as to allow smaller Guatemalan companies to obtain some leverage with foreign vendors
- Identify imported commodities that are used by export manufacturers and are high volume and high priced. These products are candidates for potential manufacture in Guatemala.

Another method to promote vendor search is to attract a private purchasing or sourcing company to establish an office in Guatemala. Such a company can offer purchasing expertise, vendor contacts and improved economy of scale for purchasing from the Far East and the United States.

- Technology Transfer - Both the academic and private sector communities are pursuing the development of manufacturing technology. Coordinating these efforts to the advancement of the whole industry should be part of the team's on-going efforts. The private sector may be willing to fund university studies in their specific area in order to gain technology development and better trained students. These programs, however, need promotion and coordination.

- Technical Training of Government Officials - In order for the Guatemalan government to deal with the manufacturing industry in an effective and efficient manner, a higher degree of manufacturing understanding is necessary. The establishment of the Cámara led team will accomplish some of the training. More specific training is needed, however, for personnel in the lower levels of the Ministry of Economy and the Aduana.

Recommendation No. 4: Strengthen Co-Op Program at University Of San Carlos

There currently exists a type of co-op program in the engineering school at the University of San Carlos. This program is called Programa de Práctica Profesional Supervisada (PPPSE). The normal engineering program includes five years of classes, an exam and a one year thesis. The new program is similar except that the fifth year of classes is replaced by a half year of classes and a half year of work in a company. The work consists of a management position or project work in a manufacturing company. The student receives no pay while working for the company. The program currently is available only for students in the Industrial Engineering and Mechanical Engineering curriculum. There are currently 25 students in the program with another 35 students waiting to be placed. Finding companies that will accept students is one problem that the program is currently experiencing. Part of this problem is due to the newness of the program, but part is also due to the lack of University personnel recruiting companies. The director of the program is Ing. Julio G. Fernández. He is the only person responsible for locating companies, defining work opportunities and projects, placing students, supervising the students while they are working on the projects, and reviewing their final reports. Until the University allocates more resources to the administration of the program, it will falter.

USAID should assist the University in increasing support for the program. This support can come in the form of financial assistance for program administration positions. It can also come through short term technical assistance with personnel from co-op universities in the United States (i.e. Drexel University, Northeastern University). These universities could assist the University of San Carlos in techniques for recruiting companies to accept students and in techniques for administering the student portion of the program.

USAID could also assist the program by working with the Cámara, the Gremiales, and member companies of these organizations in convincing them of the value of the co-op program and the need to support it by accepting students.

Recommendation No. 5: Utilize International Executive Service Corps (IESC)

The companies that had used the services of the International Executive Service Corps (IESC) were unanimous in their compliments of the service. All the services received were short term consultancies in the area of manufacturing but IESC does more than just short term consulting. There are a number of different

programs but two are directly applicable to the problem of technical training.

- o Short Term Consulting - This program is geared to solving specific problems in a specific manufacturing plant. By so doing, the IESC volunteer is also indirectly training company manufacturing management. This management sees a skilled manager identify and resolve problems on the manufacturing floor. The solutions are also a form of training.

- o Manufacturing Operations Management Seminars - This program is tied in with the University of Marroquín in Guatemala. It is a two year masters degree program with classes in the evening and Saturday mornings so current management can attend. The IESC volunteer will also give free consulting to the companies of the students. The IESC volunteers will also train the faculty at the University so that the courses can be taught in the future by Guatemalans. In addition to this formal degree program, the IESC volunteers will give shorter (two month) seminars to a broader group of people.

Both of these programs should be supported by USAID. This support should be in the form of financial subsidies of the volunteers and promotion of the use of IESC volunteers. Of the companies interviewed, many needed the assistance that IESC is able to give but the companies were unaware of IESC or how to become involved with the program. The use of IESC volunteers should not be restricted to manufacturing problems. The IESC volunteers are also able to give assistance in the areas of marketing, financial controls, and business planning. Specifically, the American Business Linkage Enterprise (ABLE) program does 40 hours of research (i.e. market research) for $1,500.

2. Marketing

a. Constraint

The interviews with Guatemalan manufacturers have clearly illustrated that export experience is predominantly based on trade links within the Central American Common Market (CACM). This concentration on regional trade is understandable given the geographic proximity and cultural ties to Central America.

A key feature of this trading pattern is that Guatemalan companies have been operating in preferential markets controlled by the CACM which has afforded favorable entry conditions for their exports. This pattern of trading inevitably limits the level of marketing experience that is required to penetrate more distant and demanding markets.

A consequence of this controlled export environment is that Guatemalan firms are unfamiliar with the commercial practices necessary to tackle markets outside the region. The implication of this is particularly serious in light of the political and economic uncertainty in the region, which threatens the export capabilities of many Guatemalan firms. The result is a highly volatile market that is influenced more by political considerations between governments than strictly commercial practices between companies.

The likelihood is that this unpredictability in the regional marketplace will increase rather than diminish, certainly in the short term. The source of uncertainty may not only be political instability but also increased competition from indigenous producers in importing countries as they increase their pace of industrialization. In quite a few instances, companies mentioned that preferential entry for their products had been withdrawn once rival domestic ventures had been started. This is especially true with the Costa Rican market.

In the face of such risks, it was clear that many of the companies interviewed have had to withdraw from the export market and operate in the more secure, although smaller, home market. More realistically, however, other firms have realized that long term survival will depend upon the opening up of other markets beyond the region.

The following are basic marketing problems observed in Guatemala:

- Passive Marketing Orientation - Guatemalan exporters exhibit a fairly passive marketing orientation as a result of their established and traditional export links with the CACM. This lack of exposure to world markets is a factor which severely inhibits a dynamic approach to the diversification of export activities.

  The reduction of the CACM market has caused some "panic" measures to replace declining traditional markets. Thus, entry into new markets is often not based on prior analysis of market conditions and consumer tastes or preferences and, as a result, performance has been poor.

  Successful export performance is not determined by price alone. Other factors such as product design, aesthetic appearance, delivery, specifications, functional performance and quality, also influence the importer's purchasing decision. But since many firms had little knowledge of buyer behavior prior to market entry, the product could not be matched to consumer requirements.

Essentially, the transition from regional to international markets is a source of risk and uncertainty which involves new distribution channels, new commercial practices (tariff and quota regulations), new quality control standards, and perhaps new product specifications. Dependence upon the regional market has not equipped Guatemalan firms with the aggressive and active marketing approach needed to compete in more demanding markets.

- Lack of Marketing Skills - While a few of the larger Guatemalan firms have developed structured export development strategies, the majority of the firms interviewed lack experience in effectively using marketing techniques as part of a coordinated export promotion program. Many companies are unfamiliar with export marketing practices and, typically, commercial relationships are developed through impromptu personal contacts. The underlying cause of deficient marketing programs is a lack of personnel with qualifications and experience in product marketing.

- Lack of Market Information - Sound market research is required prior to active product promotion. A lack of information for Guatemalan enterprises is a critical constraint affecting their capacity to penetrate and develop new markets. Market entry is seldom based upon detailed information about market characteristics and the requirements of the customer.

  Market information is essentially required to reduce the inherent risk and uncertainty associated with developing export markets. In an intensely competitive world market, the availability of an effective market information system can often mean the difference between export success or failure. Sound market research information is required for the company to develop an export promotion strategy and to provide the initial input needed to adapt the product to customer preferences before market penetration.

In summary, the lack of in-house skills, first hand knowledge of foreign markets, and exposure to international competition without preferential tariff or quota protection, indicate that the provision of marketing training and external marketing assistance (promotion) will be a critical prerequisite to improved export performance at the company level.

Recommendation No. 6: Expand Marketing Training and Assistance in "How To" Market in The United States

Training in marketing skills should be provided through group seminars which should last between 5 and 10 days. The aim of such courses would be to improve the level of understanding among Guatemalan entrepreneurs of export marketing techniques and practices. Part of the course should be used by firms to prepare product marketing plans. At the outset, foreign marketing experts, such as IESC volunteers or U.S. Department of Commerce (DOC) personnel, should be brought in to teach the courses. These teachers should be required to work alongside Guatemalan counterparts, so that these counterparts may acquire the experience to prepare future courses. The U.S. Department of Commerce should play a leading role in establishing these seminars, but USAID may need to fund them.

Foreign market research experts should be used to undertake specific export market survey studies at the firm level. These experts might be IESC volunteers in the ABLE program. On the basis of this market information, the company will define the nature of its export promotion effort, and any further assistance that may be required to bring the product to the point of marketability.

Financial assistance should be provided to companies participating in trade fairs and trade missions. This assistance can be provided by USAID through the PED project. Financial aid should be subject to strict pre-conditions for the company concerning the product to be promoted. The firm must show evidence of the following:

- Familiarity with importer preferences and demonstration that these have been incorporated in the product design or production capability
- Manufacturing capacity
- An integrated export promotion effort that includes trade fair/mission participation. This should not be an isolated activity.

b. <u>Constraint</u>

An important part of an effort to develop export oriented manufacturing involves a strong foreign investment promotion and export promotion function. This need was explained in the previous CONSTRAINT. Unfortunately, this is a serious weakness in Guatemala

as an active, clearly defined, foreign investment promotion effort is lacking. There are a number of organizations which feel that this is at least a part of their responsibility. The result of this confusion and over-lapping of responsibilities is a poor investment promotion function for Guatemala. A potential foreign investor does not know where to go. Promotional efforts are poorly planned and uncoordinated. There is a lack of investment promotion expertise and a lack of experts who are knowledgeable about foreign markets.

Recommendation No. 7: Improve International Promotion Capabilities at Gremial (with O/RD Agri-Business Development Program)

Initially, there must be a clear definition of which organization is to have the responsibility for foreign investment promotion. This organization should be the Gremial de Exportadores de Productos no Tradicionales (Non Traditional Products Exporters Guild, known as the "Gremial"). The USAID PED project has a component entitled Export Promotion. The Gremial is one of the organizations which will be involved in this component. The USAID Guatemala Office of Rural Development (O/RD) also has a project to work with the Gremial in export promotion (Agri-business Development Program). These two projects should be coordinated to include:

- Investment promotion training
- Development of professional promotional materials
- Development of a computerized tracking system
- Technical experts in the specific targeted markets

Training in investment promotion techniques should be provided to members of the Gremial, industrial free zone park personnel, interested private sector people, and Government personnel from the Consejo Nacional de Promoción de Exportadores (CONAPEX) and the Aduana. By including the Aduana in this training, it makes it become a part of the promotional effort and not a hindrance to that effort. There are a number of consulting firms which do this type of training. One which can be recommended is Development Consortium of Stamford, Connecticut. They have conducted a number of investment promotion training programs in the Caribbean and the United States. (Appendix I provides a description of their training program).

Part of the promotional effort requires having professional promotional materials. The materials available at present for Guatemala are only fair, and provide only the bare minimum.

Besides creating an improved overall brochure, there is a need for industry specific material, trade show booth display, 35mm slide presentation, subcontractor information brochure, cost analysis, and advertising. It is also necessary to insure that the information about Guatemala used by others is accurate. An example of this is the Annual 807 and CBI Comparative Analysis published by the Bobbin Consulting Group. The 1988 report has incorrect information concerning Guatemala.

In order to maintain and utilize information on potential investors, a computerized tracking system should be developed. This is extremely important as the number of potential leads grows, even though it does not seem necessary at the present time. This system does not have to be custom designed as there are a number of these types of systems currently available. Some of these systems have been developed for USAID with USAID funds. The system should be as uncomplicated as possible and should not be tied in with a large number of other systems.

The use of technical experts in the targeted market areas can be very beneficial. There are three areas of expertise required by an investment promotion consultant:

- Knowledge of and experience with Guatemala
- Knowledge of and experience with investment promotion
- Knowledge of and experience with the targeted industry

The specific areas in which a consultant can be utilized are as follows:

- Strategy Development - A consultant should assist the Gremial in developing a strategy for promoting the targeted industry.

- Work at Trade Shows and Seminars - A consultant can be utilized to work at a trade show or seminar when there is insufficient manpower in the Gremial to adequately cover a promotional event or if specific industry expertise is desired.

- Assistance with Specific Companies - A consultant may be utilized to assist with the follow-up of specific companies with which the consultant has a special relationship or about which he has special knowledge.

- Train Personnel - A consultant should be able to train both Gremial and other interested persons in investment promotion techniques and in specific industry subjects.

- Development of Local Subcontracting Capability - A consultant could be a valuable resource in conducting half day seminars to promote subcontracting to local

businessmen. A consultant would also be valuable in developing technical assistance programs for the subcontractors and in actually assisting the subcontractors.

The next three recommendations discuss what, specifically, the Gremial should be promoting. It is important to realize these three activities in developing promotion strategies.

Recommendation No. 8: Promote Current Local Export Capabilities

There already exists in Guatemala a great deal of exportable capability. There is a variety of agricultural products along with some manufactured goods. Two current industries with very good export potential are the woodworking industry and the garment maquila industry. The Gremial should be assisting these industries in marketing their products and capabilities with the use of trade shows, promotional materials, advertising, and follow-up. The objective of the Gremial should be to promote Guatemala and the basic industry capabilities rather than any specific company. The largest market for these capabilities is the United States and it is this market which the Gremial should be targeting. In order to market in the United States, the Gremial should use the services of the Commercial Attache's Office in the United States Embassy in Guatemala.

USAID assistance for this promotional effort should be through the PED project.

Recommendation No. 9: Target Foreign Investment

The second targeted market is the foreign manufacturer who is looking for a lower cost manufacturing location. This manufacturer needs to find a subcontractor to manufacture his products, or a location to establish his own manufacturing operation, be it 100% owned or a joint venture. Because Guatemala has capital available, the type of foreign investment which should be sought is that with marketing capability and manufacturing technology. What Guatemala lacks is the ability to enter new foreign markets and the capability to establish new manufacturing industries. These are both capabilities which the foreign investor is able to bring to Guatemala. Attracting marketing and technology investors is significantly easier than attracting capital investors, especially to a region of economic and political instability.

Developing a strategy for attracting foreign investors is extremely important. Efforts will not be successful if they are not carefully directed and focused. The strategy for attracting foreign investors has two components - targeting and promoting. Guatemala is not large enough to be all things to all investors. Guatemala must target its efforts to actively attract foreign investors while at the same time responding to inquiries from all investors.

One area that needs to be targeted consists of industries which provide backward integration products to current Guatemalan industries. These manufacturing support industries can support improvements in Guatemala's balance of payments through import reductions and also make investment in Guatemala by other foreign investors more appealing. Producers of finished products tend to seek manufacturing sites where components for their products are available. The less a manufacturer has to do in-house, or to import, the better.

In addition to these backward integration industries, Guatemala must target industries with the following characteristics:

- Industries which are growing in both size and in product mix. Expanding and changing products often require new operations.

- Industries in which new companies, not merely a few very large companies are emerging. New companies need new facilities or new subcontracting arrangements.

- Industries under pressure to reduce costs.

- Labor intensive and not merely capital intensive industries.

- Industries which are not at the leading edge of technology and therefore, require less technical support. The more developed manufacturing countries should develop the new manufacturing technology.

- Industries with low bulk products and a high value added to weight ratio.

Foreign investment promotion involves three stages: identification, follow-up and follow-through. The objective of the identification stage is to establish a one-on-one relationship with a potential investor. For an extremely narrowly defined industry, desk research, direct mail and phone calling is the best approach. For larger industries, there are a variety of ways to make initial contact - media advertising, direct mail, networking, trade shows,

seminars and investment missions. One of the most successful methods to bring about face-to-face contact is through the use of trade shows, both by having a booth at the show or by merely walking the show.

Follow-up is the part of the investment promotion procedure which is undertaken to convince the investor to take a trip to Guatemala. It is an activity that is performed primarily in the foreign country (i.e. the United States). Information obtained in the identification stage must be entered into an investor tracking system (either manual or, preferably, computerized). The follow-up techniques then required depend on the specific potential investor but may include letter, telephone, visit to the investor's plant, and responding to the requests of the investor. The objective is to maintain and strengthen the relationship.

Follow-through involves dealing with the investor in Guatemala. In the case of subcontracting, this means taking samples to subcontractors, expediting quotes, and assisting both the investor and the subcontractor in order to facilitate the arrangement. In the case of an investor seeking his own operation, this may mean finding a joint venture partner and assisting with the logistics of a fact-finding trip. This follow-through stage ends only when an investor decides <u>not</u> to invest in Guatemala. Even after a decision is made to invest in Guatemala (subcontract or own operation), the promotion staff should be available to assist the investor.

Recommendation No. 10: Develop Maquila In Other Industries

The third area which needs to be promoted is the development of local maquila or subcontracting capability in new industries. At present, Guatemala has a fairly well developed garment maquila industry. This indicates that maquila-type industry in Guatemala is very viable. Guatemala must now seek to develop similar maquila industries in different branches of manufacturing. Examples of these new industries are electronics, woodworking, metal mechanics, plastics molding, and data entry. A more in depth look at the development of an electronics maquila industry is provided in Appendix A. This appendix includes:

- Analysis of the electronics industry
- Review of the infrastructure requirements of the industry and how Guatemala is prepared to meet these requirements
- Strategy to develop the maquila industry in Guatemala

All three of these items need to be developed in depth for each new industry which Guatemala seeks to promote, although the basic strategy is applicable to many different industries.

A major part of this recommendation assumes that there are Guatemalan businesses and entrepreneurs who are interested in establishing new maquila industries. This assumption is based upon the conversations with business leaders and with the response at the "working cocktail" party. Following the party, two Guatemalan businessmen expressed interest in establishing electronics maquila operations. Both need considerable assistance in developing the businesses, but the willingness to invest was apparent.

3. Infrastructure

a. Constraint

The greatest infrastructure constraint to manufacturing in Guatemala is the poor telephone service. This was mentioned by every company and person interviewed. The problem exists with regard to both the lack of availability of telephone lines for manufacturing operations and the poor service offered. When asked about the telephone service, people laughed because it is so bad, but to a potential foreign investor it is not a laughing matter. When a plant is unable to communicate with its international parent or customer, that is a serious problem. Without a good telephone system, the function of foreign investment promotion is severely hindered (unless there is an active investment promotion office in the country being promoted). USAID received an analysis entitled Telecommunications in Guatemala written in May 1987. This study was prepared by the Partridge Group of Washington, D.C.. The in depth 1987 report called for the privatization of at least parts of the telecommunications services in Guatemala. This preliminary assessment of the manufacturing sector in Guatemala supports that recommendation,but has not analyzed the problem in enough depth to offer further recommendations. However, telecommunications are a very serious constraint to industrial development in Guatemala.

b. Constraint

There is a definite lack of manufacturing support services in Guatemala. These are services such as mechanical and electrical repair, calibration, tool and die work, precision plastic molding shops, and sourcing or purchasing services. If these industries are not available, the manufacturer must provide the service himself either in-house or imported from outside of Guatemala. Most companies in Guatemala have attempted internal backward vertical integration by performing these services in-house. Economies of scale and changing technologies, however, make backward vertical integration for individual companies very costly.

To be an expert in all areas of a highly vertically integrated product is extremely expensive. Moreover, in many cases it is impossible to do due to the high quality standards, and the laboratory and testing facilities required in each area. This work should be subcontracted to local experts in each field, but these experts do not exist currently in Guatemala. In fact, the development of these manufacturing support industries is indirectly discouraged. Value added taxes, import duties, and indirect exports excluded from the Decree-Law 21-84, are three Government of Guatemala policies which discourage the development of manufacturing support industries. These restrictions will be discussed in **Recommendation No. 16.**

Recommendation No. 11: Promote Development of Manufacturing Support Services and Industries

The promotion of manufacturing support industries has already been identified in **Recommendation No. 9** as an important area which promotional activities should try to target. As mentioned, these manufacturing support industries can help to improve Guatemala's balance of payments through import reductions and provide an additional stimulus for foreign investors. Producers of finished products tend to seek manufacturing sites where components for their products are available. The less a manufacturer has to do in-house, or to import, the lower the cost.

c. Constraint

Transportation is an important infrastructure requirement in developing a manufacturing industry. The transportation needs of the electronics industry are discussed in detail in Appendix A. The requirements itemized in Appendix A are not significantly different from those of other light manufacturing industries. The basic needs are air transportation (both passenger and freight), sea transportation, express package service and in-country public transportation. In Guatemala these services are not bad, but neither do they represent a strong advantage. Air freight is irregular, with air shipments frequently being bumped from passenger planes. All transportation is relatively expensive, with air freight the most costly (relative to other Caribbean and Central American countries).

In June 1987, USAID received a report entitled Central America Regional Transportation Study (Contract # OTR-0000-I-00- 6071-00). This study reviewed transportation from a regional perspective and from each individual country's perspective. There are numerous recommendations pertaining to Guatemala which should be considered. Although this preliminary assessment of the manufacturing sector in Guatemala did not study the transportation situation in depth,

as the 1987 report did, two additional brief recommendations are provided below.

Recommendation No. 12: Encourage "Open Skies"

A policy of "open skies" tends to make the establishment of air routes dependent on the requirements of the market. As the manufacturing sector in Guatemala grows, the requirements for air freight will increase. If free competition of air freight and passenger routes is allowed, the frequency of service will increase and the increased competition will cause freight rates to decrease. The Far East is an excellent example of this.

Recommendation No. 13: Educate on Use of Broker

The problems which companies expressed with freight and customs seemed to differ a great deal. It soon became apparent that companies which used a freight broker to both import and export material had significantly fewer problems. The companies that did not use a freight broker had significant problems, and spoke of large staffs of employees whose sole function was traffic (controlling in-bound and out-bound shipment of materials, including route, carrier, customs, documentation and cost determination). The high cost of a freight broker was the reason given for not using a freight broker but the in-house staff costs actually seemed to be higher.

Using a freight broker is not the answer to all freight and customs problems, nor is it the right direction for every company. The alternative of using a freight broker should be properly presented so that each company is able to make an intelligent decision. Many of the shortcomings of Guatemala's transportation system can be reduced or overcome by utilizing a freight broker.

4. Government Policy

a. Constraint

When discussing the Government of Guatemala's (GOG) role in developing the manufacturing sector, the comments, as could be expected, were mixed and often heated. There was an overwhelming feeling of uncertainty about the Government, based primarily, on widespread uneasiness about what the GOG would do next regarding economic and fiscal policies, rather than concerns of an impending coup, although the 1992 elections could bring about a change. The current GOG received high marks for its initial actions. However, there was a loss of confidence in the Government arising from

concerns that the new tax legislation had been enacted recently, despite initial Government claims to the contrary. As a result, there is growing uncertainty with respect to GOG policies and programs. The GOG's economic policy strategy seems to be changing direction, but the new direction is unknown. The policy dialogue items in **Recommendation No. 16** could help this problem.

Concerns were also voiced regarding the political context for industrial development. This is related to the security problem arising from guerrilla type activity in parts of the country. No company felt that there was an actual security problem, but many discussed the perceived problem and how that affected foreign investors. One banker spoke of two foreign investors in the past month who had stopped their investment investigation, at least temporarily. The reason given was the lack of personal security in the country. A local Guatemalan company also mentioned that a joint venture with a U.S. firm was on hold until security conditions improved.

Nevertheless, the security problem apparently is more perceived than real. Because of its location, Guatemala is associated, rightly or wrongly, with the political unrest and guerrilla warfare occurring in other parts of Central America. In addition, the U.S. Embassy in Guatemala restricts travel for Embassy employees and certain areas of the country, including the second largest city in Guatemala, are off-limits. For a potential foreign investor, with no first hand knowledge or experience, this type of restriction creates a feeling of insecurity.

A USAID study entitled A Desk Study of Investment Incentives For El Salvador and Selected Central American and Caribbean Countries (Project Number DPE - 2028-C-005074-00) listed the economic, financial and political risk ratings and rankings for Guatemala in February, 1986. Economic risk was based on a country's performance on GDP growth, inflation, balance of payments and other factors. Ratings ranged from very good to bad. Significantly, Guatemala was rated "Bad" and was ranked 85th out of the 119 countries rated. In addition, Guatemala was rated "Bad", and ranked 97 out of the 119 countries rated, in the financial risk category. This type of risk was based on three variables rated as follows: access to international financial markets (50%); terms obtained, i.e. spread/maturity (25%); and sell down (25%).

Moreover, with regards to political risk, which is defined as the risk of political turmoil over the next 18 months, Guatemala was rated "High" ("violence or potential violence can erupt"). Specifically, Guatemala's ratings in three sub-sectors that comprise this political risk category were as follows: In the Finance Risk sub-sector, Guatemala was given a C- rating ("pressures for restrictions on international business; international debt problems"). In the Investment Risk sub-sector, Guatemala was given a C rating ("political turmoil creating security problems;

controls on equity ownership, repatriation of profits; unstable labor conditions"). In the Export Risk sub-sector, Guatemala was given a D+ rating ("inconsistent and restrictive policies restricting trade and international payments; turmoil creates major operational problems; unstable currency, high inflation").

The ratings were done by Frost and Sullivan, World Political Risk Forecasts, 1985.

Recommendation No. 14: Review Ratings of Guatemala

The U.S. Embassy travel restrictions and hardship ratings should be reviewed with an understanding of the positive and negative consequences of these restrictions and ratings. This does not mean that these restrictions and ratings are currently not taken seriously. Nor does it mean that these restrictions should not be conservative (err on the safe side). It means that as conditions change, restrictions and ratings should change, and that erring on the too conservative side can have some unjust and negative impact on investment in the country.

When independent ratings are established (i.e. Frost and Sullivan), an attempt should be made by the U.S. Embassy, USAID, the GOG and the Gremial to ensure that these ratings are as accurate as possible. Some of the rating categories are based on objective criteria, but most are based on subjective evaluations and opinions. Keeping these ratings up-to-date and accurate is in the best interest of Guatemala. There should be overt actions to ensure this.

Recommendation No. 15: Promote Guatemalan Tourism in the United States

The perceived security problem caused mostly by the proximity of Guatemala to countries with civil unrest is a difficult issue. The question thus arises about how Guatemala can differentiate itself from the unfavorable image of Central America which is so prevalent today. A major advertising campaign in the United States promoting tourism in Guatemala would accomplish two things. First, it might attract tourism, which is a high priority sector of the economy. Second, advertising would give the U.S. public a more favarable impression of Guatemala. Without ever mentioning industrial development, a U.S. business person will have an improved perception of Guatemala. Subsequently, when an investment promoter talks to a United States manufacturing company about Guatemala, the first thoughts in the minds of the company's

management are more likely to be of Guatemalan tourism and not of the fighting in Nicaragua and El Salvador.

b. Constraint

There are a number of current GOG policies and regulations which are not in the best interest of developing the manufacturing industrial sector of Guatemala. Since this preliminary assessment focused on export oriented manufacturing companies, these policy areas also deal primarily with imports and exports.

- Investment Incentives - The current Decree-Law No. 21-84 regulates incentives for industrial export enterprises and has contributed significantly to the development of a maquila type industry in garments. The law also made an important statement concerning GOG interest in developing export oriented businesses. There are, however, some areas in the Decree-Law that should be improved. First, there is currently no provision in the law for companies which are not 100% exporters (i.e. 80% export, 20% local market). The development of these partial export companies, however, would contribute to an increase in exports and decreases in import requirements for some finished products. There also is no provision for indirect export companies (i.e. companies which sell over 80% of their component type products to local companies which then export the finished product), and no incentives for the export enterprises to subcontract any of their work to a local manufacturer.

- Free Trade Zone - The current free trade zone law 22-73 amended by Decree 15-79 allows only one free trade zone (FTZ), which is owned by the GOG. There is a need, however, to establish additional free trade zones that are privately-owned. Free zones provide a method for goods to enter and leave a country with a minimum of bureaucracy and without requiring a system of tariff payments and drawbacks. Most countries allow material to enter their free trade zones free of duty if it is to be exported. In a free zone, the material enters the free zone in bond and no duty payment is made. On the other hand, in a non-free zone environment, an import duty is paid when the material enters the country and this duty is refunded (drawnback) when the material is exported. Since no duty is paid in a free zone environment, the material passes through customs much quicker.

  Free zones which are full service industrial parks can also provide additional services. These services can include employment screening, medical services, high voltage electrical service, satellite communications,

security, employee transportation, freight facilitation, employee training facilities and available factory shells.

- Government Intent - There are two laws which currently inhibit the expansion of industrial development, particularly export-oriented manufacturing. These are the Export Tax Law (Decree No. 23-86) and the Value-Added-Tax Law (Decree No. 72-83 with amendments 120-83, 97-84, 66-85, and 103-85).

  The four percent tax on non-traditional exports is less a financial problem and more a philosophical problem. Is the GOG really interested in developing export oriented businesses if it then taxes those exports?

  The value-added-tax penalizes a company for performing more work (more value-added) in Guatemala. This does not promote industrial development.

- Patents and Trademarks - Patent laws and trademark applications are poorly administered. One example of this involved a foreign company trying to establish a licensing agreement with a local Guatemalan company to manufacture its products. The products would be manufactured in Guatemala, and then sold locally and to Central America (using the foreign brand name). The whole project was stopped, however, when it was discovered that the foreign brand name had already been issued as a trademark in Guatemala. The trademark was not being used currently to manufacture or sell anything, but since it had already been issued, the manufacturing licensing project could not take place.

- Raw Material Management - Agricultural products represent a tremendous resource for Guatemala. The Gremial and GOG should be promoting the development of industries which add significant labor to these agricultural products. This is especially true if the end products are exported. An example of this is found in the lumber/woodworking industry. In this industry, one U.S. dollar of exported raw lumber or timber can be transformed into five U.S. dollars of exported woodworking industry final product. Currently, it is very difficult for the woodworking industry to buy raw timber in Guatemala, yet, it is very easy to export raw timber or rough cut lumber. This stands in the way of manufacturing industrial development, and, if allowed to continue without required reforestation, will rape the country of a valuable resource.

Recommendation No. 16: Policy Dialogue

USAID should promote policy dialogue with the appropriate Office or Ministry of the GOG concerning six specific policy areas (tariff regulations are discussed in **Recommendation No. 18**).

- Decree-Law No. 21-84 - This law is currently being revised. The new law should do the following:

  - allow export enterprises to subcontract to local companies

  - define an indirect export company as an export enterprise

  - allow an export enterprise to sell up to 20% of its goods in the local market.

  These amendments to the current law 21-84 will ensure that incentives which make Guatemala competitive with other developing nations in attracting foreign investment are provided.

- Free Trade Zone Law 22-73 amended by Decree 15-79 - There is currently a new free trade zone law being developed. This law should encourage the development of privately owned free trade zones. The benefits of these free trade zones have been demonstrated around the world. The most recent example is the Dominican Republic, where the establishment of free zones has led to the creation of over 15,000 new jobs each year for the past four years in the free zones.

- Export Tax Decree No. 23-86 - This law has been revised. There is currently a program to gradually (over 3 years) reduce the 4% tax. This tax should be repealed immediately! The revenue loss would be partially off-set by the reduction in government tax and customs officials.

- Value-Added Tax Decree No. 72-83 with amendments 120-83,97- 84, 66-85 and 103-85 - A value-added-tax does not promote manufacturing industrial growth. Instead of a value-added-tax, a value-added incentive is needed. A tax incentive or credit should be given for an increase in the local value added portion of a product. This can be determined by the ratio (by value) of imported material to the total product value.

- Patent and Trademark Law - The administration of these laws should not prevent the development of the manufacturing sector. Patents and trademark laws should protect legitimate manufacturing operations and not restrict their development.

- Forestry (Decree 58-74) - This law gives a tax credit of 50% to persons who incur the expense of reforestation. Reforestation should be required if over 5 hectares of timber are being cut. The regulations concerning local purchase of timber should be simplified to allow the woodworking industry to grow.

c. Constraint

The operation and usefulness of CORFINA is severely hindered by the large number of companies currently in its portfolio which are non-operational. These companies tie up much needed CORFINA funds and the debt service on these funds is a drain on the country.

Recommendation No. 17: Assist In Selling Corfina Companies

USAID and the Gremial should promote the sale of CORFINA companies to the private sector. Two of the local companies visited had recently purchased CORFINA operations. In fact, one of the firms has already turned the company into an expanding, profitable operation, while the second one is using the acquisition as part of its expansion plans. Both were very pleased with the transactions.

At the present time, there is only one CORFINA owned company in operation. This plant was visited and found to be a very well run company. Over the last three years, new management has been able to reverse a six-year trend of operating losses. This plant is currently operating profitably and at production capacity. It could definitely use IESC assistance in planning production expansion, but managers were not aware of the IESC program. Moreover, the company is very marketable but the investment community is unaware of this. One banker, for example, discussed a recent visit by a foreign potential investor in the exact product area of this CORFINA owned company. The banker, however, was not aware of this acquisition or joint venture opportunity.

The recent devaluation of the Guatemalan Quetzal makes the acquisition of these CORFINA owned operations by foreign investors more attractive. USAID, the Gremial and CORFINA must be more aggressive in marketing the CORFINA owned manufacturing companies.

5. Government Bureaucracy

a. Constraint

There are two major problem areas with the bureaucracy of the GOG as it pertains to the industrial sector -- paperwork and the Aduana.

The paperwork requirements for operating an export oriented business are overwhelming. The recent implementation of the ventanilla única (one-stop window) system has reduced the number of locations or stops necessary to obtain approval of export commodities. One study suggested that, before the establishment of the ventanilla única, an exporter had to walk 80 kilometers of lines in order to process the paper requirements for exports; this amount of travel has now been reduced to one kilometer. Thus, the ventanilla única has been a significant improvement, but problems still remain. As one exporter pointed out, even though the number of lines (queues) has been reduced by the ventanilla única, the length of the line has increased.

Unfortunately, the quantity of paperwork has not been reduced by the ventanilla única. The scope of this preliminary assessment did not allow for a paperwork path analysis. In talking with various GOG officials, however, it became apparent that GOG offices are overwhelmed by the amount of paperwork received which can not be processed or filed in a timely manner. The quantity of "red-tape" has created an unfortunate situation in which private sector time and resources are utilized to fulfill control requirements, which GOG personnel cannot manage. This is a waste of both private sector and GOG manpower resources.

The quantity and complexity of transactions required creates other real costs for the manufacturer. Late paperwork may cause a shipment date to be missed, which might jeopardize the manufacturer's relationship with his customer and, in the case of perishable goods, even cause a complete loss of the goods. In addition, the difficulties in obtaining foreign exchange to pay for imported materials can encourage companies to increase their inventory, with subsequent reductions in working capital and increases in the cost of operations.

The second problem area identified during company interviews relates to the operation of the Aduana. The comments centered on the short hours worked by Aduana officials (24 hours of work in a 40 hour work week schedule), their lack of product knowledge and flexibility and, in some cases, the necessity to make "extra" payments in order to obtain release of imported shipments. Difficulties with the Aduana regarding the import of spare parts and sample materials were also cited. Although this preliminary assessment was unable to verify or reject these affirmations, the complaints by manufacturing companies in this regard were not

conflicting. However, companies which used freight brokers were not directly involved with the Aduana.

Recommendation No. 18: Assist With Fiscal Management Reforms

USAID should develop a project to assist the GOG in analyzing, revising, and implementing fiscal policy. The objective of the project should be to develop a system that eliminates regulations which are both unnecessary and unmanageable. The fiscal controls should be stable, understandable and enforceable. If a regulation or control is necessary, a system must be developed to manage the control in an efficient and timely fashion. Because their project could not hope to deal with the entire GOG fiscal system, it should focus on import/export controls and customs procedures, and tax structure and management.

Part of the project should develop a detailed assessment of the tariff and tax incentive system. The study must focus on methods of reducing any inherent bias against exports and must reconcile the short-term revenue objectives of the GOG with the long-term objectives of local manufacturing growth. Much of the short-term reduction in revenue from duties could be counter-balanced by improved enforcement and collection of corporate income tax. All tariff regulations should place a higher duty on finished products than on raw materials or components (i.e. the more labor in the product, the higher the import tariff duty).

The study of the tariff system would also assist in the design of appropriate industrial incentives for exports by doing the following:

- comparing the incidence and impact of incentives among industry groups
- examining the effects of income tax and other direct taxes
- looking at the overall impact of major incentives on investment.

Some specific areas requiring tariff improvements are:

- spare parts and research and development equipment which should enter the country duty free
- sample materials to be defined as having no duty value. This would avoid delays caused by disputes over the definition and identity of different materials.

Recommendation No. 19 Encourage Training of Aduana Officials

There are two main areas for training of Aduana officials. The first supports improvments in the manufacturing technical capability of the officials. This training would facilitate application processing of the drawback/temporary entry systems and identification of materials. The Cámara-led technology team should coordinate this training.

The second area should aim at developing a better understanding by customs officials of the overall objective of import tariff regulations, with special emphasis on industrial development objectives. Part of this training would be geared towards improving custom's trust in manufacturers. This does not mean companies should not have their statements carefully checked. In fact, detailed and qualified audits of the companies' inventories and activities can be accomplished, for example, utilizing public accounting firms. This would streamline the auditing, put the cost burden on the companies, and allow customs personnel more time for other duties. Having Aduana officials take part in the investment promotion training would assist with the aforementioned objective.

IV. SURVEY OF EXISTING MANUFACTURING-RELATED DATA COLLECTING CENTERS

A. Introduction

The development of a modern economy necessitates statistical information that can support and guide economic analyses by public and private sector institutions, both domestic and international, in considering alternative programs and policies to accelerate economic growth. The Agency for International Development, in its support of economic development programs in developing nations worldwide, is thus a primary requestor and user of such information. Specifically in the case of Guatemala, the Private Sector Office of USAID/Guatemala is in need of information that can support its private sector strategy with regard to the manufacturing sector. Therein lies the rationale for conducting a survey of existing sources of information on the manufacturing sector in Guatemala.

During the field research in Guatemala, frequent reference was made by interviewees to the lack or unreliability of the data available on the manufacturing sector. Although a number of statistical series exist which are useful and adequate for analyzing the structure and growth of the manufacturing sector, particularly those of the Instituto Nacional de Estadística, there is ample room for improvement of existing sources as well as for development of new series. The following section discusses in considerable detail the sources and types of data currently available in Guatemala. Appendices C and D provide complementary information.

B. Sources and Types of Data

1. Public

The principal sources of primary data on the manufacturing sector are public sector institutions. The Instituto Nacional de Estadistica and the Banco de Guatemala, in particular, are the primary gatherers of raw data on this sector. Other public offices, such as the Dirección de Poliitica Industrial and the Unidad Sectorial de Planificación y Programación, which are directly involved in manufacturing-related activities could also play an important role in data collection, but are currently very limited by the lack of resources and personnel.

a. Instituto Nacional de Estadísticas (INE)

The National Institute of Statistics (INE) is by law the organization responsible for the compilation of statistical data in Guatemala and has technical jurisdiction over all statistical

activities undertaken by public sector institutions. Formerly the Dirección Nacional de Estadísticas, INE was created in 1985 by Decree-Law 3-85 as part of a national plan to integrate, coordinate and rationalize the National Statistical System (Sistema Estadístico Nacional - SEN). Within the SEN, which is comprised of all governmental or para-governmental entities involved in the collection, tabulation, analysis, and publication of statistical information, INE has as its principal role the formulation and implementation of statistical policies, as well as the responsibility for planning, directing, coordinating, and supervising all statistical activities. A diagram of the SEN is provided in Appendix C-1.

INE currently collects and publishes most of the systematic data on the manufacturing sector in Guatemala. The following is a description of these series:

- National Directory of Industrial Establishments

The directory, available on an irregular basis since 1968, has been published annually since 1984. It includes firms of 5 or more employees, grouped according to the Standard International Industrial Classification system (SIIC-Rev. 2).[2] The directory provides the name of the firm, name of the proprietor, geographical location (including department or municipality, address of the central plant or offices, and telephone number), and types of products manufactured. A total of 2,200 manufacturing establishments were included in

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[2] Under the Standard International Industrial Classification system, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively become narrower with successive additions of digits. Thus, the greater the number of digits, the more detailed the information. The hierarchical order of SIIC-Rev. 2 categories included in INE publications is as follows:

Gran División	1-digit	i.e. Manufacturing Industry
Divisiones	2-digits	i.e. Food, beverage and tobacco industries
Agrupaciones	3-digits	i.e. Food products for human consumption
Grupos	4-digits	i.e. Manufacture of dairy products

the latest directory.

The manufacturing establishments listed in the directory are classified into one of the following groupings:

- o I 5 - 10 employees
- o II 11 - 24 employees
- o III 25 - 49 employees
- o IV 50 - more employees

Although a number of industrial directories are published by private firms and institutions, INE's is the most comprehensive in terms of scope.

- Industrial Censuses

The first industrial census was conducted in 1946 and published in October of 1951. Since then, INE has conducted 4 more censuses of the manufacturing industry in Guatemala. The fifth, and most recent census, was conducted in 1978 but was not published until 1982. It includes firms of 5 or more employees, and contains information on:

- o Value of finished products
- o Sales revenues
- o Product sales price
- o Other income
- o Number of employees
- o Value of raw material inputs

The value added in manufacturing is computed indirectly as the difference between total gross production and raw material inputs. As will be discussed later in the report, INE currently has plans to conduct another census with the support of the Chamber of Industry of Guatemala and other organizations.

- Annual Surveys of Manufacturing

The annual surveys of manufacturing provide the most complete source of information on the manufacturing industry in Guatemala. The XIIth and most recent survey was conducted in 1985 and published in June of 1988. It provides information that is fundamental for analysis of the structure and composition of the manufacturing sector. Specifically, the survey includes information on:

- o Number of manufacturing establishments
- o Quantity and value of production
- o Quantity and value of sales
- o Other income
- o Average yearly number of workers as well as salaries

and wages paid, according to 5 different categories of employees
- Total man-hours worked (regular and over-time) by category of employee
- Quantity and value of raw material inventories at beginning and end of period
- Quantity and value of finished products and work-in-process at beginning and end of period
- Total costs of operation
- Total general and administrative costs
- Type and value of installed capacity
- Structure and origin (domestic, Central American, and extra-regional) of financing

This information is available on 2,055 manufacturing establishments with 5 or more employees, broken down according to the size of the establishment (groups I,II, III, and IV above) as well as the legal organization of the firm, coded to the 4-digit SIIC level. The only data coded to the 8-digit product groupings category are: quantity and value of raw material purchases, beginning and ending inventory, and consumption; quantity and value of raw material inputs by origin (domestic, Central American, and extra-regional); quantity and value of finished products at beginning and end of period; and quantity and value of manufactured products and sales.

- Quarterly Surveys of Manufacturing

Quarterly surveys of manufacturing have been conducted by INE since 1978. Their purpose is to provide timely information on the dynamics of the manufacturing sector at short intervals during the year. The survey, however, is published with a long lag time: the most recent quarterly surveys, for example, were conducted in 1985 but were not published until June of 1988, when they were available in a single volume. This publication includes the following information:

- Quantity and value of products manufactured and sold during the period, according to the principal activity of the firm
- Quantity and value of products manufactured and sold during the period, according to type of activity to which the product belongs
- Number of workers and man-hours during the period, according to activity and category of employment.

The sampling frame of the most recent survey included 424 industrial firms which produce 80 percent of total domestic manufacturing production. In addition, the survey includes only firms of 50 or more employees. As other INE publications, the quarterly surveys are based on the SIIC

system Rev. 2.

b. Banco de Guatemala

The Bank of Guatemala plays a key role in the compilation of primary and secondary data on the Guatemalan economy, particularly with regard to international balance of payments statistics and, naturally, monetary and financial indicators. Collection of data specific to the manufacturing sector is much more limited, however. The two main sources originate in the Departamento de Estudios Económicos - Sección de Cuentas Nacionales and in the Departamento de Investigaciones Agropecuarias e Industriales.

The Section on National Accounts of the Department of Economic Studies conducts an "opinion survey" among manufacturing sector entrepreneurs in the metropolitan area of Guatemala City. Like INE's, the survey includes only manufacturing establishments of 5 or more employees. Although formerly conducted quarterly, the survey has only been conducted on a semi-annual basis since 1984 due to lack of personnel. The results of the survey are made available to public authorities, private sector chambers, companies surveyed, and regional organizations such as the Secretaría Permanente del Tratado General de Integración Económica Centroamericana (SIECA). The results are also available at the Bank's library which is open to the general public.

The main weaknesses of the survey stem from the fact that it is strictly qualitative and is limited in its coverage to 330 firms. According to one knowledgeable source, the sample, in order to be representative, should be approximately twice that size. Another reason why the survey is not considered to be very reliable is because the surveyors often obtain the information from the secretary or the accountant who happens to be at the firm's office at the time the survey is taken and, therefore, does not necessarily reflect the opinions of the entrepreneur or proprietor whose opinions it was intended to portray.

In its present form, the survey consists of less than 25 multiple choice questions designed to understand the behavior of entrepreneurs in the manufacturing sector. It aims at gauging whether production, sales prices, raw material inputs, employment, investment in capital equipment, utilization of installed capacity, and so forth have increased, decreased or remained at the same level as the previous year. The survey also employs the same multiple choice format in an attempt to "measure" the expectations of entrepreneurs with regard to production, prices, sales, and the overall position of the firm, among other factors, for subsequent quarters of the year. A copy of the sample survey is provided in Appendix C-2.

The Departamento de Investigaciones Agropecuarias e Industriales is planning to publish an annual bulletin with

statistics on the manufacturing sector. Even though the first bulletin is still in draft form, an outline of the report was made available to the consultants and is provided in Appendix C-3. As the outline shows, the report will consist of four major sections. The first section will explore the general conditions of the manufacturing sector, including number and size of manufacturing establishments, their geographical distribution, and the number of personnel employed. The second one will focus on measuring the gross value of industrial production and in the process provide an overview of the structure and composition of manufacturing activities in Guatemala. It will also furnish an assessment of value added by branch of activity. Finally, the third section will focus on international trade of manufactured products, while the last section of the report will cover other aspects of the manufacturing sector including value of investment in fixed assets, financing, and legal and regulatory considerations, such as minimum wages and manufacturing sector related laws presently in force in Guatemala. According to interviewees, the report will rely primarily on statistics from the National Institute of Statistics.

The Bank of Guatemala also publishes statistics on foreign trade which are very similar to the Anuarios de Comercio Exterior published by INE. While not strictly reports on the manufacturing sector, these publications are relevant insofar as they contain data on the value and volume of exports and imports some of which are manufactured products or imported inputs for manufacturing activities. The Bank also produces an annual report entitled Estudio Económico y Memoria de Labores del Banco de Guatemala, which incorporates a brief assessment of manufacturing sector activities including tables on the gross value of production; value added; and distribution of industrial production by branch of activity into consumption, intermediate, and capital goods.

c. Dirección de Política Industrial

The Office of Industrial Policy within the Ministry of Economy is charged with giving direction to industrial policy in Guatemala. The Direccion currently has extremely limited resources and capabilities which severely restrict its role in, and its impact on, the development of industrial policy in Guatemala. Most notable are the obsolete equipment and the generally poor conditions in the office (i.e. limited space, lack of filing cabinets, obsolete typewriters, non-existence of photocopying facilities or computer equipment, and so forth). AID's Private Sector Office is well aware of this situation, however, and will be providing important support through the PED project, which will no doubt influence the future development of this office. Therefore, for purposes of this section of the report, the primary concern is the current data collection activities of the Dirección in the area of manufacturing.

At the present time, data compilation activities are virtually

non-existent despite the existence of the Statistical Section within the Dirección. For the reasons cited above, this section can at best keep records of those companies which have applied for licenses or permits to export products that allow them to take advantage of certain fiscal incentives. All transactions processing is still done manually and much of the paperwork is not even filed because filing cabinets are not available. As a result, it was noted in some interviews that the Dirección can not track whether the companies which have been registered as 100% exporters (i.e. maquila textiles), and are thus taking advantage of certain fiscal incentives, are in fact exporting all their products rather than "dumping" some of them in the domestic market. Nevertheless, insofar as a data bank can be said to exist within the Dirección, it consists of the sworn declarations (declaraciones juradas) that firms must submit when they register to export or to receive fiscal benefits associated with exporting. These forms provide the following information:

- Name and address of the firm
- Permit or operating license (acuerdo de calificación)
- Date of start of production
- Type of products produced
- Number of personnel employed
- Amount of equity capital

In addition, the Dirección sends a monthly survey to registered firms requesting information on the value of imports and exports, the type of products produced, the origin of imports, the destination of exports, the number of workers employed, and the wages and salaries of employees. Unfortunately, many firms do not respond to the survey and, according to representatives of the Dirección, they have no means of enforcing this requirement. Moreover, although the Dirección General de Aduanas should be keeping track of this type of information, some question the reliability of its information.

As part of the Plan Estadístico Nacional (PEN) to be discussed later in the report, the Dirección is working with INE and other offices of the Ministry of Economy to coordinate and rationalize statiscal activities on the industrial sector in Guatemala. Members of the Dirección appear to be very conscious of the importance of compiling statistics that might enable them to establish some parameters for measuring the impact of fiscal incentives on the volume and value of exports, and are anxious to support activities for the general improvement of the Sistema Estadístico Nacional (SEN).

d. Registro de la Propiedad Industrial

The Registro de la Propiedad Industrial is the office within the Ministry of Economy responsible for granting trademarks and patents. In 1987, the Registro received approximately 7,000

applications for trademarks compared to 2,000 - 3,000 applications per year prior to 1985. Representatives of this institution see the increase in applications as indicative of the reactivation of economic activity and the growing awareness of the importance of registering trademarks. Thanks to the Organizacion Mundial de la Propiedad Industrial (OMPI), which enabled the Registro to purchase state-of-the-art computer equipment, and to the Government of Venezuela which has donated the software, the Registro has been able to process the increasing number of applications without a proportionate increase in personnel. This equipment has also enabled the Registro to respond within approximately 24 hours to requests for information on the existence of similar brand names before applicants submit lengthy trademark applications, a useful service for private sector entrepreneurs.

Appendix C-4 provides samples of the types of data available from the Registro, including tables and graphs on the number of trademark applications, the number of patent applications, and the number of registered patents for the period 1/85 to 7/88.

e. Secretaría General del Consejo Nacional de Planificación Económica (SEGEPLAN)

SEGEPLAN was created in 1954 to conduct planning within the framework of a private sector dominated capitalist economy. According to interviewees, SEGEPLAN was virtually shut down under the Ríos Montt Administration (1982-83), and has since suffered from problems of morale among the employees. At the present time, the office is still trying to "recover" and has no publications or data bank on the manufacturing sector. Moreover, representatives of SEGEPLAN believe the government has no mechanisms for influencing industrial policy because the only instrument, CORFINA, has been intervened. Consequently, they see their role in the manufacturing sector as purely "indicative" of policies with no real power for implementation.

f. Unidad Sectorial de Planificación y Programación (USPLAME)

The Unidad Sectorial de Planificación y Programación (USPLAME) was created in 1979, under the aegis of the Ministry of Economy, to direct and coordinate industrial development activities and programs. USPLAME directors describe their office as the entity within the Ministry of Economy responsible for the development of industrial policy, while the Dirección de Política Industrial is seen as the "transactions processor". Under the National Statistical Plan (PEN) described later in the report, USPLAME is being considered as the focus for centralization and coordination of statistical activities within the Ministry of Economy. USPLAME, however, has few trained personnel and, like the Dirección de Política Industrial, has very limited office equipment.

USPLAME published a report entitled Diagnóstico del Sector Industrial 1980-1985 in April, 1988. The purpose of the report was to provide an objective and technical guide for the development of policies and programs in the industrial sector. The report is limited in scope to the 1980-85 period and the most up-to-date figures are not included because they were not available at the time of publication. The report, which is based on statistics from INE's annual and quarterly surveys, includes chapters on: the size and number of manufacturing establishment and their geographical distribution; the structure and evolution of manufacturing production; utilization of human resources (including number of employees, productivity of labor, and wages and salaries); fixed capital investment; availability of credit; foreign export of manufactured products; and amount and origin of imported inputs.

In addition, USPLAME has sponsored an assessment of industrial-related legislation. The resulting study, entitled El Diagnóstico de la Legislación relacionada con la Actividad Industrial, was not available to the consultants.

Appendix C-5 also provides a list of data on the industrial sector that USPLAME is gathering.

2. Private

Among the private sector institutions in Guatemala, the systematic collection of primary data on the manufacturing sector is most notable by its absence. Nevertheless, occasional publications by the Chamber of Industry of Guatemala and the Gremial de Exportadores de Productos No Tradicionales are useful sources of information. The results of interviews with representatives of these and other private sector organizations with regard to the availability of data on the manufacturing sector are presented below and are complemented by the list of publications presented in Appendix D.

a. Cámara de Industria de Guatemala (CIG)

The Chamber of Industry of Guatemala is a powerful institution with more than 900 members. It owns a 16-story building in a high-rent section of Guatemala City and, although most of the building is rented to other organizations and firms, CIG occupies two floors and has plans for expansion. The International Club for members of CIG occupies the top three floors.

As a member of the Monetary Board of the Bank of Guatemala, the Chamber has access to macro-economic data compiled by public sector institutions before it is available for publication and consumption by the general public. Based on this information, CIG publishes a monthly newspaper entitled El Industrial, which is available to Chamber members at no cost. The paper covers a wide

range of topics on national and international political and economic developments, some of which are related to manufacturing, and serves as the regular channel of communication between Chamber members. The paper also serves as an instrument for influencing public opinion on a variety of domestic issues.

The Chamber also publishes an annual Industrial Directory which contains a list of member firms, including name, address, and telephone number as well as products produced and services provided. The directory contains a section on the organizational structure and composition of the Chamber as well as a section on industrial laws and regulations such as Decree Law 21-84.

The Chamber has a documentation center that is open to the general public. It has some of the statistical series published by public sector institutions as well as foreign periodicals on economics, industry, marketing and other topics. In total, the center has approximately 1,500 publications. Although the Chamber is equipped with personal computers and a variety of software for wordprocessing, database management, spreadsheet analysis, graphics and desktop publishing, it has no database with information on the manufacturing sector such as employment, costs of production, sales, and other relevant statistics.

b. Cámara Empresarial (CAEM)

The Chamber of Entrepreneurs (CAEM) is an umbrella organization representing private enterprise in Guatemala. CAEM differentiates itself from CACIF, the Coordinating Committee of Agricultural, Commercial, Industrial and Financial Associations, by pointing out that it is comprised primarily of small and medium entrepreneurs in contrast to CACIF which it describes as a lobby organization mostly representing larger entrepreneurs. At the present time, CAEM has a staff of 5 people and no database with information on manufacturing sector activities. The assistance provided by AID through the PED project, however, will change fundamentally the structure of CAEM and should enable it to undertake a wide range of projects in support of small and medium enterprises. The provision of state-of-the-art computer equipment through the PED project will also facilitate the development of data management systems capable of integrating information available in the Chamber of Industry, the Non Traditional Products Exporters Guild, and other CAEM members.

c. Gremial de Exportadores de Productos No Tradicionales

The Guild is a dynamic organization established in 1982 with the objective of promoting the diversification of exports through the production of non-traditional products such as frozen fruits and vegetables, wood products, and flowers and ornamental plants, among others. At the present time, the Guild is comprised of

approximately 500 members organized into different committees according to the type of products produced.

Interviews with a number of representatives of the Gremial as well as research in the documentation center revealed that no information is being collected on a systematic basis in the area of manufactured products. The only information currently available consists of directories of companies, organized according to the type of products produced, which list the name of a contact person, and the address, telephone number and telex of the firm. The only more detailed directory is that of the Maquila Commission which was prepared for the Bobbin Show (textiles) and includes, in addition to the above, information on type of product, production capacity, number of employees, number and type of machines, work area available, and references.

In addition, the Gremial publishes a monthly bulletin for its members with news on Guild activities and announcements, and occasional reports on Guild work plans and promotional activities. Aside from these, the Guild has published two studies described in the list of publications in Appendix D. One is an analysis of the structure and growth of exports from Guatemala in the period 1980-87; the other a study of the supply of exportable goods from Guatemala.

Like the Chamber of Industry, the Guild has a documentation center that is open to the general public. The development of this center, which receives approximately 230 periodicals, is an important part of those Guild activities undertaken in support of exporters. The provision of commercial information on such issues as foreign market trends, standards of quality, taxes, prices, and the like, is a significant objective of the Guild.

d. Other

Although some private firms exist in Guatemala that collect information systematically on a variety of aspects of the national and regional economy, none could be found producing statistics specific to the manufacturing sector. Nonetheless, in the search for sources of information on this sector, the team came across a small firm of 16 employees which for the last twenty years has been collecting data on Guatemalan exports and imports from the different customs agencies, including the Aduana Central, Santo Tomás de Castilla, Puerto Barrios, Champerico, Puerto de San José, Aduana Quetzaltenango, and so forth. The firm, Publiesca, has a weekly (EXIMPORT), a biweekly (INCAMEX), and a monthly (DATEX) publication of the raw data compiled by the different customs agencies and sold to it for publication. The information includes the name of the importer or exporter, the number of bags, the content, the place of origin or destination, value and weight of the merchandise, and the name of the remitting or purchasing agent.

Another private organization, Especialidades Tecnológicas, publishes a monthly bulletin entitled Crónica Tecnológica y Comercigrama which contains information on industrial technology, including ideas for development and transfer of new industrial technologies, suggestions on possibilities for export promotion, and opportunities for joint ventures, among other issues.

Strictly within the confines of this study, however, systematic sources of data on the manufacturing sector are not being published currently by private sector institutions in Guatemala.

3. Regional

The Secretaría Permanente del Tratado General de Integración Económica Centroamericana (SIECA) and the Central American Research Institute for Industry (ICAITI), co-authored a proposal, with the Central American Bank for Economic Integration (CABEI), on reactivating the industrial sector in Central America. Because the proposal was evaluated in a recent study by the International Science and Technology Institute (ISTI) for the Regional Office on Central America and Panama (ROCAP), its contents will not be repeated here. SIECA also publishes a series entitled Series Estadísticas Seleccionadas de Centroamérica which includes information on the manufacturing sector in Guatemala. Other relevant publications are listed in Appendix D. In addition, current efforts to improve statistical series on a regional basis will be discussed later in the report.

4. Libraries/Documentation Centers

A comprehensive list of publications on the manufacturing sector in Guatemala, including abstracts of the contents, is provided in Appendix D. The list encompasses only studies and reports covering the period since 1978, and includes primarily those which are specific to the manufacturing sector in Guatemala. This list is the result of interviews with over 40 people in 13 public and private sector institutions in Guatemala, as well as research in the following documentation centers and libraries in Washington, D.C. and Guatemala:

- Joint IMF/World Bank Library
- US Department of Commerce Library
- Georgetown University Library
- Banco de Guatemala Library
- INE Documentation Center
- CIG Documentation Center

- Gremial de Exportadores Documentation Center
- SIECA Library
- ICAITI Library
- US Embassy/Guatemala Commercial Library
- AID/Guatemala O/PSP Documentation Center

C. Limitations of Available Data/Information

As noted above, there are a number of public sector institutions, most notably INE and the Bank of Guatemala, that are making important contributions to the collection, tabulation and publication of data on the manufacturing sector. Existing series, however, display a number of weaknesses some of which have already been mentioned but which will be discussed in greater detail in this section. Duplication of information, which has been found to be a problem in the agricultural sector, is not currently a problem in the case of manufacturing statistics according to most sources. The only reference to duplication was found in regard to data on foreign trade compiled by the Bank of Guatemala and INE. To correct this situation, a Subcommittee on Foreign Trade Statistics was formed which recommended in 1986 that the Bank of Guatemala be responsible for the collection and automated processing of statistics on foreign trade, and that INE be charged with publication of the corresponding results.

The principal weaknesses or limitations of current series on the manufacturing sector are the following:

1. Limited Degree of Confidence

Perhaps the Spanish phrase most frequently used to describe current sources of information on the manufacturing sector was "poco confiables", meaning that one can have only limited confidence in the reliability of available statistics. While most sources agree that INE's annual and quarterly publications are by far the best, most impartial, and most systematic source of information on the manufacturing sector, all concur that there is enough room for improvement with regard to methodology, as well as processing and production of data, to require "careful use of the statistics".

The methodology used by the Bank of Guatemala to compile its "opinion survey" came more strongly under fire than was that of INE for the reasons already cited regarding the representativeness of the sample, the qualitative nature of the survey, and the appropriateness of the sources of information within the firms

surveyed.

2. Inconsistencies

Inconsistencies exist both within the same source of information and across different sources of information. In the case of INE's surveys of manufacturing, for example, inconsistencies arise from the fact that data from different companies sometimes correspond to different time periods with the result that little uniformity with regard to the period of reference exists. For example, the data for one firm may correspond to a June to June calendar year, while others may be providing information from December to December.

Inconsistencies also arise because the sources of information (i.e. the firms surveyed) may supply inaccurate or misleading information intentionally or unintentionally. A common problem is that some firms keep two books, and smaller, less sophisticated companies may keep no books at all. Another problem arises over the meaning of concepts which are not always defined clearly by the surveyors.

Inconsistencies also have been noted between sales and production figures compiled by INE and by the Bank of Guatemala. According to some sources, figures for gross value of production and value added in manufacturing supplied by the Bank of Guatemala are not always congruent with the results of INE's surveys.

3. Limited Coverage

Although the contents of the censuses and surveys of manufacturing available are considered to be adequate, their coverage is limited to those manufacturing establishments of five or more employees, in effect excluding much of the microenterprise sector so important in the Guatemalan economy. With the exception of the 1978 Censo Artesanal, which included establishments of less than 5 employees, no currently available statistical series incorporate this sector. The coverage of this census, however, was partial because it covered urban and rural areas in only 11 departments in the country, while in the remaining departments information on the rural areas was not included.[3] In addition, it covered only establishments with less than 5 employees. Nevertheless it should be noted that the National Statistical Plan (PEN) for 1988-92, which will be discussed later in the report, does include projects to compile statistics on the microenterprise sector.

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[3] The results of the Censo Artesanal were published in 6 volumes in 1981. In addition, in 1982 a special volume of the principal economic indicators of handicraft establishments was published by INE.

4. Timeliness

Lag time in the publication of statistical series by public sector institutions is a common problem and one that interviewees across the board identified. The causes are usually described as lack of resources and personnel. INE's quarterly survey, for example, the purpose of which is to provide timely and continous information on the manufacturing sector, is not available in some cases for several years.

At the present time, the most recent quarterly and annual surveys available are those for 1985, and they were not published by INE until mid-1988. However, the current National Statistical Plan has as a primary objective the regularization and timely publication of statistical series produced within the SEN. Moreover, the goals of the plan are to increase the periodicity of statistical publications covering areas such as production and sales statistics in the manufacturing industry.

5. Information Gaps

Information gaps are most apparent in the area of costs of production of manufactured products. In practice, however, it could be said that at certain time periods gaps are also present in other more general areas due to the lag time in the publication of statistical series with the requisite information.

At the present time, INE's annual survey is the only source of information on costs of operation and general and administrative costs and, as already mentioned, the 1985 survey is the most recent one available. (A list of the cost information included in this survey is provided in Appendix C-6). The Bank of Guatemala survey only indicates whether costs have gone up or down or stayed the same, and approximately by what percentage. On the other hand, INE's quarterly survey does include data on the number of workers employed, man hours (regular and overtime), as well as salaries and wages, and prestaciones--all broken down according to five different categories of employment--which permit estimation of direct and some indirect labor costs. However, as in the annual survey, the cost information currently provided in the quarterly series is not at the level of products, but at the 4-digit SIIC code (see footnote 1) and it, too, is several years late.

Also notable are the absence of any series with manufacturing industry indicators such as an index of industrial production by product and branch of economic activity, or an index of the prices of major manufactured products, among others. Under the National Statistical Plan, however, INE has plans to develop some of these indicators. Appendix C-7 provides a list of manufacturing sector data that is currently available from INE publications and that which is not. The list also indicates whether INE alone, or with

another entity, is planning to compile and publish that information.

D. Principal Constraints to Data Collection

1. Lack of Resources

An important constraint to the production of timely information on the manufacturing sector and of new statistical series is the lack of resources, most notable in the public sector even though interviewees in the private sector also complained about insufficient resources. INE, for example, may have only 3 or 4 people conducting a survey of 1,200 establishments and, later on, the information compiled may not be processed for an extended period of time due to lack of trained personnel. Concerns were also raised with regard to basic needs such as not having the resources to pay for the fuel, much less for the automobiles, required to conduct surveys in the more remote areas of the country.

2. Inadequate Infrastructure

The inadequacy of the office infrastructure, very apparent in the Dirección de Política Industrial and in USPLAME, for example, is tied to the lack of resources. The degree of inadequacy varies greatly, however, between public and private sector entities in particular, but also among public entities.

With respect to the availability of statistics on the manufacturing sector, the relevant infrastructure is that which impedes or facilitates the compilation, processing, and publication of data. In the case of the Chamber of Industry, CAEM, and the Guild, for example, there is state-of-the-art computer equipment available (and more will be made available under the PED project), as well as trained personnel capable of compiling and analyzing data on the manufacturing sector. In other words, the basic infrastructure needed to compile information on the manufacturing sector is currently in place or will be in place in the near future.

There is greater disparity, however, among the public sector institutions. The Dirección, for example, has a few obsolete typewriters, no photocopying facilities, and not enough filing cabinets to file the stacks of paper currently piled on the floor, much less automated equipment with which to process the necessary transactions to allow private export-oriented firms to take advantage of fiscal incentives. The PED project, however, will be assisting the Dirección greatly in that regard and the office equipment made available will, in turn, facilitate the compilation and processing of industrial data.

INE and the Bank of Guatemala, on the other hand, have more modern office equipment than the other public offices investigated. The computer equipment available in INE's central offices for the processing of information, for example, includes an IBM S/36 model 5362 with 384K of main memory, a matrix printer 5224 model 2 with printing capacity of 140 lines/minute, and 3 personal computers (XT models) with 14 terminals. This equipment is considered "adequate" at the present time, although INE would like to substitute the equipment that is currently leased with a more efficient system that could respond more effectively to current and future demand for information processing, especially of the national censuses.

The Bank of Guatemala has central computer facilities that are very modern, but what is available on a regular basis to the Seccion de Cuentas Nacionales within the Departamento de Estudios Economicos and the Departamento de Investigaciones Agropecuarias e Industriales, which are the offices primarily responsible for manufacturing sector data, is more limited. The Departamento de Estudios Economicos, for example, has a multi-user IBM AT with 5 terminals but, within the Seccion de Cuentas Nacionales, which has 28 employees, there is only 1 terminal.

3. Limited Training of Personnel

Public sector institutions complained that the shortage of personnel trained in statistics is another problem that the SEN is trying to deal with. The problem arises in part from the lack of specialized career programs in statistics at universities or training centers. Although courses in statistics are available, these are offered as part of other careers in such fields as economics or business administration, but not as a major discipline. In INE, for example, of the 365 permanent (56.7%) and temporary employees only 13 are professionals with university degrees and 10 of these have management positions.

The shortage of personnel qualified to undertake specialized statistical activities is also evident in the national statistical system as a whole: excluding INE, the SEN has 1,082 permanent and temporary employees, only 6.8% of whom are professionals. Moreover, only 475 of the 1,082 employees have received any type of training in statistics. By means of the National Program for Training in Statistics discussed later in the report, INE has been developing courses in statistics aimed at personnel of the SEN with the objective of improving the technical qualifications of its human resources.

4. Distrust of Data Collection Agents

A major constraint to the compilation of reliable statistics in Guatemala is the distrust of public representatives which leads respondents to restrict information for fear that it might be used for fiscal purposes, despite clear disclaimers by INE and other

statistical offices on the confidentiality of the data. According to some sources, this distrust and the hostile welcome with which surveyors are often greeted has led to declining morale among workers responsible for gathering data directly from the establishments.

On the private sector side, the distrust arises more from fear that information about the firm might be used by competitors who work or are affiliated with the private institution, be it the Chamber of Industry, CAEM or the Exporters Guild. Some interviewees, however, also felt that the distrust might be part of the nature of Guatemalan business arising from the fact that many are closely-held firms with a strong preference for guarding information inside the family circle.

5. Limited Awareness of Importance of Data Collection Efforts

Interviewees across the board expressed concern that the difficulty of compiling accurate and complete information is intensified by the lack of awareness among the general population of the importance of compiling statistics that can support analyses of the state of the economy and guide decision-makers in the formulation of policies. Moreover, this lack of awareness feeds on the distrust of public and private workers described above.

E. Current Efforts to Strengthen Sources of Information

AID/Guatemala should be aware that a number of efforts to strengthen current sources of statistics at the national and regional level are being undertaken by domestic as well as bilateral and multilateral institutions. The following programs are the most directly relevant to the focus of the report:

1. National Statistical Plan (PEN)

The Plan Estadístico Nacional (PEN) 1988-92 is a new and important undertaking to consolidate the national statistical system (SEN) at the central, sectorial and regional levels with the objective of improving the efficiency of statistical collecting activities and the quality and timeliness of statistical series. An important aspect of the PEN involves the decentralization of statistical collecting activities through the establishment of coordinating offices (oficinas coordinadoras de estadística) within each Ministry, responsible for coordination, strategy development, supervision, and evaluation of all statistical activities in the Ministry. The goal is to integrate and rationalize statistical activities so as to avoid duplication of efforts and attain a higher degree of efficiency within the SEN.

The coordinating offices are selected by sectorial commissions

(comisiones sectoriales de estadística) which are comprised of representatives from the central as well as the decentralized and autonomous entities within each Ministry. In the case of the manufacturing sector, statistical activities come under the umbrella of the Ministry of Economy which includes INE, the Bank of Guatemala, the Dirección de Política Industrial, USPLAME, and the Registro de la Propiedad Industrial, among other entities. At the present time, a sectorial commission already has been formed within the Ministry of Economy and there is support to make USPLAME the coordinating office. Sectorial commissions have also been formed within the Ministries of Agriculture, Public Finance, and Communications, among others.

Another important objective of the PEN is to enhance the technical qualifications of SEN personnel through support of training programs, including courses in statistics, seminars, conferences, and so forth. For this purpose, a National Program for Statistical Training was initiated in 1986 with financial assistance from the United Nations Development Program (Proyecto GUA/84/015 - PNUD/DTCD/CEPAL). For this endeavor, INE has also received technical assistance from the OAS Centro Interamericano de Enseñanza Estadística (CIENES) as well as logistical support from the Instituto Técnico de Capacitación y Productividad (INTECAP).

Under the PEN, INE has also begun a program to develop a series of short-term statistical indicators on the economy as a whole as well as on individual sectors of the economy to help guide public and private sector policies and programs. In the case of the manufacturing sector, INE will be publishing a volume of short-term indicators, including indexes of industrial production by product and branch of activity, of employment in manufacturing by branch of activity, and of the prices of principal manufactured products, among others. In addition, as part of the PEN, INE is developing a proposal to conduct a census of manufacturing which, as will be described below, has the support of the Chamber of Industry.

With the consolidation and rationalization of the SEN, the role of INE will evolve into one of "coordinator of the coordinating offices" as responsibility for compilation and production of statistics will fall under the corresponding Ministerial offices, while INE will emerge more as a consultant to these offices, assisting them with regard to methodology and specialized programs. INE will also be responsible for the production of those statistics which are multi-sectorial and that otherwise would not be produced. In addition, INE will have responsibility for arranging and negotiating technical and financial assistance for the development of priority statistical activities, as well as for conducting periodic evaluations of the statistical activities of the SEN.

2. INE - CIG Proposal to Conduct Census of Manufacturing

Sector

As part of the PEN, INE is taking steps to redesign the content of the annual surveys of manufacturing and is also preparing a proposal to conduct a census of manufacturing which has not been undertaken since 1978. The coverage of the census will be extended to include establishments of less than 5 people. On these endeavors, INE has been working with the Chamber of Industry, which has representatives on INE's Board of Directors, as well as with the Dirección de Política Industrial and representatives from UNIDO. The Chamber's support will include assistance in the area of promotion of the census. It has offered, and INE has accepted, to launch the census with a conference at Chamber headquarters to indicate private sector support of the census, to highlight the importance of this undertaking, and to encourage entrepreneurs to provide the requisite information. At the time of the field work, INE was in the process of drafting the proposal for review by UNIDO and other interested parties.

3. Regional Efforts

SIECA is receiving assistance from UNIDO in support of improvements in the compilation of statistical information on the manufacturing and other sectors of the economies of Central America. At the time of the team's work in Guatemala, a UNIDO consultant was touring Central America as part of a 2-3 month program to assess the statistical systems of the region and to develop a plan of action for their improvement. The project has the support of the Government of Italy which is committed to assisting in the development of an Integrated Program of Statistics for Central America. The principal objective of the project is to improve the methodology and data collection activities of institutes of statistics throughout Central America, including Panama, and to create a central information system in the SIECA offices in Guatemala.

F. Situation of Chamber of Industry Database

The statement of work initially called for studying the feasibility of a manufacturing sector database that was being developed in the Chamber of Industry of Guatemala. For this purpose, interviews were held with at least five people working at the very top and middle management levels of the Chamber. The findings were that personnel in the Research and Analysis Division were interested in the possibility of acquiring a sophisticated information system that would enable the Chamber to develop long-term projections and forecasting based on available macro-economic data. The system would then empower the Chamber to challenge public sector analyses of the present status and future course of the economy, and to publish its own interpretations of economic conditions in the country. The vision was that of creating a

private sector equivalent of SEGEPLAN within the Chamber of Industry.

While the idea of establishing an "economic planning arm" of the private sector is indeed an interesting one, the conclusions of the study were that the idea was still in the very early stages of development and that the global or macro orientation of the proposition made it less relevant to the specific objective of supporting the development of the manufacturing sector in Guatemala. Particularly in light of the relative lack of basic and reliable information on the manufacturing sector, the CIG-proposed information system is premature. As a member of the Chamber noted himself when explaining his support of the INE proposal to conduct a census of manufacturing, "we [the manufacturing sector] don't know who we are or where we are". It is more appropriate, therefore, to support development of the foundations before attempting to construct the building.

A final concern arose from consideration of the Private Sector Office's interest in promoting and supporting activities for cultivating dialogue between the private and public sectors in Guatemala. The information system, as envisioned by the CIG, was more an instrument for lobbying than an endeavor to increase the availability of information on the manufacturing and other sectors of the economy. Therefore, it seemed less conducive to public-private sector dialogue than AID support of other manufacturing sector activities, such as the joint INE-CIG proposal described above.

As a result, and in view of the identification of other important constraints within the manufacturing sector, including the relative lack of reliable information on the sector, it was recommended that support of the Chamber of Industry in this endeavor should not be a priority of AID's manufacturing sector strategy. Nevertheless, as described in the next section on recommendations, the emerging ideas for creating a "SEGEPLAN" within the Chamber of Industry might be re-directed into the conceptualization of a think tank which, through a university affiliation, might develop into the "American Enterprise Institute" of Guatemala. A think tank, associated with a university or at least semi-independent of the Chamber of Industry, to support private sector ideas and conclusions on the economy would also be seen as a more objective and, therefore, more credible source of information than that currently conceptualized at the Chamber.

G. Recommendations

This section of the report presents a series of recommendations describing the basic nature and sequence of activities required to encourage and support development of data on the manufacturing sector in Guatemala. For the most part, these

recommendations would require relatively small amounts of resource outlays on the part of the Private Sector Office. Moreover, the majority of the recommendations could be undertaken with resources already allocated under the PED project. Other recommendations could use Economic Support Funds or PL 480 funds.

Short-term Recommendations

Recommendation No. 1: Support the Joint INE - CIG Proposal to Conduct a Census of the Manufacturing Sector

As part of the National Statistical Plan for the period 1988-92, INE is developing a proposal to conduct a census of the manufacturing sector which, for the first time since the 1978 census of the handicraft industry, will attempt to incorporate the microenterprise sector comprised of establishments with less than five workers. The census will provide the frame of reference for the annual and quarterly surveys of manufacturing and will serve as the benchmark for measuring the growth of this sector in years to come.

At the present time, there is a multi-institutional committee comprised of representatives of INE, the Chamber of Industry, the Dirección de Politica Industrial, and UNIDO examining and laying out the methodology and contents of the census, as well as the costs of the undertaking. AID should be part of this committee and support the proposal for the following reasons:

- The census will provide information that AID will be able to use in its own assessments of the manufacturing sector and as a benchmark for evaluating the impact of future programs in support of this sector.

- The census will provide an important opportunity for private and public sector representatives to work together and, therefore, will promote the kind of public-private sector dialogue which is currently a major goal of AID.

- Support of this activity will help improve the reliability and degree of coverage of other industrial sector statistics as the census will provide the frame of reference for other more frequent publications.

- The support of AID and other bilateral and multilateral agencies, as well as the private sector, might give statistical-gathering institutions, INE in this case, more credibility and, therefore, might help alleviate some of the apprehension of the population which currently contributes to the provision of limited and

often inadequate or inaccurate data.

Action options for AID include the following:

- o Provide technical assistance with regards to methodology and contents of the report.
- o Provide financial assistance to cover part of the costs of the census-taking (approximately 70% of the costs of the census are for basic materials, fuel, wages and salaries, and per diem for the surveyors).
- o Support promotional efforts to build awareness of the importance of census-taking by simply making a presence at special events, such as the planned INE-CIG conference to launch the census, or by providing resources for advertising and promotional activities.

Recommendation No. 2: Coordinate Activities with Other AID Offices and with Other Bilateral and Multilateral Institutions

At the present time, there are a number of bilateral and multilateral agencies interested in supporting current and future statistical activities in Guatemala. As already mentioned, UNIDO is supporting a regional effort to strengthen national statistical entities and to create a central data bank in SIECA headquarters in Guatemala. UNDP is also giving assistance through the Proyecto GUA/84/015 in support of training in statistics for SEN personnel. The Venezuelan government has supported the Registro de la Propiedad Industrial with software and OMPI provided hardware. In addition, while in Guatemala a team member met with a consultant from the Instituto Nacional de Estadísticas de Mexico (INEXE) who was providing short-term technical assistance to INE in the area of industrial statistics. The Mexican government, however, will not be providing assistance in the implementation of INEXE recommendations. Moreover, AID itself is conducting a similar survey of sectorial data in the agricultural area.

It is vital, therefore, that the Private Sector Office coordinate any activities in support of improvements in the statistical area with other AID offices, as well as with other bilateral and multilateral institutions, in order to avoid duplication and increase the effectiveness of its programs by profitting from synergistic activities.

Specific actions that the Private Sector Office could take include:

- o Contacting Roberto Castro or other relevant personnel in the Agriculture and other offices of the mission, and ROCAP, to demonstrate interest in undertaking cooperative

projects in the area of statistical development and evaluation.

- Participating in the census-taking committee meetings described above and working with UNIDO and other interested parties on ways to provide complementary support in this and other PEN activities.

- Supporting implementation of INEXE recommendations. (INEXE's report was not available at the time of the field work, but should become available soon. The contact person at INE is Lic. Luis Felipe Cabrera.)

- Re-positioning PED project support for the Dirección de Política Industrial and other Ministry of the Economy offices by encouraging these offices to take advantage of the resources (i.e. computers) that will be made available by AID for purposes of collecting manufacturing sector data as well as to fulfill other needs of the entities. Since these offices are already working with INE through the comisiones sectoriales de estadística, all that might be required is demonstration of AID interest in supporting these and other statistical activities of the PEN.

Medium-term Recommendations

In the medium-term, any significant improvements in the quality and availability of statistics on the manufacturing and other sectors in Guatemala will depend on the strength and capabilities of the public or private sector institutions responsible for these activities. The success of the National Statistical Plan, which is the first undertaking of this kind in Guatemala, will also depend on the availability of resources to fund new projects and publications, to acquire new and more modern equipment for the different offices that comprise the SEN, and to train SEN personnel. Thus, the impact AID can have on the long-term improvement of manufacturing sector data requires support of the following complementary set of actions:

Recommendation No. 3: Support Institutional Strengthening of Public and Private Sector Entities with PED Project and Economic Support Funds

Under the PED project, resources have been allocated to strengthen the capabilities of the Dirección de Política Industrial to revise, implement and administer incentives to export traditional and non-traditional products from Guatemala. Likewise, the PED project is providing assistance to the Cámara Empresarial and the Gremial de Productos No Tradicionales to generate and implement new export promotion projects as part of a strategy to

accelerate economic growth in Guatemala. The strengthening of these institutions that will come about over the next few years will also facilitate improvements in data compilation and analysis activities both from a capabilities (available trained personnel) and office equipment/infrastructure standpoint. The action required on the part of AID is one of directing or re-directing these institutions so that available resources under the PED project can be exploited for data collection activities as well as other activities for which they were intended.

It is recommended that Economic Support Funds also be used to strengthen the capabilities of other institutions, especially INE, because it is the single most important source of current statistics on Guatemala and because the PEN offers a rare opportunity for improving the efficiency and effectiveness of the national statistical system.

Recommendation No. 4: Capitalize on Information System Links Developed under the PED Project

The PED project will be supporting the acquisition and development of automated management information systems with funds channelled through CAEM. This equipment will facilitate the compilation and analysis of information on manufacturing sector activities and on more general trade and investment promotion activities. The Private Sector Office should take the following steps:

- Support a central documentation center in the Chamber of Industry building under the aegis of CAEM.

  At the present time, the Chamber of Industry and the Gremial each have their own documentation center, and, as indicated earlier in the report, the Chamber is planning to expand its library. Some of the material in these libraries is duplicative and, in light of limited resources, it would be more effective to support one center, especially since all these institutions occupy the same building. The US Embassy Commercial Attache has also indicated some interest in moving the Commercial Library elsewhere and it might be possible to shift their publications to a central documentation center in the Chamber building. This would have the effect of increasing the availability of periodicals and other commercial publications available for use by CAEM, Chamber, and Guild members, and the general public, as well as serving as a center for information on Guatemala for use by investors.

- Encourage CAEM to capitalize on the information system links in member organizations to develop new data collection projects.

CAEM representatives have indicated that the computer networks that will be set up in Chamber of Commerce affiliates with PED Project funds will facilitate the collection of raw data on investment projects, production costs and other types of data which the Chamber of Industry, for example, might not be able to collect for lack of "local contacts" which the Chamber of Commerce, with its 27 affiliates, has. (The Chamber of Industry only has 3 affiliates)

- Support compilation of micro data on the manufacturing sector by capitalizing on personnel and equipment resources to be made available under the PED project.

  Macroeconomic data is more widely available in Guatemala than micro data such as costs of operation of firms in a particular industry (e.g. maquila). Rather than duplicate what is already available from public sector institutions, AID should encourage CAEM and its member organizations to undertake surveys of a more limited scope. For example, the Gremial might experiment with a survey of the maquila industry that would incorporate information of the type provided in the questionnaire in Appendix E.

  Although it is very difficult to obtain cost information for the reasons cited earlier in the report, this type of information was made available to the consultants and, with the appropriate format, (i.e. anonymous coded forms), it might be possible to obtain. This would not be a costly undertaking since available personnel and equipment would be used and the survey would be limited, at least initially, to Guild members.

On the whole, AID should capitalize on the information system links established under the PED project to consolidate private sector sources of information on the manufacturing sector in order to avoid duplication and render more effective the collection, tabulation and analysis of information on the sector.

Recommendation No. 5: Support Training of SEN Personnel

As noted earlier in the chapter, there are few skilled personnel in Guatemala in the field of statistics. The universities offer statistics courses as part of other career programs, but there is no professional schooling in the field of statistics per se. Support for training of the personnel of the national statistical system is thus an important area, and one where AID assistance can have a significant impact.

The US Census Bureau has specialized training programs for

which AID and the UN have provided scholarships. While these programs received positive ratings among SEN personnel interviewed, they are costly programs especially when the expenditure of travel and maintenance is added. Thus, training in Guatemala would have the advantage of being less expensive, which would make it possible to extend training over a larger group of individuals. In addition, training in Guatemala would have an advantage for SEN personnel in the sense that it would not require complete severance from their jobs as evening or early morning workshops could be offered.

As with other recommendations, AID should coordinate its efforts with those of other bilateral and multilateral agencies since, as already indicated, the UNDP is providing some funding for the National Program in Statistical Training.

Recommendation No. 6: Support Promotion/Educational Campaign

A key constraint to the compilation of reliable statistics is the reluctance on the part of industrial establishments to furnish complete and accurate information. For this reason, support of a campaign to promote awareness of the important uses of statistical information by public, private and international organizations, and to build confidence about the confidentiality of this information, is an important area of action for AID. The National Statistical Plan offers an opportune time and promotion of the industrial census might be a first step in this regard.

Recommendation No. 7: Support Diffusion of Information

The diffusion of information is one way to create awareness of the uses and importance of statistical information. For this purpose AID should consider supporting the creation of government documentation centers at university libraries and at public and private libraries, analogous to those in the United States. This would bring information closer to users and also serve as promotion of the SEN and of the function of statistics.

Long-term Recommendations

Recommendation No. 8: Private Sector Center for Information and Industrial/Economic Planning

The emerging ideas for creating a "SEGEPLAN" within the Chamber of Industry might be re-directed into the conceptualization of a think tank which, through a university affiliation, might develop into the "American Enterprise Institute" of Guatemala. A think tank associated with a university, or at least semi-independent of the Chamber of Industry, could play an important role in the economic development of Guatemala through its influence on private and public sector thinking regarding the choice of

policies and programs required to accelerate economic growth. This type of center might also serve the purpose of "third party" surveyor and collector of statistical data on different sectors of the economy. In Costa Rica, for example, university research centers have been used successfully to conduct surveys and gather information which is then made available to public institutions like the Central Bank. (The sources of the information, of course, remain anonymous and procedures such as coding questionnaires can be used to ensure anonymity). The point is that just like entrepreneurs provided cost information to the authors of this report, they might trust a third party institution.

An inquiry of this type might be considered by AID after information links have been more clearly established among CAEM and its members, and after there is more experience among the private sector on the types of information they require which are not currently available. Moreover, it could be funded, at least initially, under the New Private Sector Initiatives component of the PED project. This idea, however, is presented as a long-term recommendation as other, more immediate and more important priorities for an AID manufacturing sector strategy exist.

Appendix A:
Electronic Maquila Development

ELECTRONIC MAQUILA DEVELOPMENT

I. INTRODUCTION

A. Problem

The economy of Guatemala is primarily agriculturally based and this sector is rightfully receiving a great deal of attention in promoting economic development in Guatemala -BUT- agriculture cannot produce "productive employment" in the sprawling Ciudad de Guatemala or the other growing urban centers in Guatemala. Manufacturing can do this and the need is to determine areas in manufacturing which can exhibit significantly higher growth rates.

B. Situation

The Central American Common Market is not in good condition. For a variety of reasons, regional demand for some Guatemalan products has fallen and some markets have been closed. The Guatemalan private sector lacks the marketing expertise to enter other foreign markets with its current products and capabilities. Moreover, the Guatemalan private sector lacks the technology base to develop/design new proprietary products or manufacturing capabilities. This means that current Guatemalan manufacturing is not able to sustain substantial growth.

C. Solution

The electronic maquila industry utilizes foreign marketing and foreign technical expertise with local labor. The following is a description of the electronics industry, the infrastructure requirements of the industry and an assessment of these in Guatemala. In addition, some recommendations on how to develop the electronic maquila industry in Guatemala are provided.

II. THE ELECTRONICS INDUSTRY

A. Definition

The world electronics industry includes many diverse products and processes. It can be divided into two broad segments: electronics equipment (consumer products, communications equipment, electronic instruments, military and industrial goods, and computers) and electronic components (resistors, capacitors, diodes, relays, switches, printed circuit boards (PCB), and subassemblies). For purposes of this report, electronics will be very loosely defined and will include electrical and electro-mechanical type products and subassemblies.

B. Growth

The United States electronics industry has grown at an average annual rate of 9.5% since 1981. The world industry is forecast to grow at a 6.6% rate from 1987 to 1990 with sales in 1990 topping $500 billion. The components segment is forecast to grow at a 6.8% annual rate for the next 5 years compared to a more moderate growth of 4.5% for communications products. Almost one half of the world's consumption of all electronics products is in the United States. This means that from a shipping standpoint, regardless of where manufacturing occurs, almost one half of all electronics products end up in the United States.

C. Trends

The electronics industry is known for constantly changing. It is a very dynamic and innovative industry. A great deal of the changes involve improved and brand new products. Many of these changes do not drastically effect the manufacturing of the products, except for the fact that the manufacturing plants must remain flexible to schedule and product definition changes. This required flexibility is an important characteristic of the industry.

There are a number of manufacturing trends in the electronics industry which are extremely important to the electronic maquila industry in Guatemala. Some of these are favorable and some are unfavorable to the growth of the Guatemala maquila industry.

Favorable

- Use of subcontract manufacturers is increasing
- Problems with Far East are drawing firms closer to home
- New companies are being formed

Unfavorable

- Labor content is decreasing
- Automation is growing

1. The use of subcontract manufacturers started to increase in 1981 when IBM started subcontracting a majority of the parts for the new IBM Personal Computer, instead of manufacturing the entire computer in-house. Since then, the electronics subcontracting industry has been growing very rapidly. One estimate places the current size of this industry at $5 billion.

There are many reasons for this growth. For the manufacturer who is basically a mechanical assembler and suddenly finds electronic controls on his products, the subcontractor can engineer and assemble the subassembly. For the company which needs a small quantity of a specially designed product to serve a small market

niche, the subcontractor can economically supply as few as several units per month. For the assembler who is set up to manufacture a few major high volume product lines, the subcontractor is able to economically manufacture low production products. Subcontracting is also becoming more popular due to short product life cycles, rapidly changing technology which can very quickly become obsolete, and the very high overhead structures of some of the electronics industry corporate giants. If a company is developing a new product, they want to concentrate on R&D and let someone else concentrate on how to make it. This is especially true of new start-up companies and inventors who have neither the expertise nor the resources to manufacture their products competitively.

According to a study by Gnostic Concepts Inc. entitled "Critical Trends in Contract Assembly", the manufacture of printed circuit board (PCB) assemblies is split between the original equipment manufacture (OEM) and both domestic and foreign subcontractors. The growth and share split of the PCB assembly market according to the study are as follows:

MARKET VALUE OF PCB ASSEMBLY

	1986	1992
OEM (in-house)		
$	$15.05 Billion	$22.16 Billion
% of market	85%	80%
Average annual growth	--	8%
Domestic Subcontractors		
$	$1.95 Billion	$3.88 Billion
% of market	11%	14%
Average annual growth	--	12%
Foreign Subcontractors		
$	$0.7 Billion	$1.66 Billion
% of market	4%	6%
Average annual growth	--	15%
Total Market		
$	$17.7 Billion	$27.7 Billion
Average annual growth		8%

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With subcontracting increasing, industrial developers should be placing strong emphasis on promoting to local entrepreneurs and to United States based subcontractors.

2. Problems with the Far East are drawing firms closer to home, and there is a growing trend to bring Far East manufacturing back to the United States. There are many reasons for this shift. Turnaround time is much shorter. Products are changing very rapidly but firms must still maintain close control of quality and inventories. Companies feel they can maintain better control of quality when the production is performed only two to three hours from their engineers. United States companies are also concerned with the increasingly strong Japanese yen, the higher cost of Far East labor, and the need to keep closer watch over inventory and costs. They feel the cost, time and hassles of shipping, in many cases, offset the labor cost savings of manufacturing in the Far East.

The trend in high volume manufacturing is to establish highly automated assembly operations in the United States where it is possible to have more flexibility. The domestic subcontractor can also utilize short, reliable communication channels in or close to the same time zone as the customer. These communications advantages allow frequent and complex engineering changes to be implemented faster and production problems to be communicated and resolved faster.

The domestic subcontractor can reduce the customer's cash needs since the customer's cash expenses will normally be a minimum of 30 days after the completed and tested assemblies are received. There are no upfront costs and no letters of credit or sight drafts.

In addition, many companies previously using Far East manufacturing have come to realize that competitors were suddenly producing similar products in a very short time after the Far East manufacturing contacts were made. Apple Computer has had to wage a fierce struggle to prevent counterfeit "Apples" from entering the United States market.

One attempt to remedy some of these problems is for the offshore manufacturer to have office headquarters in the United States. The U.S. company quotes FOB United States, and takes care of the shipping hassles. All transactions are in US dollars so there are no exchange rate fluctuations. In addition, if there is a legal problem (i.e. confidentiality of product), both parties are American. This means no third party firm in another country, with a different language and with a strange legal system.

The Far East subcontractor assembly operations continue to be a good alternative but, there are problems with this alternative,

and United States companies are becoming increasingly aware of these problems. Subcontractors and manufacturing operations closer to home are becoming more popular.

3. New and different types of companies are being formed. In the electronics industry, for example, the trend towards more service-oriented firms is demonstrated by the emergence of a large number of companies which merely design products, market them, and then administer the production of the products without actually doing the manufacturing. These companies contract out their manufacturing needs. In addition, this type of company is people oriented, not capital intensive, and therefore is very easy to start-up. Moreover, there seems to be a resurgence of the entrepreneurial spirit which has been characteristic of the electronics industry and there is a growing number of new companies being formed. In 1986, for example, 28 of the electronics industry's top 200 companies had not been in the 1985 list. This indicates a restructuring or transformation of the most important companies in the industry. As new companies develop initial strategies and fast growing companies are forced to develop new strategies, a tremendous opportunity for investment promoters to influence these companies is created. These companies do not have to be convinced to make a change, they <u>must</u> make changes in order to survive.

4. Another important trend in the electronics industry is the decreasing labor content of manufactured products. The percentage of direct labor in the cost of an electronics product was formerly in the 50% to 75% range with material at approximately 10% - 35%. At the present time, however, the direct labor for a product manufactured in the United States is closer to 5% to 15%. This percentage becomes even lower when the product is manufactured offshore. This shift in labor versus material requirements is taking place as a result of the higher concentration of high priced electronic components in a product, and the growing trend for companies to focus themselves on design and marketing, while sourcing more of their manufacturing needs. Therefore, the most important cost reduction area is no longer labor costs, but rather decreasing material costs. This trend places significantly more importance on the purchasing department of a company. As a result, many companies establish offshore purchasing offices as their first offshore venture and, even manufacturing subcontractors are now offering material purchasing services as part of their "turn-key" package.

5. The growth of automation is another important trend. Within the electronics industry, the fundamental strategic drivers behind manufacturing have changed. In the past the focus was to minimize cost, but today, maximizing quality is equally as important. One electronics company with an operation in Mexico found that their scrap cost was greater than their labor cost. Maximizing flexibility is a close third priority. Within the

scheme of improving both quality and production flow, there is an increased trend toward driving electronic assembly directly from computer-aided- design(CAD). The CAD system that designs the PCB, also programs the PCB assembly robots. Some offshore locations are also finding a labor shortage developing. This all means an increase in automation, even automation in offshore operations.

Financially, it is very difficult to justify offshore automation unless it is done to improve quality or material yield. With offshore skilled wages of $ .50 to $1.00, it is impossible to justify automation based on the labor rates. Therefore, it must be justified in terms of quality assurance. Some of the equipment most easily justified are wave solder machines, electron-beam microscopes for component manufacture, fault detection devices, automatic pick-and-place equipment for PCB assembly, pre-wave solder masking, and component preparation.

A problem with offshore automation is the lack of technical support to maintain the sophisticated equipment. This is not as severe a problem in the Far East where a great deal of local technical capability exists and because a number of automation equipment manufacturers are building their equipment there. The problem is also not as critical in Mexican border operations because technical capabilities are available right across the border in the United States. As the degree of automation continues to grow, offshore service companies will also be established to give support. Almost all of the top U.S. electronics manufacturers are using automation in some form in their U.S. operations, but that trend is now also including offshore operations.

III. INFRASTRUCTURE REQUIREMENTS

The following are the desirable infrastructure requirements of an electronics company. Although these can be generalized, the order of importance (priority) of each item will vary from company to company.

A. Transportation

The cost and availability of reliable transportation is probably the most important infrastructure requirement. There are four categories of transportation needs: air, sea, express package and in-country.

- Air - Daily direct flights from the mainland United States are most desirable. Scheduling freight and travel plans around non-daily flight service is not recommended. The need for direct flights avoids trans-shipping in a foreign country with a foreign freight forwarder. Full

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size jets versus commuter size prop aircraft are also desired. Freight is often bumped off the small commuter planes since passengers are their number one priority. Also, the smaller planes cannot accommodate air freight containers. For these same reasons, regularly scheduled (not only as required), air cargo service directly to the mainland United States is most desirable. Efficient airport operation is also very important.

- Sea - Regularly scheduled weekly containerized direct shipments to the mainland United States are most desired. However, with containerized shipping, trans-shipments are not as great a problem. Roll-on/ roll-off capability helps to insure adherence to schedules. Efficient port operation is important.

- Express Package - Emergencies often require 24 or 48 hour express package service. This includes shipments of materials, tooling, gages, and large blue print drawings. The availability of this express package service provides an insurance policy for the manufacturer.

- In-country - In-country transportation includes a sufficiently developed road system. It also involves containerized trucking service from airport and seaport to the manufacturing location. Public bussing for employees to the plant site is also important. Small operations can bus their own employees, but larger operations must depend on outside transportation. This public bussing is especially necessary for two and three shift operations.

Transportation assessment - The transportation infrastructure in Guatemala is fairly good. There are daily direct flights and weekly direct sailings. Roads and public transportation around the capital are good. Although there is room for improvement, the transportation infrastructure in Guatemala is capable of supporting a large maquila industry.

B. Free Zones

The ability to have shipments pass quickly through customs is very much desired. Free zones provide a method for goods to enter and leave a country with a minimum of hassle and without requiring a system of tariff payments and drawbacks. Most countries allow material to enter their country duty free if it is to be exported. In a free zone, the material enters the free zone in bond and no duty payment is made. In a non-free zone environment, an import duty is paid when the material enters the country and this duty is refunded (drawnback) when the material is exported. Since no duty is paid in a free zone environment, the material passes through customs much quicker.

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Free zones which are full service industrial parks can also provide additional services. These services can include employment screening, medical services, high voltage electrical service, satellite communications, security, employee transportation, freight facilitation, employee training facilities and available factory shells.

Free zone assessment - A free zone environment for an electronic maquila industry is not available at present in Guatemala. The only free zone is too far from the international airport and the mainstream of Guatemalan manufacturing industry capability. Free zones are needed in Guatemala. (See Recommendation No. 16 in Chapter III.)

C. Utilities

The availability of reliable 220 volt, 60 cycle electrical power is required in manufacturing operations. Different voltage and frequency requires transforming at the plant site. Unreliable service requires back-up generation capability on-site. Back-up generation usually is only able to maintain the basic plant electrical needs.

Most of the electronics industry is not a large user of water or gas.

Utility assessment - Guatemala does not have an electrical problem. Back-up generators are usually not necessary or recommended. There is adequate water supply for any electronic industry.

D. Communications

Readily available, multiple line direct dial service in and out of the country is desired. Many businesses now desire fax services and high speed transmission for computer communication. Although many countries offer these services, they are often not available on a timely basis (without a year long waiting period) nor are they available outside the manufacturing plant (i.e. in the homes of plant management).

Communications assessment - Guatemala has a severe problem with telecommunications. (See first CONSTRAINT under INFRA-STRUCTURE) Although this is a major limiting factor to the growth of the electronics maquila industry, it does not prevent the industry from developing.

E. Training Capability

The availability of a trained workforce is accomplished with adequate training capability. Training is needed at the direct

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labor level to train personnel in basic electronic assembly skills. This can be performed by the manufacturer in his own facility if necessary - but it is an added expense. The basic training of technicians should be done outside the manufacturer's location. The manufacturer still has the responsibility to train the technicians in the specifics of his products and processes. The training or education of electronic and electrical engineers is at the university level. Locally educated engineers are usually utilized in manufacturing management (production supervision, quality control and material control). Through advanced training and on-the-job experience these engineers can become involved with product design and research and development. The availability of this local technical support will determine the degree of manufacturing sophistication possible and the amount of technical support required to be performed by ex-patriates.

Training capability assessment - Although Guatemala has a shortage of a skilled and experienced workforce in electronics, there are locally trained electrical and electronics engineers. As the electronics industry develops, these engineers will gain manufacturing experience, and local electronics manufacturing sophistication and design capability will improve. This is an important advantage for Guatemala.

F. Manufacturing Support Industries

Manufacturing support industries include tool and die work, plastic molding, metrology (calibration), service and repair, and sourcing or purchasing service. If these industries are not available, the manufacturer must provide the service himself either locally in-house or from the United States. This can be very costly and inefficient.

Manufacturing support industries assessment - Guatemala does not have adequate manufacturing support industries. These industries should be a focus of the investment promotion effort in Guatemala. As more manufacturing industry operates in the Guatemala, the manufacturing support industries should grow.

G. Business Support Services

Business support services include banking, legal, accounting, computer and shipping. These are all services which aid the business operation of the company. When not available locally, the manufacturer must go to foreign services. An additional aspect is the quality of these services and how closely they match the services that the manufacturer is accustomed to in his own country. Language and similarity are important factors.

Business support system assessment - The business support services in Guatemala are very good. Although the language is Spanish, a great deal of English is spoken and many of the services

are from the United States. This gives an investor from the United States a feeling of familiarity.

H. Subcontracting Capability

If a manufacturer does not want to invest in his own manufacturing operation, he can utilize subcontractors. The subcontractors must be price competitive, and be able to operate a manufacturing facility. The United States manufacturer is looking for someone to deliver quality products in a timely fashion. The specific manufacturing capabilities required vary from company to company. The amount of control to be exercised by the subcontractor varies from merely hiring the employees (Mexican border type maquila operation), to designing the product from functional specifications, buying the material and manufacturing and testing the product.

Subcontracting assessment - Guatemala does not have any electronics subcontracting capability at present.

I. Promotion Agency

A critical infrastructure requirement is the ease with which a company can establish and operate a manufacturing operation. A portion of this is dependent on the country's investment incentives and the degree of control which the country demands over the manufacturer (through laws and regulatory agencies). The ease of establishment and operation is also greatly facilitated by an effective promotion agency. This agency should have a local and a United States presence and should be a one-stop-shop (i.e. be able to assist the manufacturer in all aspects of his project). This agency should be visible, available, competent and responsive.

Promotion agency assessment - Guatemala has taken a major step in creating an environment conducive to the development of an electronic maquila industry with the passage of Decree-Law 21-84. Even though some improvements are necessary the law basically provides the needed incentives. There is a lack of free zone legislation, however, to allow development of free zones in the capital area. This should be corrected. There is also a lack of a clearly defined promotion agency function.

IV. STRATEGY RECOMMENDATIONS

Based on the assessment of the trends in the industry and on the infrastructure which the industry requires, there are three recommendations for developing the electronic maquila industry in Guatemala:

- Establish a Strong Promotion Agency Function

- Improve Local Subcontracting Capability
- Develop Contacts and Follow-up

A. Establish a Strong Promotion Agency Function

This is Recommendation No. 7 in Chapter III.

B. Improve Subcontracting Capability

A major trend in the electronics industry is the increased use of subcontractors. The following two steps outline a program to develop the local subcontracting capability in Guatemala:

- Survey local manufacturers
- Develop strategy and program for technical assistance

1. Survey local manufacturers

A study must be done to identify the current electronics manufacturing capabilities and potential capabilities, and potential capacities. Small half day seminars should be held to explain the electronic subcontracting industry, define technology and capital required, and show concrete examples of the subcontracting market.

Another important aspect of the study is to identify technical assistance needed by the local subcontractors. This may be assistance in such things as in quoting or administration or specific technical subjects.

2. Develop strategy and program for technical assistance

Depending on the type of technical assistance required, there are a number of technical assistance alternatives. One alternative is to establish linkages between the technical vocational schools and the private sector. These linkages can result in the following:

- Curriculum changes to better meet the needs of the private sector
- Use of technical school faculty as consultants to the private sector
- Summer intern positions for students
- Development of co-op programs (six months of classroom education followed by six months of on-the-job experience)

C. Develop Contacts and Follow-up

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The electronics industry is a changing and growing industry. New companies are entering the industry and old companies are growing. Both of these situations indicate that the population of companies needing offshore manufacturing is changing. Guatemala must continue to seek and develop new contacts through active marketing efforts. This marketing should focus around participation in scheduled events and in advertising.

1. Scheduled Events

There are many different types of scheduled promotional events available within the electronics industry. Trade shows, industry seminars, international business seminars, U.S. Department of Commerce seminars on the Caribbean Basin Initiative, (CBI) and various one time seminars have all been utilized to promote countries to the electronics industry. These events have led to different degrees of success. The trade shows and the industry seminars proved to be the most effective. The general (non-industry specific) seminars are often presented to non-business audiences (majority of the audience not in a position to invest in manufacturing) but it is difficult to really measure the effectiveness of this or other events. Many times a company or person hears a presentation and does not act on it for months or even years.

2. Advertising

Assuming a limited advertising budget, the focus of the purchased advertising should be on electronic industry top management -- and not on manufacturing engineers or purchasing personnel. The two publications which best reach the electronics industry top management are Electronic Business and Electronic News.

These two publications are similar and yet different. They are similar in that they are circulated to a similar audience, but they are different in their approach. Electronic Business is the Fortune magazine of the electronics industry and Electronic News is the Wall Street Journal of the electronics industry.

Establishing contacts is of little value without adequate and timely follow-up. Maintaining and strengthening relationships is the objective. The entire follow-up process is a blend of perseverance and responsiveness. The general approaches to follow-up include writing letters, making telephone calls, visiting plants, using a computer tracking system, and responding to specific requests of the potential investor such as subcontractor search, cost analysis and trip planning.

V. CONCLUSION

The electronic maquila industry can be attracted to, and successful in, Guatemala by accomplishing two things:

First, improving the manufacturing environment - This means making it easy, convenient and profitable to operate a manufacturing operation. To create this environment throughout the entire country is very difficult. However, it is possible to create this environment in small areas called Free Trade Zones (FTZ). A Free Trade Zone allows the use of US$ directly, removes many of the bureaucratic restrictions, and has better infrastructure. In addition to being established in the Departamento de Guatemala, these FTZ's can be developed in remote urban areas to promote development throughout the country and slow the migration to the capital.

Second, promoting the electronic maquila industry - The promotion function must be performed by a clearly defined, well trained, and aggressive organization. The promotion is of current Guatemalan electronic capabilities. It must also target foreign investment. The type of investment targeted should be primarily marketing and technical expertise, but may also be capital investment. The promotion organization must also develop local electronic maquila capabilities.

Appendix B:
List of Contacts

LIST OF CONTACTS

Ministerio de Economía

Lic. Danilo Cruz Morales, Director de Política Industrial

Lesbia Valladares de Castellanos, Sub-Directora, Dirección de Política Industrial

Licda. Ana Judith de León Mendoza, Economista Jefe de Sección de Estadística de la Dirección de Politica Industrial

Lic. Jorge Rafael Recinos Acevedo, Director General del Registro de la Propiedad Industrial

Lic. Rafael Pineda Reyes, Director, Unidad Sectorial de Planificación y Programación (USPLAME)

Instituto Nacional de Estadística

Lic. Miguel Angel Herrera, Subgerente

Lic. Luis Felipe Cabrera Franco, Jefe División de Estadísticas Continuas

Lic. Abigail Durán, Sub-Director, Encuestas Industriales, Instituto Nacional de Estadística de México

Felipe Zaghi, Documentation Center

Ing. Jaime Robles, Asesor Técnico

Banco de Guatemala

Lic. Rafael Oswaldo Mendez, Jefe, Sección de Cuentas Nacionales, Departamento de Estudios Económicos

Lic. Manuel Alonso, Sección de Cuentas Nacionales, Departamento de Estudios Económicos

Lic. Francisco José Castellanos, Jefe, Sección de Estudios y Proyectos Industriales, Departamento de Investigaciones Agropecuarias e Industriales

Ministerio de Finanzas

Lic. Estanislao Ballesteros Díaz, Secretaría General del Consejo Nacional de Planificación Económica (SEGEPLAN)

Lic. Roberto Quintana, Secretaría General del Consejo Nacional de Planificacion Economica (SEGEPLAN)

Secretaría Permanente del Tratado General de Integración Económica Centroamericana (SIECA)

Lic. Dagoberto Flores Muñoz, Director, Area Informativa y Apoyo Técnico

Corporación Financiera Nacional (CORFINA)

Lic. Edmundo Ruíz Sem, Subgerente Técnico

Lic. Edwing Othoniel Lara A., Jefe División Operativa

Lic. Fernando Fernández Rodas, Subgerente

Lic. Carlos R. Estrada Escobar, Director Técnico, Depto. de Programación y Recursos

Gremial de Exportadores de Productos No Tradicionales

Ing. Emilio Santana Kong, Presidente

Fanny de Estrada, Directora

Ana Lucrecia Ortíz, Comision de Maquila

Ing. Ricardo Santa Cruz, Gerente General

Lic. Haroldo Zaldívar, Deputy Director

Claudia Estela Martínez, Departamento de Difusión

Ing. Luis Arturo Anleu B, Presidente, Comisión de Maquila

Cámara de Industria

Lic. W. Rodolfo Ferber Aguirre, Executive Director

Edgardo Ruiz, Gerente de Investigación y Análisis

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Ing. Jose R. Zamora, Director, Junta Directiva

Ing. Victor M. Suarez Valdés, Vice President

Carolina Arroyo F., Centro de Documentación

Carlos Francisco Ramírez, Computer Programmer

Lic. Ricardo Chavez, Gerente, Finanzas y Administración

Ramiro García Chiú, General Manager

Cámara Empresarial

Guillermo Rodríguez

Asociación de Gerentes de Guatemala

Lucy Martínez Mont, General Manager

Gustavo Saravia, President

Universidad de San Carlos

Ing. Julio G. Fernández, Professor of Engineering

United Nations

Nicolla Bertollini, UNIDO Representative

US Embassy/Guatemala

Charles A. Ford, Commercial Attache

Ana Maria Th. de Solares, Comercial Assistant

Raul Villagrán, Commercial Specialist

Raquel P. de Urrutia, Commercial Assistant

International Executive Service Corp (IESC)

Luis F. Moreno, Director de Operaciones

Congreso de la Republica

Enrique Arturo Claverio Delgado, Diputado

Agency for International Development

Roberto Castro, Bureau of Science & Technology

Joseph F. Lombardo, Office of Program Development,

Bill Rodgers, Private Sector Office

Mary Ott, Economist

Elaine D. Murphy, Private Sector Office

Brendan Gannon, Private Sector Office

Felipe Manteiga, Private Sector Office

Tully R. Cornick, Agricultural Development Officer

Manufacturing Companies

Camisas Modernas (Van Huesen) (Maquila) Shirts
Luis Arturo Anleu, General Manager

Cardiz - (Maquila) Shirts
Ing Alfredo Hegel, General Manager

Cimatex - (Maquila) Dresses
Luis Egurrola, Manager of Production

Megatex - (Maquila) Garments
Ing. Alvaro Colóm, President
Carlos Colóm, General Manager

Companìa Industrial del Atlántico
(CIDASA) - Textiles (Fabric)
Roberto González, General Manager
Aldo Picciotto, Administrative Manager

Hilaturas Hunapú - Thread
Ing. Gustavo Adolfo Cárdenas Pivaral, General Manager
Juan Luis Rivas, Production Manager

Textiles Moderna - Textile (Fabric)
Victor Benchoam, President

Almo Security Systems
Ing. Gustavo Saravia Aguirre, General Manager
Ing. Ernesto Zachrisson, Manager

Industria Electrónica Larco - Electronics
Ing. Viktor J. Pokorny, General Manager

Sistemas Electrónicos Centroamericanos, S.A. Assemble Radios & TVs
Mario R. Wunderlich, President

Abbot Laboratories - Pharmaceuticals
Guillermo Herrera, General Manager

Lancasco - Pharmaceuticals
Ing. Oscar F. Monzón, Plant Manager

Química Hoechst - Pharmaceuticals
Ulrich Stever, General Manager

Ana Belly - Food Processing
Jose Antonio Lucas Rivera, Administrative Manager

Coca Cola - Food Processing
Furniture
Rolando Porras, Director
Carlos Porras, President

Malher Sucesores - Food Processing
J. Eduardo Vásquez, Sales Manager

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Topsy - Ice Cream
William Olyslager V., General Manager

Bally - Wood Furniture
Jaime Russ, General Manager
Moisés Russ, Production Manager

Maderas de Milpas Altas - Wood Working
Ing. Jorge E. Springmuhl, General Manager
Ray Mathis, Consultant

Calzado Magus - Shoes
Angusto Majía Pinzón, General Director
Benigno Alvarez, Administrative Manager

Incatecu - Shoes
Mario García, General Manager

Fábrica de Envases Metálicos Layta - Tin Cans
Ing. Victor Manuel Suarez, Administrative Manager

Miscellaneous

Caniz - Freight Broker
Rudy Hoffens, Administrative Manager

Divemo - Electronics
Food Processing
Benny Tenenbaum, President

Especialidades Technológicas - Technical Publications
Francisco Aguirre, President

Profisa - Cosmetics
Arturo Alvarado, General Manager

Publiesca - Data Publishing
María Elena Cárdenas, Manager

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Industrial Parks

Parque Industrial Zeta-La Unión - Free Zone
Lic. José Francisco Ovando, Vice President

Zolic - Free Zone
Leonel Arturo Suárez, Manager of Promotion

Banks

Banco Industrial -
Ing. Ramiro Castillo Love, President

Lloyds Bank -
Philip V. Coggins, Manager

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LIST OF PARTICIPANTS

BRAINSTORMING SESSION ON
NECESSARY MEASURES TO ACCELERATE THE
INDUSTRIAL GROWTH OF GUATEMALA

Lic. Estanislao Ballesteros, SEGEPLAN
Lic. Luis Aguilar, Vice Presidente, Banco de Guatemala
Lic. Gustavo Saravia, Associación de Gerentes de Guatemala
Ing. Guillermo Rodríguez, Cámara Empresarial
Licda. Fanny de Estrada, Gremial de Exportadores
Mr. William Rodgers, O/PSP
Mrs. Elaine Murphy, O/PSP
Ing. Alvaro Colòm, MEGATEX
Danilo Cruz, Dirección de Política Industriales (MOE)
Lic. Moisés Russ T. - Maquila garmets
Ing. Julio Rivera - President, Aceros Arquitectónicos
Sr. Francisco Aguirre, President, Especialidades Tecnológicas
Ing. Viktor Pokorny, General Manager, Industria Electrónica Larco
Rafael Marín, Econ. Counsel Office - US Embassy
Mr. Luis Moreno, IESC
Mr. Joseph Cohen, IESC
Mr. Jerome Formo, IESC
Mr. Sydney Sisselman, IESC
Mr. Felipe Manteiga, USAID

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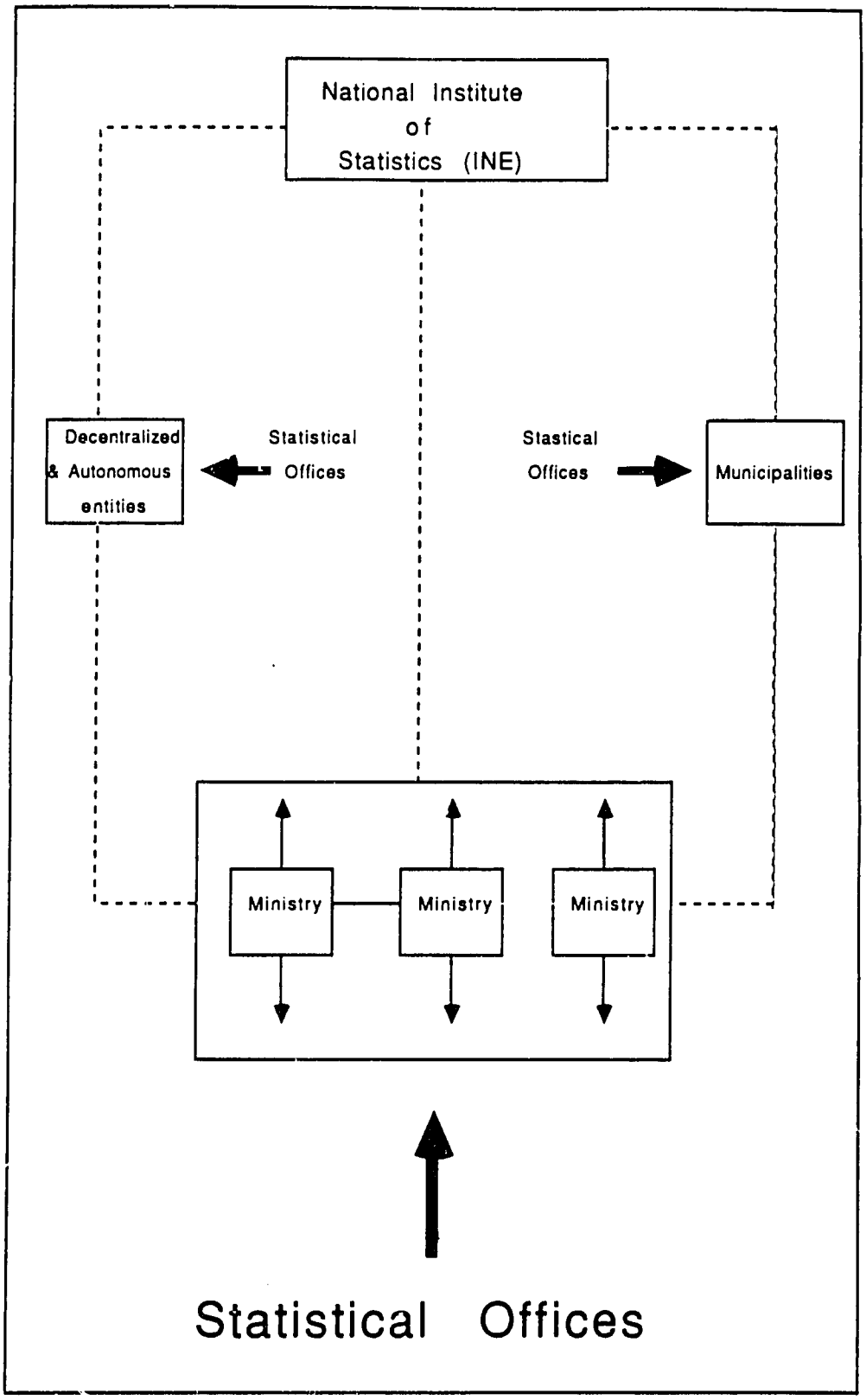
Appendix C:
Current Sources of Data

Appendix C - 1

Diagram of the National Statistical System (SEN)



Appendix C - 2

BANCO DE GUATEMALA
DEPARTAMENTO DE ESTUDIOS ECONOMICOS

ENCUESTA DE OPINION EMPRESARIAL

NOMBRE DE LA EMPRESA _____ ACTIVIDAD PRINCIPAL _____ CODIGO _____
(No llenar esta casilla)

EVALUACION AÑO 1987

1. Respecto al año 1986 el volumen de producción:

   Aumentó ☐
   Fue igual ☐
   Disminuyó ☐
   Aproximadamente en: ___ %

2. Respecto al año 1986, los precios de ventas:

	En el País	En el Mercado Externo
Aumentaron	☐	☐
No variaron	☐	☐
Disminuyeron	☐	☐
Aproximadamente en	___ %	___ %

3. Los pedidos que se recibieron, con respecto al año 1986:

	De Origen Nacional	De Origen Externo
Aumentaron	☐	☐
Fueron Iguales	☐	☐
Disminuyeron	☐	☐
Aproximadamente en	___ %	___ %

4. Los precios de las materias primas y el salario, con respecto al año 1986:

	Materias Primas de Origen Nacional	Materias Primas de Origen Importado	Salario
Aumentaron	☐	☐	☐
Fueron Iguales	☐	☐	☐
Disminuyeron	☐	☐	☐
Aproximadamente en	___ %	___ %	___ %

5. Respecto al año 1986, el nivel de ocupación de su empresa:

   Aumentó ☐
   Fue igual ☐
   Disminuyó ☐
   Aproximadamente en ___ %

6. La inversión en maquinaria, equipo y/o edificios, con respecto a 1986 fue:

   Mayor ☐
   Igual o menor ☐
   No hubo ☐

7. En forma aproximada, ¿qué porcentaje de capacidad instalada utilizó en el año 1987?:

Menos del 50%	51-60	61-70	71-80	81-90	91-100

OBSERVACIONES: _____

_____

_____

Nombre del entrevistado: _____ Dirección: _____

Teléfono: ____ ____ Entrevistó: _____ Fecha: _____

/medea

DEPARTAMENTO DE ESTUDIOS ECONOMICOS

ENCUESTA DE OPINION EMPRESARIAL

NOMBRE DE LA EMPRESA _____ ACTIVIDAD PRINCIPAL _____ CODIGO _____
(No llenar esta casilla)

EVALUACION SEGUNDO SEMESTRE AÑO 1987

1. La situación económica de la empresa fue:

Buena ☐
Normal ☐
Mala ☐

2. El volumen de producción en comparación con:

	Segundo Semestre 1986	Primer Semestre 1987
Aumentó	☐	☐
Fue igual	☐	☐
Disminuyó	☐	☐

3. El volumen de ventas, en comparación con el primer semestre 1987:

	Total	En el Mercado Interno	En el Mercado Externo
Aumentó	☐	☐	☐
Fue igual	☐	☐	☐
Disminuyó	☐	☐	☐

4. Los precios de venta, en comparación con el primer semestre 1987:

Aumentaron ☐
Fueron iguales ☐
Disminuyeron ☐

5. En comparación con el primer semestre 1987:

	Los precios de las Materias Primas de Origen Nacional	Los precios de las Materias Primas de Origen Importado	El Salario
Aumentaron	☐	☐	☐
Fueron iguales	☐	☐	☐
Disminuyeron	☐	☐	☐

6. El nivel de ocupación de su empresa, con respecto al primer semestre 1987:

Aumentó ☐
Fue igual ☐
Disminuyó ☐

7. La inversión en maquinaria durante este período:

Aumentó ☐
No hubo ☐

8. En forma aproximada, ¿qué porcentaje de capacidad instalada utilizó en el 2do semestre de 1987?

Menos del 50%	51-60	61-70	71-80	81-90	91-100
☐	☐	☐	☐	☐	☐

EXPECTATIVAS PARA EL 1er. SEMESTRE. AÑO 1988

1. Considera usted que la tendencia de la situación económica de la empresa, con respecto al 2do. semestre de 1987 será:

Más favorable ☐
Aproximadamente la misma ☐
Menos favorable ☐

2. Considera usted que, con respecto al 2do. semestre de 1987 la tendencia del volumen de producción será:

Más favorable ☐
Aproximadamente la misma ☐
Menos favorable ☐

3. Considera usted que, con respecto al 2do. semestre de 1987 los pedidos a su empresa:

	Total	De Origen Nacional	De Origen Externo
Aumentarán	☐	☐	☐
Serán iguales	☐	☐	☐
Disminuirán	☐	☐	☐

4. Se prevé que, los precios de venta, con respecto al 2do. semestre de 1987:

Aumentarán ☐
No cambiarán ☐
Disminuirán ☐

5. Se prevé que con respecto al 2do. semestre de 1987:

	Los precios de las Materias Primas de Origen Nacional	Los precios de las Materias Primas de Origen Importado	El Salario
Aumentará	☐	☐	☐
No cambiará	☐	☐	☐
Disminuirá	☐	☐	☐

6. Se espera que el nivel de ocupación de su empresa, con respecto al 2do. semestre de 1987:

	%
Aumentará	☐
No cambiará	☐
Disminuirá	☐

7. Aproximadamente, el nivel de ocupación en su empresa asciende a:

_____ Empleados

8. Se prevé alguna inversión en maquinaria para el futuro cercano?

_____

OBSERVACIONES: _____

Nombre del entrevistado _____ Dirección: _____

Teléfono: _____ Entrevistó: _____ Fecha: _____

/mre

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Appendix C - 3

Banco de Guatemala - Departamento de
Investigaciones Agropecuarias e Industriales

Outline of Forthcoming Bulletin

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I. PRESENTACION

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2. Tamaño .....

B. Distribución Geográfica .....

C. Personal Ocupado .....

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2. Sueldos y salarios pagados .....

III. PRODUCCION DEL SECTOR INDUSTRIAL

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2. Por rama de actividad .....
3. Composición .....

B. Valor Agregado por Rama de Actividad .....

IV. COMERCIO EXTERIOR DE PRODUCTOS INDUSTRIALES

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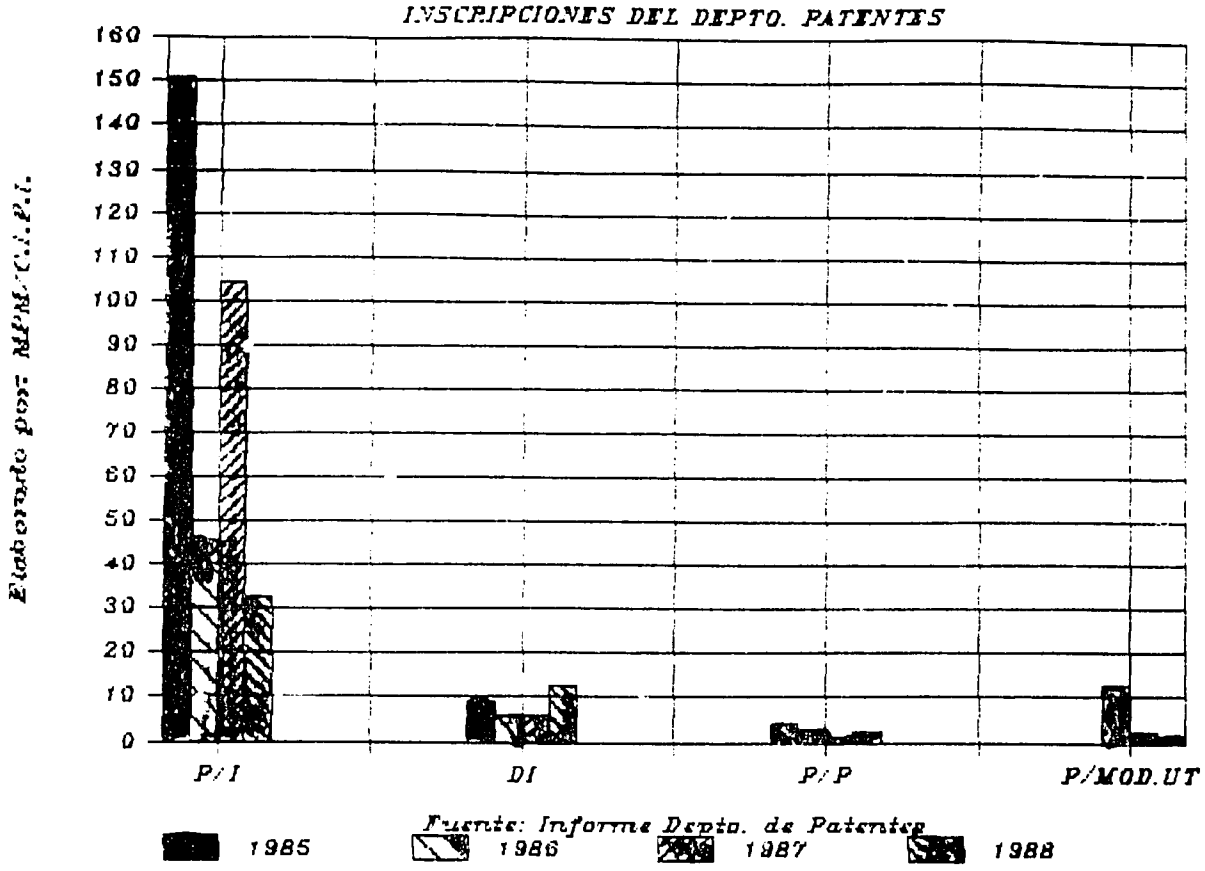
2. Salarios mínimos en la explotación de minas y canteras e industria manufacturera .....

Appendix C - 4

REGISTRO DE LA PROPIEDAD INDUSTRIAL



PATENTES DE INVENCION, PATENTES PRECAUTORIAS, DISENOS IND.
Y MODELOS DE UTILIDAD INSCRITOS EN EL REGISTRO DE LA
PROPIEDAD INDUSTRIAL

	1985	1986	1987	1988
P/I	151	46	104	33
DI	9	6	6	13
P/P	4	3	1	2
P/MOD.UT	0	13	2	1

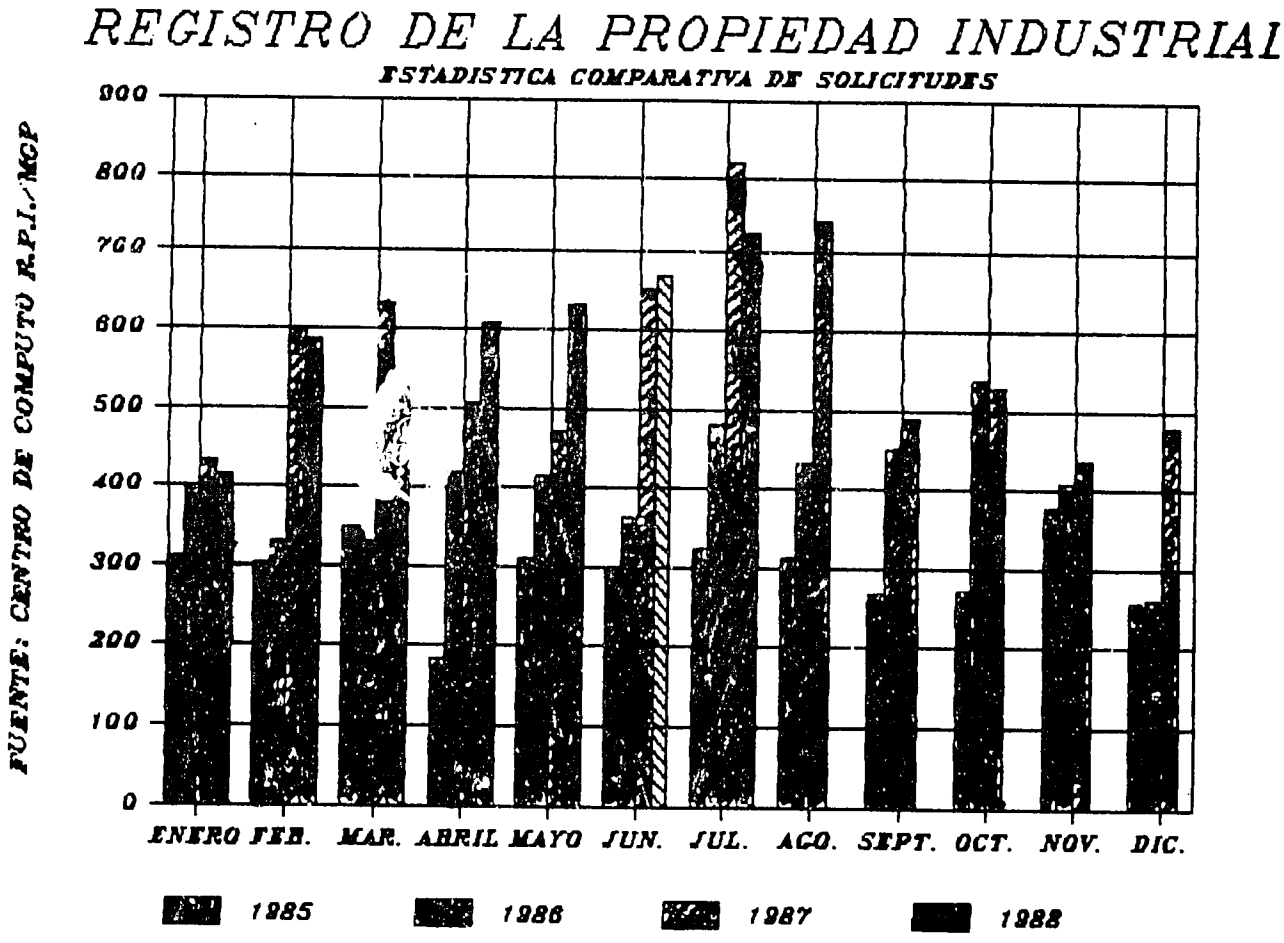
ELAB. POR: MPM/C.I.P.I.
Fuente de Inf.: Reporte del Depto. de Patentes de Invencion

NOTA: LOS DATOS CONTENIDOS EN EL PERIODO 1988
TIENEN INFORMACION HASTA EL MES DE JULIO
HE PRESENTO UNA DISMINUCION DEBIDO A QUE EL MINISTERIO
PUBLICO EXIGIO LA INSCRIPCION DEL PODER EN EL REGISTRO
MERCANTIL, GESTION QUE DEMORA MAS EL TRAMITE DEL EXP.

** TOTAL DE SOLICITUDES SOBRE MARCAS, N.C. Y SENALES DE PROP.

	SOLICITUDES PRESENTADAS DURANTE 1985	SOLICITUDES PRESENTADAS DURANTE 1986	SOLICITUDES PRESENTADAS DURANTE 1987	SOLICITUDES PRESENTADAS DURANTE 1988
ENERO	311	400	432	415
FEB.	303	331	597	587
MAR.	350	330	631	524
ABRIL	184	418	505	608
MAYO	309	414	470	631
JUN.	296	363	651	669
JUL.	323	480	819	728
AGO.	315	434	745	
SEPT.	268	450	488	
OCT.	270	538	527	
NOV.	375	409	437	
DIC.	258	262	477	
TOTAL	3562 *	4829 *	6779	4162
PROMEDIO	296.8	402.4	564.9	

Elab.:M.G.P



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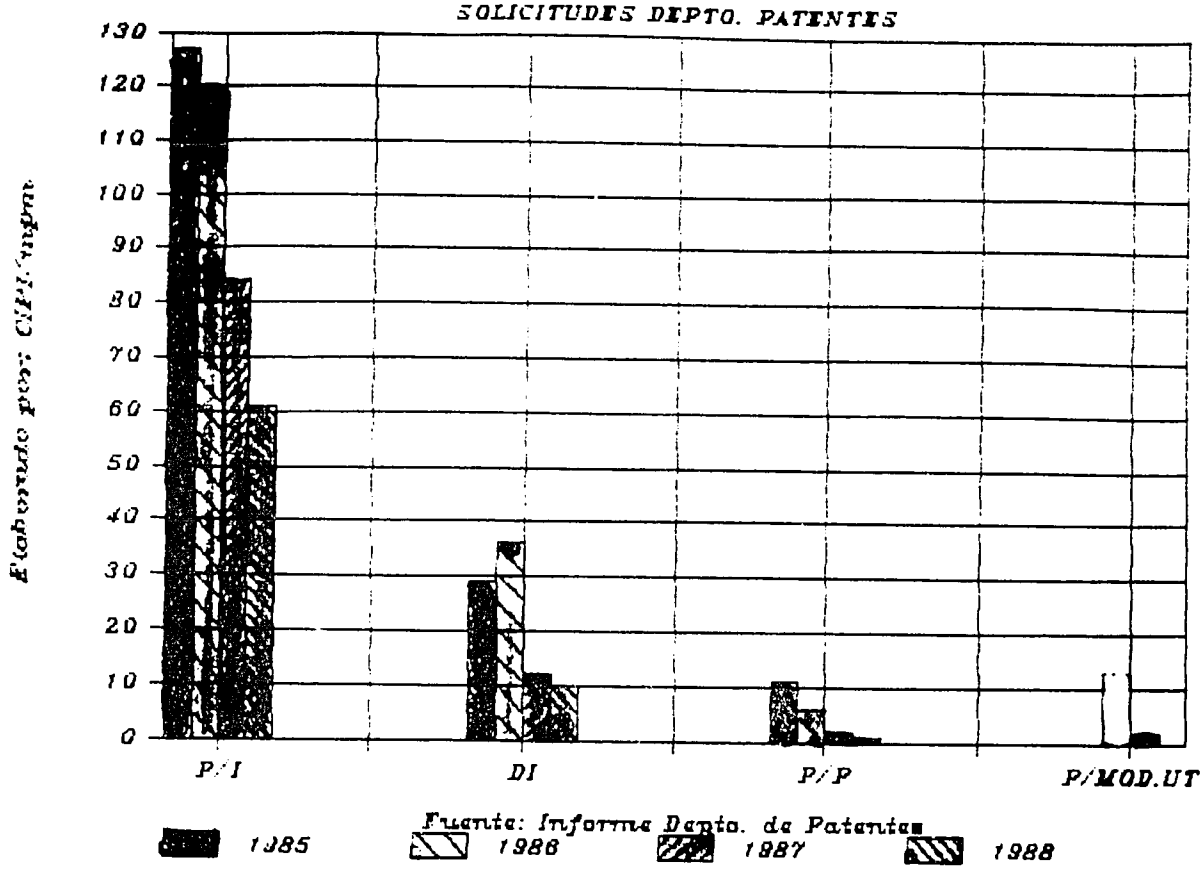
REGISTRO DE LA PROPIEDAD INDUSTRIAL



Fuente: Informe Depto. de Patentes

REGISTRO DE LA PROPIEDAD INDUSTRIAL

SOLICITUDES PRESENTADAS AL DEPTO. DE PATENTES DE INVENCION

TIPO DE SOLICITUD:	1985	1986	1987	1988
P/I	127	120	84	61
DI	[illegible]	[illegible]	[illegible]	[illegible]

Appendix C - 5

UNIDAD SECTORIAL DE
PLANIFICACION Y PROGRAMACION
(USPLAME)

MINISTERIO DE ECONOMIA

GUATEMALA, C. A.

Núm.: .....

Ref.: .....

AL CONTESTAR SIRVASE MENCIONAR EL NUMERO Y REFERENCIA DE ESTA NOTA

INDUSTRIA

- Número de Establecimientos según rama y actividad
- Número y Localización de los Establecimientos por Departamento.
- Tamaño de los Establecimientos según Rama y Actividad
- Organización Jurídica de las Empresas según Rama y Actividad.
- Valor Bruto de la Producción.
- Estructura del Valor Agregado según Rama y Actividad.
- Participación del Valor Agregado en el Valor Bruto de la Producción Generado por el Sector.
- Grado y Precio de Industrialización.
- Personal Ocupado según Rama y Actividad.
- Productividad del Personal Ocupado con respecto a la Producción Bruta, según Grupos Convencionales de Productos.
- Sueldos y Salarios según Rama de Actividad
- Salario medio del Personal Ocupado según Rama de Actividad.
- Sueldos y Salarios Promedio Percapita Pagados según Rama y Actividad.
- Valor del Activo Fijo, Según Actividad y Estructura.
- Relación entre el Valor Bruto de la Producción y el Valor del Activo Fijo de la Industria Fabril.
- Sector Industrial:

  Monto de Financiamiento concedida por los Bancos y Financieras del Sistema, al Sector Industrial según Rama de Actividad.

  Valor de los Préstamos concedidos a la Industria y su participación en el total de préstamos otorgados por las instituciones de crédito.

5a. CALLE 4-56, ZONA 1 EDIFICIO AUXILIO POSTUMO DEL MAGISTERIO - OFICINA No. 403 TELEFONOS: 518734 - 518736 - 518745

UNIDAD SECTORIAL DE
PLANIFICACION Y PROGRAMACION
(USPLAME)

MINISTERIO DE ECONOMIA

GUATEMALA, C. A.

Núm.: .....

Ref.: .....

AL CONTESTAR SIRVASE MENCIONAR EL NUMERO Y REFERENCIA DE ESTA NOTA

Valor de los Préstamos concedidos a la Industria por las Instituciones de Crpedito, según Destino del Gasto.

Sector Industrial: Balanza Comercial según Destino

Balanza Comercial por Región, según Rama y Actividad.

Participación % de las Exportaciones según destino.

Valor de las Importaciones de Productos Manufacturados según Rama de Actividad. (Millones de quetzales cada año).

Participación % de las Importaciones según origen.

- Consumo Aparente del Sector Industrial por Estructura y Actividad.

- Sector Industrial: Valor de los Impuestos de Importación exonerados a las Empresas Industriales ratificadas como Industrias Nuevas, con relación con el Vólumen de importaciones y con los Ingresos Tributarios del Gobierno Central.

FS/tsdc.

5a. CALLE 4-56, ZONA 1 EDIFICIO AUXILIO POSTUMO DEL MAGISTERIO - OFICINA No. 403 TELEFONOS: 518734 - 518736 - 518745

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COST DATA AVAILABLE ON THE MANUFACTURING SECTOR

The only systematic source of information on costs in the manufacturing industry in Guatemala is the annual survey published by the Instituto Nacional de Estadística (INE). The most recent survey, entitled XII Encuesta Industrial Fabril 1985, was conducted in 1985 and published in 1988. It includes the following cost data, coded according to SIIC-Rev.2 categories with 1,2,3, and 4 digits.

1. Labor Costs - Information on labor costs is provided in the annual as well as the quarterly surveys of manufacturing. It includes:

   - Total number of employees
   - Salaries and wages
   - Severance pay
   - Total man-hours (regular and overtime)

2. Total Operating Costs - Operating costs are broken down into the following categories:

   a. Consumption of goods used in production process, including:

      - raw materials
      - bottling, canning and packing
      - fuel and lubricating materials
      - other materials

   b. Payments to third parties for manufacturing-related work, including:

      - electricity
      - repair and maintenance costs
      - miscelaneous work of an industrial nature

   c. Cost of materials purchased and sold without processing, including:

      - materials sold without processing
      - lease of machinery and equipment
      - other operating costs

3. Total General Costs - No breakdown is provided. Therefore, data such as interest payments, administrative costs, marketing/sales costs, and research and development expenditures are not available.

Appendix C - 7

LIST OF DATA ON THE MANUFACTURING SECTOR IN GUATEMALA
(Including data not currently available but projected)
1988 -1992

Description of Data	Source	Frequency	Coverage
A. Caracteristics of Manufacturing Establishments			
1. Directory of manufacturing establishments by number of workers employed, volume and value of production, and value of annual sales	INE-DPI	Annual	N: D-M
2. Number of establishments in the manufacturing sector by size and economic activity	INE-DPI	Annual	N: D-M
3. Directory of manufacturing establishments, by type of products manufactured and occupational strata	INE-DPI	Quarterly	N: D-M
4. Number of establishments in the manufacturing industry	INE-DPI	Quarterly	N: D-M
B. Human Resources			
1. Personnel employed in the manufacturing industry, by number of man-hours worked and employment category	INE-DPI	Quarterly	N: D
2. Personnel employed in the manufacturing industry, by size and type of industry	INE-DPI	Quarterly	N: D
3. Personnel employed in manufacturing establishments with five or more workers employed	INE-DPI	Quarterly	N: D
*4. **Personnel employed in manufacturing establishments with less than five workers employed**	INE-DPI	Annual	N: D

C. Production and Sales

*1.	**Quantity and value of manufacturing production by number of workers employed, according to branch of economic activity**	INE-DPI	Quarterly	N: D
*2.	**Quantity and value of principal manufactured products, by branch of economic activity**	INE-DPI	Quarterly	N:D
*3.	**Quantity and value of sales of the manufacturing industry, by number of workers employed, according to branch of economic activity**	INE	Quarterly	N: D
4.	Annual income in the manufacturing industry, by number of employees and according to type of income and economic activity	INE	Annual	N: D

D. Costs of Production

1.	Quantity and value of the main domestic and imported raw materials by branch of industrial activity	INE-DPI	Annual	N: D
2.	Domestic and imported inputs used in manufacturing, by type and branch of industrial activity	INE	Annual	N
3.	Wages and salaries and other payments and man-hours worked during the year, by branch of industrial activity	INE	Quarterly	N
4.	Beginning and ending inventories of materials utilized in the manufacturing industry, by type of product and branch of economic activity	INE	Annual	N

*5.	**Machinery and equipment utilized in manufacturing production by type of industry and number of workers employed (with less than or more than 5 workers employed)**	INE	Annual	N
*6.	**Expenditures for investment in construction and equipment in the manufacturing industry by economic activity and number of workers employed (with less than and more than 5 workers employed)**	INE	Annual	N
7.	Costs of operation and general costs during the year in the manufacturing industry, by branch of economic activity	INE	Annual	N

5. <u>Indexes</u>

*1.	**Index of industrial production, by product and branch of economic activity**	INE	Quarterly	N
*2.	**Index of employment in the manufacturing industry, by branch of activity**	INE	Quarterly	N
*3.	**Index of the prices of principal manufactured products, by branch of industrial activity**	INE	Quarterly	N
*4.	**Index of the physical volume of national production of machinery and industrial equipment**	INE-DPI	Annual	N
*5.	**Index of the prices of industrial machinery and equipment**	INE-DPI	Quarterly	N
*6.	**Average employment**	INE	Monthly	N
*7.	**Index of the physical volume of manufacturing production**	INE	Annual	N

*8.	**Median production in the manufacturing industry per worker employed and branch of economic activity**	INE-DPI	Quarterly	N
*9.	**Proportion of compensation in industrial production, by branch of economic activity**	INE-DPI	Annual	N
*10.	**Proportion of imported raw materials to total raw materials, by branch of economic activity**	INE-DPI	Annual	N
*11.	**Idle capacity by branch of economic activity**	INE-DPI	Annual	N

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* Indicates that data is not currently available, but that INE and/or another institution have plans to compile and publish that data between 1988-1992.

DPI = Dirección de Política Industrial
N = National
D = Departmental
M = Municipal

Source: Instituto Nacional de Estadística (INE)

Appendix D: Abstracts of Available Reports and Studies

LIST OF PUBLICATIONS ON
THE MANUFACTURING SECTOR IN GUATEMALA

[Note: n.a. = not applicable or not available]

Statistical Series

Title: Encuesta de Opinión Empresarial
Author: Banco de Guatemala, Departamento de Estudios Económicos
Date: 1987.
Publisher: n.a.
Frequency: Annual
Abstract: This is an opinion survey of manufacturers in the Department of Guatemala. The survey is strictly qualitative and the results per se are not published although they are covered in the country's major newspapers. The survey consists of less than 25 multiple choice questions that aim at gauging whether production, sales prices, raw material inputs, employment, investment in capital equipment, utilization of installed capacity, and so forth have increased, decreased or remained at the same level as the previous year. The survey also employs the same format in an attempt to "measure" the expectations of entrepreneurs with regard to production, prices, sales, and the overall position of the firm, among other things, for subsequent quarters of the year.
Index: Manufacturing; Industry; Guatemala.

Title: I Censo Artesanal 1978.
Author: Dirección General de Estadística.
Date: May 1982.
Publisher: Dirección General de Estadística, Guatemala.
Frequency: n.a.
Abstract: This is a census of the handicraft industry in Guatemala. It is currently the only source of information available on manufacturing establishments with less than 5 workers employed. It includes the principal economic indicators of establishments in the handicraft industry, including: number of workers employed; geographical location; salaries; value of equipment; value of production; and value of inputs.
Index: Guatemala; Manufacturing; Industry; Handicrafts.

Title: Directorio Artesanal 1978.
Author: Dirección General de Estadística.
Date: December 1981.

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Publisher: Dirección General de Estadística, Guatemala.
Frequency: n.a.
Abstract: This is a national directory of handicraft establishments with less than 5 workers employed. The directory includes the following information: name of proprietor; department and municipality; address; type of products manufactured; and number of personnel employed. The directory consists of 6 volumes.
Index: Guatemala; Handicraft Industry; Manufacturing.

Title: V Censo de la Industria Manufacturera Fabril 1977
Author: Dirección General de Estadística, Guatemala.
Date: May 1982.
Publisher: Dirección General de Estadística, Guatemala.
Frequency: Irregular. Censuses conducted in 1946, 1953, 1958, 1965, and 1978.
Abstract: INE has conducted a total of five censuses of the manufacturing industry in Guatemala. The most recent one, conducted in 1978 for the year 1977, was not published until 1982. It includes manufacturing establishments of 5 or more employees, and information on: value of finished products and sales; product sales price; other income; number of employees; and value of raw material inputs. The value added in manufacturing is computed indirectly as the difference between total gross production and raw material inputs.
Index: Manufacturing; Guatemala; Industry.

Title: Encuesta Industrial Fabril 1985.
Author: Instituto Nacional de Estadistica, Guatemala.
Date: June 1988.
Frequency: Annual. The annual surveys of manufacturing provide the most complete source of information on the manufacturing industry in Guatemala. The XIIth and most recent survey was conducted in 1985 and published in June of 1988. It provides information that is fundamental for analysis of the structure and composition of the manufacturing sector. Specifically, the survey includes information on: Quantity and value of production; quantity and value of sales; number of employees and salaries paid; quantity and purchase value of raw materials at beginning and end of period; quantity and value of finished products and work-in-process; type and value of installed capacity; costs of operation; general costs; gross capital formation; structure and origin of financing; calculation and analysis of value added.
Index: Guatemala; Manufacturing; Industry; Production; Costs of production.

Title: Encuesta Trimestral de la Industria Manufacturera Fabril.
Author: Instituto Nacional de Estadística, Guatemala.
Date: 1985.
Publisher: Instituto Nacional de Estadística, Guatemala.
Frequency: Quarterly. Available for first 3-quarters of 1978, fourth quarter of 1979-80, and four quarters of 1981-1985.
Abstract: This publication contains tables on: quantity and value of products manufactured and sold during the period, grouped according to the principal activity of the firm; quantity and value of products manufactured and sold during the period, according to type of activity to which the product belongs; and number of employees and man-hours during the period, according to activity and category of employment. The sample is limited to firms of 50 or more employees. Information is broken down in categories of 4, 3, 2 and 1 digits, according to the Standard International Industrial Classification system (CIIU-Rev.2).
Index: Manufacturing; Guatemala; Industry.

Title: Directorio Nacional de Establecimientos Industriales
Author: Instituto Nacional de Estadística, Guatemala.
Date: 1987.
Publisher: Instituto Nacional de Estadística, Guatemala.
Frequency: Annual since 1984. Volumes for 1975 and 1980 are also available.
Abstract: This directory provides a complete listing of manufacturing enterprises in Guatemala with 5 or more workers, including name of the firm, name of the proprietor, location (department and county), address, phone number, and type of products manufactured. It also provides a break-down of the number of firms according to size (5-9, 10-19, 20-49, 50 and more) and type of activity.
Index: Guatemala; Manufacturing; Industry.

Title: EXIMPORT.
Author: Publiesca.
Date: 1988.
Publisher: Publiesca.
Frequency: Weekly.
Abstract: This is a weekly statistical series on imports from Guatemala. While not strictly manufacturing-related, this publication is useful as a provider of raw data on imports and the format of presentation allows one to compile data on manufacturing-related imports. It includes the name of the importer, number of packages, origin of

import, mode of transportation, CIF value, and gross weight in Kilos. It is based on the statistics provided by the Aduana Central, Express Aéreo, Aduana de Aviación, Santo Tomás de Castilla, Puerto Barrios, Champerico, and Puerto de San José.

Index: Guatemala; Imports; Statistics.

Title: INCAMEX.
Author: Publiesca.
Date: 1988.
Publisher: Publiesca.
Frequency: Bi-weekly.
Abstract: This bi-weekly series contains raw data on exports and imports obtained from the Aduana Valle Nuevo, Ciudad Pedro de Alvarado, Aduana Agua Caliente, Aduana El Carmen, Aduana Tecun Uman, and Aduana Quetzaltenango. It includes the following data: name of importer or exporter; number of packages; origin or destination; value of merchandise; gross weight in Kilos; and name of dispatcher or receiver. While not strictly on manufacturing, this series allows one to determine to some extent the sectorial nature of the import or export.
Index: Guatemala; Exports; Imports; Statistics.

Title: DATEX.
Author: Publiesca.
Date: 1988.
Publisher: Publiesca.
Frequency: Monthly.
Abstract: This monthly statistical series includes data on exports from Guatemala, including the name of the exporter, the number of packages, the destination, value, weight, and importer firm. While not strictly on manufacturing, this publication allows one to gather data on exports from that sector. The raw data is obtained from official customs agencies in Guatemala.
Index: Guatemala; Exports; Statistics.

Title: VII Compendio Estadístico Centroamericano.
Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).
Date: 1981.
Publisher: Guatemala, SIECA.
Frequency: Every 5 years. Volume for 1986 not available, but will publish 1987 volume.
Abstract: This statistical compilation includes data on the manufacturing sector in Guatemala and that of other Central American countries. Statistics are based on data available from national institutes of

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statistics throughout the region. In the case of Guatemala, the most recent report available is based on the 1975 survey of the manufacturing industry conducted by the Dirección Nacional de Estadística, now INE. The following types of data on the manufacturing sector of Guatemala are included: number of manufacturing establishments; number of workers employed; wages and salaries; gross value of production; value added in manufacturing; value of raw material purchases; amount of electricity consumed by manufacturing establishments; production of cigarettes from 1965-80; production of beer; production of sugar; surface area of construction permits authorized. The 5 major sections of this statistical compilation are: industrial censuses and surveys; volume of industrial production; construction activities; consumption of electrical energy; and agricultural production.

Index: Central America; Guatemala; Industry; Manufacturing; Agriculture; Statistics; Energy; Construction.

Title: Series Estadisticas Seleccionadas de Centroamérica.
Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).
Date: December 1985.
Publisher: SIECA, Guatemala.
Frequency: Annual. 1986 volume is now being published.
Abstract: This is a compilation of selected statistics on Central America. Data on the manufacturing sector in Guatemala includes the following: production of cigarettes, cement, sugar and beer; number of construction permits authorized; installed electrical capacity; gross generation of electricity; and consumption of electricity. The most recent series available includes data for the years 1970-84.
Index: Central America; Guatemala; Industry; Manufacturing; Electrical energy; Statistics.

Miscellaneous Reports and Studies

Title: Estudio Económico y Memoria de Labores.
Author: Banco de Guatemala.
Date: 1986.
Publisher: Litografía Modernas, Guatemala.
Frequency: Annual.
Abstract: This annual report provides an overview of domestic economic activity. While not exclusively on manufacturing, this study does contain a section on the manufacturing sector. The report assesses the behavior of the principal sectors of the economy, including manufacturing, and gives statistical

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tables on GNP, consumer prices, and gross production in the agricultural, industrial, transportation, construction, and other sectors. It also discusses the international balance of payments situation as well as monetary and credit conditions with tables on interest rates, and credit to the private sector, among others.

Index: Guatemala; Economy; Industry; Manufacturing; Trade; Statistics; Agriculture; Credit.

Title: Directorio Industrial
Author: Cámara de Industria de Guatemala.
Date: 1987/88.
Publisher: Litografía Multicolor, Guatemala.
Frequency: Annual.
Abstract: This directory provides a complete listing of the Chamber of Industry's member firms, including name, address, telephone number, telex, and cable. The directory also provides an overview of the Chamber's purpose and organizational structure. In addition, it provides a comprehensive listing of laws and regulations that affect the manufacturing industry in Guatemala, including laws on incentives for export promotion. Finally, the directory also provides a copy of "Investment in Guatemala", a guide prepared by Praun, Reyes, Aldana & Asociados, an affiliate of Peat Marwick & Mitchell.
Index: Guatemala; Manufacturing; Industry; Investment; Regulations; Laws.

Title: El Industrial
Author: Cámara de Industria de Guatemala.
Date: 1988.
Publisher: Publicaciones Internacionales, Guatemala.
Frequency: Monthly.
Abstract: This monthly newspaper by the Cámara de Industria de Guatemala is an important source of communication between the Chamber and its member firms. It is also distributed widely outside the Chamber to promote discussion of issues deemed important by the Chamber and to communicate the Chamber's stance or point of view regarding a wide range of topics, both economic and political. The newspaper also covers any proposed changes in legislation of interest to manufacturers and industrialists in Guatemala, as well as events internal to the Chamber, such as changes in the composition of the Board of Directors and seminars sponsored.
Index: Guatemala; Manufacturing; Industry.

Title: Industria
Author: Cámara de Industria de Guatemala.
Date: July 1986.
Publisher: Litografía Multicolor, Guatemala.
Frequency: Annual. (No volume was published in 1987, but will be resumed in 1988.)
Abstract: This magazine covers a number of topics, including political and economic development issues in Guatemala and in other parts of Central America. It includes information on monetary policies, macro-economic indicators, industrial policy, and legal and regulatory issues, among other topics of relevance to private sector entrepreneurs and foreign as well as domestic investors.
Index: Guatemala; Industry; Manufacturing; Economics; Central America.

Title: Informe del Segundo Congreso Industrial Nacional.
Author: Cámara de Industria de Guatemala.
Date: July 1987.
Frequency: n.a.
Abstract: This report is a summary of the proceedings of a National Congress on Industrial Development in Guatemala. It includes papers on: problems in the national economy; import substitution industrialization; pressures from international organizations; promotion of exports; fundamental issues behind a proposed industrial policy; conclusions and recommendations of the participants.
Index: Guatemala; Manufacturing; Industrial policy; Import substitution.

Title: Situación Actual de la Industria del Mueble de Madera en Guatemala.
Author: Cámara Oficial Española de Comercio en Guatemala.
Publisher: Ediciones Superiores, Guatemala.
Date: 1979.
Frequency: n.a.
Abstract: This is a study of the situation of the wood furniture industry in Guatemala.
Index: Guatemala; Wood Industry; Furniture Industry; Manufacturing.

Title: Directorio Industrial de Guatemala, C.A.
Author: Byron Chinchilla.
Date: 1987.
Publisher: Imprenta Latina, Guatemala.
Frequency: Annual
Abstract: This directory lists the names of manufacturing firms in Guatemala, including name and address of the firm, and telephone number by type of activity.

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Index: Guatemala; Manufacturing; Industry.

Title: Crónica Tecnológica.
Author: Especialidades Tecnológicas.
Date: September, 1988.
Publisher: Especialidades Tecnológicas, Guatemala.
Frequency: This monthly newsletter has been available since 1987. It has information and ideas on industrial technological developments, new products available for import, products with export potential, and opportunities for investment and joint ventures.
Index: Guatemala; Technology; Industry; Manufacturing; Investment.

Title: Seminario sobre la Importancia de la Industria Textil Indígena en el Municipio de Panajachel y su Aceptación en el Turismo.
Author: Facultad de Humanidades, Universidad Rafael Landívar.
Date: 1985.
Publisher: Universidad Rafael Landívar, Facultad de Humanidades.
Frequency: n.a.
Abstract: This is a collection of the papers presented at a seminar on the importance of the indigenous textile industry in the municipality of Panajachel.
Index: Guatemala; Textiles Industry; Tourism; Manufacturing.

Title: Análisis del Comportamiento de las Exportaciones, Período 1980 -1987.
Author: Gremial de Exportadores de Productos No Tradicionales de Guatemala.
Date: 1988.
Publisher: Gremial de Exportadores de Productos No Tradicionales de Guatemala.
Frequency: n.a.
Abstract: This study examines the balance of trade for Guatemala in the 1980-87 period with regards both to Central America and the rest of the world. It provides tables on total exports as well as non traditional export products.
Index: Guatemala; Industry; Exports; Statistics.

Title: Boletín Informativo.
Author: Gremial de Exportadores de Productos No Tradicionales de Guatemala.
Date: September 1988.
Publisher: Gremial de Exportadores de Productos No Tradicionales de Guatemala.
Frequency: Monthly.
Abstract: This bulletin is distributed to members of the Non

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Traditional Products Exporters Guild. It includes information on Guild activities and projects such as seminars, training programs, promotional events, and so forth. It also includes discussion of non traditional products.

Index: Guatemala; Exports; Industry.

Title: Informe del Estudio de Oferta Exportable de Guatemala.

Author: Gremial de Exportadores de Productos No Tradicionales de Guatemala.

Date: 1986.

Publisher: Gremial de Exportadores de Productos No Tradicionales.

Frequency: n.a. (One-time report).

Abstract: This report is a study of the supply of exportable products from Guatemala in the immediate, short-term and near-future. It analyzes the types of problems and impediments to export production in Guatemala and describes the requirements and needs of exporters. Product categories included in the study are food processing, perishable agricultural products, non-food consumer products; raw materials and semi-processed goods, and furniture and other items.

Index: Guatemala; Manufacturing; Industry; Exports; Agriculture.

Title: An Assessment of the Industrial Sector in Central America: Current Situation and Future Needs.

Author: International Science and Technology Institute.

Date: January 1988.

Publisher: Report prepared for the Regional Office for Central America and Panama (ROCAP) and the Private Sector Office/Bureau for Latin America and the Caribbean, U.S. Agency for International Development, Washington, D.C.

Frequency: n.a.

Abstract: This report provides an overview of the industrial sector in each of 6 countries in Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Panama. The report discusses key constraints to investment and growth in the industrial sector, including political turmoil, policy and regulatory impediments, finance, labor markets, marketing, technical/production processes, management and training, and infrastructure. It also provides an assessment of the role of regional entities such as SIECA, ICAITI, CABEI, INCAE, LAAD, FEDEPRICAP, and BLADEX, as well as a description of USAID activities. The report provides a series of recommendations to reactivate industrial production

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in Central America.

Index: Guatemala; Belize; Costa Rica; El Salvador; Honduras; Panama; Central America; Industry; Manufacturing; Central American Common Market.

Title: Planteamiento de la Profesionalización de la Industria de la Maquila en Guatemala. (Report prepared for the Cámara Empresarial de Guatemala.)

Author: Kurt Salmon Associates,Inc.

Date: July 1987.

Publisher: (Unpublished report)

Frequency: n.a.

Abstract: This is a comprehensive report of the maquila industry in the apparel sector in Guatemala. The study provides an assessment of the installed industrial capacity in Guatemala, current practices for commercialization of the industry, and current infrastructure. The report also provides an overview of the production and marketing requirements for successful development of the industry. In addition, it makes a comparative analysis of regulations and fiscal incentives in other Central American and Caribbean countries. The report includes a series of short-term recommendations to increase the competitiveness of maquila operations in Guatemala, and proposes a long-term strategy to accelerate the development of this industry.

Index: Guatemala; Manufacturing; Industry; Maquila.

Title: Informe Comisión Maquiladores `Confección 2000'. Report prepared for Agency for International Development on behalf of the Comisión de Maquiladores, Gremial de Exportadores de Productos No Tradicionales.

Author: MEGATEX.

Date: April 1988.

Frequency: n.a.

Abstract: This report complements a 1987 study by Kurt Salmon Associates on the maquila industry in Guatemala. The report evaluates the legal and physical infrastructure for maquila operations, as well as training needs, financial requirements and quality and availability of promotion and information systems. The study lays out an integrated program that will create the fundamental bases for development of the maquila garments industry in Guatemala.

Index: Guatemala; Maquila; Textiles Industry; Manufacturing; Fiscal Incentives; Training.

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Title: Imágen de la Industria Química Básica al Año 2,000.
Author: Secretaría General del Consejo Nacional de Planificación Económica.
Date: 1981.
Publisher: SEGEPLAN.
Abstract: This is a study of the chemical industry in Guatemala in the 1980s and to the year 2000. Examines the role of the chemical industry in industrial development.
Index: Guatemala; Chemical Industry; Manufacturing; Industrial Development.

Title: Compendio de la Legislación Centroamericana de Incentivos Fiscales al Desarrollo Industrial.
Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).
Date: 1978.
Publisher: SIECA, Guatemala.
Frequency: n.a.
Abstract: This is a collection of legislation on fiscal incentives to industrial development in Central America.
Index: Central America; Guatemala; Laws; Incentives; Industry; Manufacturing.

Title: Estudio sobre la Oferta y Demanda de los productos incluídos en el Artículo XIV del Segundo Protocolo de Managua, que se destinan a la industria del corte y confección de ropa.
Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).
Date: December 1985.
Frequency: n.a.
Abstract: This study includes a general description of the textile industry in Central America with specific information on value added, employment, intra-regional trade. More specifically, the study examines current problems in the textile industry, as well as the situation of demand and supply for different types of textiles (i.e. cotton, polyester, acrylic, knits, etc.) Also included are tables by country for value added in textiles; intra-regional commerce for textiles; extra and intra-regional imports for the textiles industry; and number of hectares planted of cotton; production of cotton; number of fabrics in the textile industry for all Central American countries individually as well as as a whole for the period 1978-82.
Index: Central America; Guatemala; Textile Industry; Import Duties; Regional Accords.

Title: Estudio sobre la Situación de la Industria de Papel

Instalada en Centroamérica y sus Requirimientos para la Reconversión.

Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).

Date: April 1988.

Publisher: SIECA, Guatemala.

Frequency: n.a.

Abstract: This study by a team of technicians from SIECA, BCIE and ICAITI seeks to determine the requisite conditions for paper production in Central America. It examines productivity issues as well as the degree of competitiveness of the industry. The study estimates regional demand and supply for various types of paper.

Index: Central America; Guatemala; Industry; Manufacturing; Paper.

Title: Listado de insumos que Utilizan o Pueden Utilizar para su Producción las Ramas CIIU de Actividad.

Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).

Date: 1978.

Frequency: n.a.

Abstract: This is a listing of inputs used, or with the potential of being used, in the production of manufactured goods corresponding to the branches of activity supplied in the Standard International Industrial Classification system.

Index: Guatemala; Industry; Manufacturing.

Title: Precios máximos de las llantas para automóviles, camión liviano, camión pesado, tractor delantera, neumáticos fabricados por la planta de integración Ginsa de Guatemala.

Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).

Date: June 1983.

Publisher: SIECA.

Frequency: n.a.

Abstract: This is a 10-page document consisting of tables on the current prices as of July 1983 of tires for automobiles, light and heavy trucks, and tractors.

Title: Situación Actual del Sector Industrial Centroamericano.

Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA).

Date: June 8, 1987.

Publisher: SIECA, Guatemala.

Frequency: n.a.

Abstract: This report examines the current conditions of the

industrial sector in Central America in the context of a continuing economic crisis in the region. The report includes tables on valued added of the industrial sector in Guatemala for 1980-85. It also includes tables on exports and imports in Guatemala to and from other Central American countries for the same period in thousands of Central American pesos.

Index: Central America; Guatemala; Industry; Manufacturing; Trade.

Title: Propuesta para Reactivar la Produccion Industrial y el Intercambio de Bienes Complementarios en la Region Centroamericana.

Author: Secretariado Permanente del Tratado de Integración Centroamericana (SIECA), Banco Centroamericano de Integración Económica (BCIE), and Instituto Centroamericano de Industria y Tecnología (ICAITI).

Date: October 1987.

Frequency: n.a.

Abstract: This report was prepared by 3 regional institutions following a study of the conditions of industrial development in Central America. The study identifies key constraints to the growth of manufacturing industries in Central America and proposes a series of recommendations for reactivating industrial production in the region.

The study examines economic linkages in the Central American region, principal barriers to intra-regional trade of complementary products; current situation of industrial plants, including volume of production, status of machinery and equipment; use of quality controls; possibilities to increase use of idle capacity by other firms; alternatives for increasing production; and use of technical assistance within firms; among other issues. Also contains information on exports to third countries, and demand for credit for expansion of existing firms and for investment in new firms. The report includes individual tables on industrial production in Guatemala and other Central American countries, based on a survey conducted by SIECA, BCIE, and ICAITI.

Index: Central America; Industry; Manufacturing.

Title: Diagnóstico del Sector Industrial 1980-1985.

Author: Unidad Sectorial de Planificación y Programación Industrial (USPLAME)

Date: April 1988.

Frequency: n.a.

Abstract: This is an assessment of the manufacturing sector in Guatemala based on statistics from the National

Institute of Statistics. The report covers the following areas: structure of the manufacturing sector by number of workers employed; geographical location of establishments; legal organization; structure of manufacturing production; evolution of production; value added in manufacturing; human resources including number of employees in manufacturing, salaries and wages paid, and productivity of labor; fixed investment in manufacturing; financial resources of the sector; and trade in manufacturing including imports and exports and balance of trade.

Index; Guatemala; Industry; Manufacturing; Industrial development.

Title: Situación de la Industria del Aserrío en Guatemala.
Author: INAFOR.
Date: 1985.
Publisher: Unidad Sectorial de Planificación y Desarrollo de la Agricultura.
Frequency: n.a.
Abstract: A study of conditions in the sawdust industry in Guatemala.
Index: Guatemala; Wood Industry; Manufacturing.

Title: Guatemala Economic Situation and Prospects.
Author: The World Bank.
Date: January 1987.
Frequency: n.a.
Abstract: This report by the World Bank provides a detailed overview of recent macroeconomic developments in Guatemala. It has chapters on the agricultural sector, energy and industry, issues in social development (i.e. income distribution, health, education, and population and labor markets), and medium-term prospects and policy priorities. Although this report is not exclusively a manufacturing sector study, it does include important information on the sector and illustrates the type of reports available from international donor agencies. Unfortunately, this type of report is not available to the general public, but AID personnel may be able to access more recent versions of this report and similar reports from the International Monetary Fund and the Inter-American Development Bank.
Index: Guatemala; Economy; Industry; Manufacturing; Social development; Tariffs.

Theses

Title: La Mediana Industria en Guatemala y los Problemas

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de Organización.
Author: Víctor Hugo Alpírez Girón.
Date: 1980.
Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Frequency: n.a.
Abstract: This thesis focuses on the role of medium-sized industrial enterprises. It reviews the organizational structure and administration of personnel in these firms.
Index: Guatemala; Manufacturing; Industry; Personnel Administration.

Title: Aplicación de la Técnica de Muestreo de Trabajo en la Industria Metalmecánica.
Author: Eduardo José Alvarez Valencia.
Date: 1978.
Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Frequency: n.a.
Abstract: A thesis on the application of the sampling technique to the metal-mechanics industry.
Index: Guatemala; Manufacturing; Metal Mechanics Industry.

Title: El Empleo de Normas de Producción y Calidad de la Industria Guatemalteca.
Author: Denis Rolando Ayala Alvarado.
Date: 1979.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: This is a thesis on the employment of norms of production and quality control in Guatemalan industry.
Index: Guatemala; Industry; Manufacturing; Employment; Quality Control.

Title: Control de Producción en una Industria de Tacones de Madera para Zapatos.
Author: Jorge Mauricio Calderón Juárez.
Date: 1983.
Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Abstract: This is a thesis on production controls in the manufacture of heels for shoes.
Index: Guatemala; Shoe Industry; Manufacturing.

Title: Estudio de la Administración de Personal en la Pequeña y Mediana Industria Manufacturera Guatemalteca.
Author: Camino Castillo, Rossana y Herbruger Salcedo.
Date: 1981.
Publisher: Universidad Rafael Landívar, Facultad de Ciencias Económicas.

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Frequency: n.a.
Abstract: This is a study of personnel administration in small and medium manufacturing enterprises in Guatemala. It was prepared as a thesis by students at the University of Rafael Landívar. It includes information on training needs for SMEs.
Index: Guatemala; Manufacturing; Industry; Personnel administration; Training.

Title: Análisis de Condiciones Económicas; El Análisis de los Efectos de los Salarios Mínimos en la Industria Papelera e Impresa.
Author: Carlos Ceballos.
Date: 1981.
Publisher: Published in Cámara de Comercio de Guatemala No. 71 (Noviembre - Diciembre 1981).
Frequency: n.a.
Abstract: This study analyzes economic conditions and the effect of minimum wages in the paper and publishing industry.
Index: Guatemala; Paper Industry; Publishing Industry; Manufacturing.

Title: La Estructura Organizacional de la Mediana Industria.
Author: Gladys Silvina Contreras Sesto.
Date: 1982.
Publisher: Universidad Rafael Landívar, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: A study of the organizational structure of medium-sized industries in Guatemala including a review of the productivity of labor.
Index: Guatemala; Medium Industry.

Title: Posibilidades de Impulsar Programas a Nivel Nacional para Promover la Fabricación de equipo usado en la Industria Química, Beneficios del Café y Similares; en Talleres Mecánicos.

Title: Análisis de la Artesanía Textil en Guatemala.
Author: Oscar Rolando Díaz Girón.
Date: 1979.
Publisher: Universidad Mariano Gálvez, Escuela de Administración de Empresas.
Frequency: n.a.
Abstract: This is an analysis of the textiles handicraft industry in Guatemala.
Index: Guatemala; Textiles industry; Handicrafts.

Title: Las Inversiones Extranjeras en la Producción de Papel y Productos de Papel en Guatemala.

Author: Carlos René Estrada Escobar.
Date: 1978.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: This study evaluates the participation of foreign investment in the paper and paper products industry, publishing and other related industries. It includes an overview of industrial activities in Guatemala and the origins of foreign investment. The report also discusses the historical development of the paper industry and its role in the national economy, as well as available forestry resources. The study analyzes the structure of 15 national and foreign firms producing paper or paper products, including the number of firms, value of production, value added, number of workers, nationality of personnel, wages and salaries, origin of raw materials, paid-in-capital, loanable funds, among other issues. The study also provides a financial analysis of some of the firms including debt structure, productivity, solvency, and so forth.
Index: Guatemala; Paper Industry; Manufacturing; Foreign Investment.

Title: Metodología para el Cálculo del Producto de la Industria Manufacturera.
Author: Lidia Gutiérrez Escobar.
Date: 1983.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas, Guatemala.
Frequency: n.a.
Abstract: This thesis describes a methodology for estimating the contribution of the manufacturing sector to gross domestic product. It also provides an overview of the role of the manufacturing sector in Guatemala's economy, including information on: the structure and composition of the sector; its contribution to fiscal revenues; the percentage of banking system credits absorbed by the sector; and generation of foreign exchange and employment. The study also provides a historical overview of different attempts to compile, analyze, process, and publish statistics on the industrial sector.
Index: Guatemala; Statistics; Manufacturing; Industry; Methodology.

Title: Estudio de Prefactibilidad de la Pequeña Industria para la Fabricación de Puertas de Madera Contrachapada.
Author: Walter Oswaldo Hemmerling González.
Date: 1978.

Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Frequency: n.a.
Abstract: This is a feasibility study on the manufacture of plywood doors by small enterprises.
Index: Guatemala; Manufacture; Wood Industry; Small Enterprise.

Title: Municipio de San Felipe: Artesanía e Industria y Posibilidades del Desarrollo.
Author: Cristóbal Marroquín López.
Date: 1978.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas, Guatemala.
Frequency: n.a.
Abstract: This is an assessment of industrial activities in the municipality of San Felipe with special focus on the manufacture of handicrafts. The study analyzes the principal political and economic factors that impact on the handicrafts industry; and defines the technical, entrepreneurial and economic characteristics of handicraft establishments in rural and urban areas of San Felipe. The study has information on techniques of production used (manual, semi-manual and mechanized). It also deals with issues of ownership of the means of production, destination of production, means of financing, raw materials, and technical assistance.

Title: Capacidad Ociosa de la Industria Textil en Guatemala.
Author: Gustavo Adolfo Oliva García.
Date: 1982.
Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Frequency: n.a.
Abstract: A thesis on idle capacity in the textile industry.
Index: Guatemala; Textile Industry; Manufacturing; Quality Control;

Title: Comercialización de la Producción, Municipio de Santa Catarina Mita, Departamento de Jutiapa.
Author: Hugo de Jesús Paz.
Date: 1981.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: This is a study of production in the municipality of Santa Catarina Mita. Although the primary focus is on agricultural production, the study includes a section on the shoe and handicrafts industry which fall in the manufacturing category.
Index: Guatemala; nufacturing; Agriculture; Handicrafts;

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Shoe Industry.

Title: Aplicación de Costos Standard por Ordenes de Producción de la Industria Metal-Mecánica.
Author: Jesús Francisco Quijivix Alonzo.
Date: n.a.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: This thesis explores the application of standard costing procedures to production in the metal-mechanics industry.
Index: Guatemala; Manufacturing; Metal-Mechanics Industry.

Title: Costos y Rentabilidad de Unidades Productivas: Municipio de Quetzaltepeque, Depto. de Chiquimula.
Author: Obdulio Manuel Ramírez Cifuentes.
Date: 1980.
Publisher: Universidad de San Carlos, Facultad de Ciencias Económicas.
Frequency: n.a.
Abstract: This is a thesis on the costs and profitability of manufacturing establishments in the Municipality of Quetzaltepeque.
Index: Guatemala; Manufacturing Industry; Costs of Production; Agriculture.
Author: Jorge Gustavo Monroy Solórzano.
Date: 1978.
Publisher: Universidad de San Carlos, Facultad de Ingeniería.
Frequency: n.a.
Abstract: This thesis evaluates the potential of national programs to promote the manufacture of used equipment in the chemical industry, mechanical shops, and other industries.
Index: Guatemala; Manufacturing; Metal Mechanics Industry; Chemical Industry; Industrial equipment.

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Appendix E: Questionnaire

GUATEMALA MANUFACTURING SECTOR

ASSESSMENT

NAME:_____

YEAR ESTABLISHED:_____ OWNERSHIP:_____

PRODUCTS:_____

PRODUCTION LABOR: TYPES OF SKILLS -- #S AND $/HOUR

Hours/Day____ Shifts/Day____ Hours/Week_____ Days/Week____
Production Employees_____ # Total Employees_____

Average Daily Labor ($/Hour)

Unskilled

Semiskilled

Skilled

Benefits - Required and Voluntary

Vacation	Bonus
Holiday	Medical
Payroll Taxes	Pension
Sick Leave	Other
Transportation	Food

Turnover Ratio

Efficiency--compared to what?

Absenteeism/Tardiness

Number of candidates interview in order to hire one

Availability of unskilled labor

Availability of skilled labor

Training time

Where trained In-house
Government Institution

TECHNICAL/MANAGEMENT PERSONNEL:

Availability

Benefits

Training: in-country or foreign

Local versus expatriate

TRAINING/EDUCATION/TECHNOLOGY:

Government Technical Services

Universities - Applicable

Co-op

Summer intern

MATERIALS: (What, Why, From Whom, Country, Duty)

Local:

Imports:

Delivery

Safety Stock

Customs Problems

MANUFACTURING CAPABILITIES:

Facility problems and needs--

Square footage____ Availability

Type of building

Lease Own

Equipment/Processes

Plastic molding Injection, Spin, Compression

Casting Rough, Precision

Tool & die work

Precision machine shop

Printed circuit board fabrication, assembly, solder, test, two-sided, plated thru, multi-layed, flexible

Wire and cable harness

Repair/maintenance service

Testing service

Calibration (Metrology)

INVESTMENT $: Equipment
Building
Total

REVENUE $:

PRODUCTION PROBLEMS:

FREIGHT:

Quantity/month (weight and volume)

Method

Cycle Time

Rate

Broker

UTILITIES:

Electricity

Water

Gas

Telephone

Telex

Telecopy/facsimi__

FOREIGN/PARENT COMPANY ASSISTANCE/JOINT VENTURE:

Number of visits

Telex/telephone

Extra inventory

Other manufacturing operations worldwide

ANALYSIS OF SERVICE:

Manufacturing Support (Repair, Machine Shop)

Banking

Communication

DIRECT LABOR CONTENT %:

VALUE ADDED IN:

TOTAL BURDENED COST/HOUR--DEFINE INCLUSIONS:

MARKETING:

Type of market --

Local %	Advertising
ASEAN %	
U.S. %	Sales force
Europe %	
Middle East %	Representatives
South America %	
Caribbean %	Company
	Foreign

MARKETING POLICIES AND PRACTICES:

Marketing plans or budgets for overseas markets

International market surveys

Export pricing policy

Selling and distribution methods

Promotional activities undertaken

GOVERNMENT RELATIONS:

PERCEPTIONS AND EXPERIENCES OF DEALING WITH PUBLIC SECTOR:

Type of assistance received: which body

General awareness

Level of satisfaction

Greatest need for support

IMPROVEMENT OF PUBLIC SECTOR REGULATORY AND SUPPORT FRAMEWORK:

Import duty drawback system

Import/investment license procedures simplified

Export financing mechanisms

EXPANSION PLANS (VERTICAL AND HORIZONTAL):

New markets

New products

Expanded facility

Automation

FACTORS LIMITING EXPANSION (INCLUDING EXPORTS):

Lack of market knowledge

Insufficient funds for marketing

Insufficient funds for expansion

Insufficient production capacity

Lack of suitable machinery

Lack of technical know-how

Infrastructural constraints

Overseas market price (not price competitive)

Lack of necessary imported items

TECHNOLOGY TRANSFER: PERCEPTIONS AND EXPERIENCES:

Search for technology suppliers

What are the technoloy needs; i.e., can these be articulated?

Details of TT agreements (genesis, type, implementation, results)

Government regulations; e.g., royalty payments

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COST ANALYSIS DATA SHEET-1

PRODUCT DATA

Weight
Volume
Std. Hrs. Added
Value

DIRECT LABOR

People
Hrs./Week
Weeks/Year

Absenteeism
Training
Efficiency

Q/Hour

PAID DAYS OFF

Vacation
Holidays
Sick Days

FRINGE COSTS

Payroll Tax %
Bonus %
Transportation
Food
Medical
Insurance

COST ANALYSIS DATA SHEET-2

SALARIOS

(Q / Mes o Q / Año)

MANPOWER OVERHEAD

Managing Director (Gerente General)
Plant Manager (Gerente de Planta)
Secretary (Secretaria)
Telephone Op. (Telefonista)
Manufacturing Mgr. (Gerente de Manufactura)
General Foreman (Superintendente)
Foreman (Jefe)
Group Leader (Jefe de Grupo o de Línea)
Q.C. Manager (Gerente de Control de Calidad)
Q.C. Engineer (Ingeniero de Calidad)
Q.C. Inspector (Inspector de Calidad)
Materials Mgr. (Gerente de Materiales)
Purchasing Mgr. (Gerente de Compras)
Buyer (Comprador)
Inv. Control Mgr. (Jefe de Bodega)
Stock Clerk (Dependiente de Bodega)
Truck Driver (Chofer de Camión)
Maintenance Eng. (Ingeniero de Mantenimiento)
Maintenance (Empleado de Mantenimiento)
Cleaner (Encargado de Limpiezo)
Gardener (Jardinero)
Finance Manager (Gerente de Finanzes)
Finance Clerk (Dependiente de Finanzes)
Personnel Mgr. (Gerente de Personal)
Engineering Mgr. (Gerente de Ingenieria)
Engineer (Ingeniero)

Salary Fringe %

COST ANALYSIS DATA SHEET-3

(Q / Año)

OVERHEAD

Building- Metros cuadrados
- Q
Depreciation
Telephone
Maintenance
Electricity
Water
Gas
Auto Expense
Mfg. Supplies (Provisiones para Manufactura)
Shipping Supplies (Provisiones para Transportas)
Office Supplies (Provisiones para la Oficina)
Insurance (Seguro, no para las empleados)
Employee Welfare
Scrap (Desecho)
Gratuity (Propina/Soborno)
Security (Seguridad)
Medical

OUTSIDE SERVICES (Servicios afuera de la Compañía)

Legal (Abogado)
Accounting (Contabilidad)
Shipping Broker

COST ANALYSIS DATA SHEET-4

U.S. COSTS

(Costos de la Compañía en los Estados Unidos)

INVENTORY

Extra Safety Stock
Trans. Cycle Weeks
Q/ Week
Cost of Capital %

TECHNICAL ASSISTANCE

Trips
Q/ Trip

TELEPHONE

FREIGHT

Volume / Month
Pounds / Month
Q / Month
Broker Fee

Appendix F:
Cost Data/Analysis

COST DATA/ANALYSIS

During the company interviews, a variety of cost data was sought. A follow-up letter with a copy of DATA SHEETS #2 and #3 was sent to some of the companies, requesting them to fill in the data. Eighteen firms supplied direct labor costs and benefits, and nine companies supplied overhead (manpower and non-manpower) cost data.

The direct labor hourly cost calculation gives an indication of the cost for one clock hour of direct labor. To calculate the cost per standard hour (earned hour) the direct labor cost per hour must be divided by the efficiency. This is a very good indicator of the true cost of direct labor in Guatemala.

The overhead costs varied significantly between the different industries and according to company size. The averages are useful for gross comparison basis only.

DIRECT LABOR COST DATA

	AVERAGE	
Hrs./Week	44 Hours/Week	
Weeks/Year	52 weeks/Year	
Q/Hour	11.48 Q/Hour	
PAID DAYS OFF		
Vacation	15 Days	
Holiday	12 Days	
Sick Days	0	
FRINGE COSTS		
Payroll Tax %	11.30%	
Year End Bonus %	8.33%	(One Month)
Transportation	0	
Food	0	
Medical	0	
Insurance	0	
Severance	8.33%	(One Month)
Seventh Day	20.00%	
One Half of Sixth Day	10.00%	

DIRECT LABOR HOURLY COST CALCULATION

HOURS WORKED

44 Hours/Week X 52 Weeks/Year	=	2288 Hours/Year
Minus		
Vacation: 15 Days/Year X 8 Hours/Day	= -	120 Hours/Year
Holidays: 12 Days/Year X 8 Hours/Day	= -	96 Hours/Year
Total Hours Available For Work Per Year Per Employee (Clock Hours)	=	2072 Hours /Year

COST

At Average Pay of 11.48 Q/Day

7 Days/Week X 52 Weeks/Year = 364 Days/Year

364 Days/Year X 11.48 Q/Day	=	4179 Q/Year
Plus		
Bonus: 8.33% X 4179 Q/Year	= +	348 Q/Year
Severance: 8.33% X 4179 Q/Year	= +	348 Q/Year
Social Security: 11.3% X 4179 Q/Year	= +	472 Q/Year
Total Payroll Cost Per Year Per Employee	=	5347 Q/Year

COST PER HOUR WORKED

$$\frac{5347 \text{ Q/Year}}{2072 \text{ Total Hours Available per Year}} = 2.58 \text{ Q/Hour Worked}$$

= $ .96 US$/Hour

MANPOWER OVERHEAD COSTS

(SALARIES - Q / MONTH)

	AVERAGE
Managing Director (Gerente General)	4,600
Plant Manager (Gerente de Planta)	2,800
Secretary (Secretaria)	690
Telephone Op. (Telefonista)	380
Manufacturing Mgr. (Gerente de Manufactura)	3,270
General Foreman (Superintendente)	1,080
Foreman (Jefe)	1,025
Group Leader (Jefe de Grupo o de Línea)	770
Q.C. Manager (Gerente de Control de Calidad)	1,800
Q.C. Engineer (Ingeniero de Calidad)	1,160
Q.C. Inspector (Inspector de Calidad)	475
Materials Mgr. (Gerente de Materiales)	2,000
Purchasing Mgr. (Gerente de Compras)	1,050
Buyer (Comprador)	420
Inv. Control Mgr. (Jefe de Bodega)	720
Stock Clerk (Dependiente de Bodega)	450
Truck Driver (Chofer de Camión)	370
Maintenance Eng. (Ingeniero de Mantenimiento)	1,340
Maintenance (Empleado de Mantenimiento)	650
Cleaner (Encargado de Limpieza)	260
Gardener (Jardinero)	310
Finance Manager (Gerente de Finanzas)	2,740
Finance Clerk (Dependiente de Finanzas)	790
Personnel Mgr. (Gerente de Personal)	1,670
Engineering Mgr. (Gerente de Ingeniería)	2,950
Engineer (Ingeniero)	880
Salary Fringe %	31.3%

NON-MANPOWER OVERHEAD COSTS

(Q / Año)

IN-PLANT COSTS	AVERAGE
Building- Q/Metros cuadrados	50
Depreciation	104,520
Telephone	26,125
Maintenance	65,040
Electricity	159,375
Water	13,705
Gas	8,400
Auto Expense	77,840
Mfg. Supplies (Provisiones para Manufactura)	85,600
Shipping Supplies (Provisiones para Transportas)	50,900
Office Supplies (Provisiones para la Oficina)	46,200
Insurance (Seguro, no para las empleados)	42,240
Employee Welfare	67,380
Security (Seguridad)	18,410

OUTSIDE SERVICES (Servicios afuera de la Compañía)	
Legal (Abogado)	32,300
Accounting (Contabilidad)	14,400

Appendix G:
Work Plan

Work Plan

9/18	Arrival in Guatemala	
9/19-9/22	Introductory Meetings Discussion and Agreement on Scope of Work Develop Work Plan	
	SOW-B-1-4	Establish List of Contacts Sources: Meetings with Felipe Manteiga, Chuck Ford (Commercial Attache), Danilo Cruz (Ministry of Economy), Victor Suarez (Camara de Industria)
	SOW-B-2	Begin Interviews with Manufacturers (3) as well as Institutional Sources (INE)
	SOW-B-2	Begin Research and Compilation of Data on Manufacturing Sector
	SOW-B-3	Begin to Catalogue and Abstract Available Reports and Studies
9/23	Meeting with O/PSP Staff to Discuss Status of Work Plan	
9/26-9/29	SOW-B-2	Continue Interviews (9)
	SOW-A-2	Continue Collection of Data Sources and Assessment of Quality of Data
	SOW-A-4	Determine Possible Possible Uses and Objectives of Database
9/29	Mid-term Meetings with O/PSP Staff to Discuss Progress, Problems and Preliminary Thoughts	
9/30	Depart Guatemala	
10/11	Return to Guatemala	
10/12-10/14	SOW-B-2	Continue Interviews (6)
	SOW-A-2-4	Continue Assessment of Data Sources and Feasibility of Data Base
	SOW-B-3	Continue to Catalogue and Abstract Reports
	SOW-B-4	Continue Interview of Relevant Institutions

10/14	Meeting with O/PSP Staff to Discuss Progress
10/17-10/18	Complete Interviews and Research
10/19-10/20	Develop Preliminary Recommendations and Outline of Report
10/21	Verbal Presentation of Preliminary Findings and Recommendations
10/22	Depart Guatemala
11/25	Submit Draft Report
12/?	Submit Final Report Two Weeks After Receiving Comments (Hopefully before Christmas)

Appendix H:
Tables

TABLE I

Selected Indicators in Manufacturing Industry
(1980 - 1985)

Real Annual Growth Rate (%)	1980	1981	1982	1983	1984	1985
Value added in manufacturing	5.7	-3.2	-5.2	-1.9	0.5	-1.3
Manufactured exports	38.3	-16.4	-14.4	-3.5	-2.2	-6.2
of which: CACM	37.2	-20.8	-11.2	-2.0	-7.7	-8.7
Rest of the World	44.7	6.9	-27.3	-11.0	28.0	3.3
Imported inputs a/	6.7	4.3	-18.1	1.2	7.6	-6.4
Imported capital goods a/	-23.6	10.3	3.1	-58.2	28.3	-2.3
Fixed investment in industry	-23.5	-3.3	-0.3	-59.3	15.9	n.a.
Factory wage rate	-0.5	11.4	-2.0	-4.3	5.3	-10.0
Levels						
Value of Manuf. exports (in US$m)	**486.2**	**408.2**	**344.3**	**323.6**	**310.9**	**295.2**
of which: CACM	410.4	325.8	285.3	272.4	249.9	228.3
Factory employment (thousands)	83.1	73.7	73.9	77.8	69.5	78.2
Real Exchange rate b/	100.0	91.1	88.4	85.0	84.7	116.8

a/ Refers to imports for industry.
b/ An increase means depreciation.
Source: Bank of Guatemala and World Bank staff estimates. Cited in World Bank, Guatemala Economic Situation and Prospects, Report No. 6434-GU (January 16, 1987), p. 34

TABLE II

Exports of Manufactures
1980 - 1985
(in millions of US$)

	1980	1981	1982	1983	1984	1985
Total, World	486.2	408.2	344.3	323.6	310.9	295.2
Total, Non-CACM	75.8	82.4	59.0	51.2	64.0	66.9
of which:						
Chemical products	26.7	26.5	27.3	24.7	24.0	24.1
Textiles	10.5	5.2	5.8	5.0	8.8	6.5
Manufacture of wood	1.9	5.1	3.2	1.6	1.8.	2.7
Glass procucts	2.8	1.4	1.4	0.7	1.7	3.6
Metal products	3.2	2.4	1.0	0.6	0.8	0.7
Machinery (non electrical)	11.8	17.8	17.5	n.a.	21.3	20.5
Total, CACM	410.4	325.8	285.3	272.4	249.9	228.3
of which:						
Chemical products	87.8	87.9	76.4	75.5	66.2	52.0
Textiles	92.0	61.6	50.1	38.0	48.8	27.4
Rubber manufactures	15.3	18.8	16.4	22.3	14.9	5.9
Glass products	17.4	28.4	12.1	13.6	10.7	7.5
Leather manufactures	0.8	1.0	1.1	1.2	1.4	0.8
Paper manufactures	23.1	20.8	14.4	14.4	14.4	7.7
Electrical appliances	21.0	16.4	14.5	11.3	9.9	6.8
Construction materials	14.0	15.9	20.0	16.7	12.0	9.3
Plastic manufactures	15.3	14.0	12.7	12.1	13.5	9.9
Miscellaneous manuf.	17.7	12.8	11.2	10.7	11.9	9.0

Source: Bank of Guatemala and World Bank staff estimates. Cited in World Bank, Guatemala Economic Situation and Prospects, Report No. 6434-GU (January 16, 1987), p. 83

TABLE III

Distribution of Manufacturing Establishments
According to Size in 1987

Size of Establishment	Establishment	
	Number	%
5 - 9 Workers	765	35
10 - 19 Workers	596	27.2
20 - 50 Workers	435	19.8
51 - More Workers	392	18
Total Manufacturing Sector	2188	100

Source: Instituto Nacional de Estadistica (INE)

TABLE IV

Manufacturing Establishments
Registerd in 1987, according
to type of industry*

Type of Industry	Number of Establishments	%
Food Processing, Beverages & Tobacco	679	31.0
Textiles, Clothing & Footwear	400	18.3
Wood & Wood Products	234	10.7
Paper & Paper Products	156	7.1
Chemicals & Chemical Products	249	11.4
Non-Metallic Mineral Products	210	9.6
Basic Metallic Industries	17	.7
Metallic Products & Equipment	210	9.6
Other	33	1.5
Total Manufacturing Sector	2188	100.0

Source: Institute Nacional de Estadistica (INE)

* Note: Statistics include only manufacturing establishments with 5 or more employees.

TABLE V

Value Added in Manufacturing, 1970 - 1985
(millions of constant 1958 quetzales)

ITEM	1970	1975	1980	1985
Consumer Goods	212.6	272.7	402.2	363.9
Food Processing	76.5	101.1	140.5	121.9
Beverages	30.6	39.9	66.5	58.3
Tobacco	17.6	19.6	29.4	23.0
Textiles	33.8	33.0	48.6	41.7
Clothing and footwear	32.6	39.1	49.4	45.6
Furniture and fixtures	6.6	7.7	9.3	8.6
Printing	4.9	6.0	7.7	7.1
Miscellaneous	10.0	26.3	50.8	57.7
Intermediate Goods	37.8	46.5	66.0	56.4
Wood and cork	5.5	6.8	9.8	8.0
Paper	4.9	7.9	9.0	7.5
Leather	3.0	3.2	3.9	3.2
Rubber	3.9	4.6	7.0	6.6
Chemicals	10.3	10.1	14.4	13.2
Non-metallic minerals	10.2	13.9	21.9	17.9
Capital Goods	32.5	37.2	49.3	42.0
Metal products	22.0	23.7	32.1	28.9
Machinery (non-electric)	3.6	3.9	4.9	4.1
Electrical machinery	3.9	5.2	6.6	4.8
Transportation equipment	3.0	4.4	5.7	4.3
Total	282.9	356.4	517.5	462.3

Source: Bank of Guatemala, cited in World Bank, Guatemala Economic Situation and Prospects, Report No. 6434-GU (January 16, 1987)

TABLE VI

Composition and Growth of Value Added
in Manufacturing by Type of Industry
1975-1987

Subsectors	Shares (%)				Annual Real Growth (%)	
	1975	1980	1985	1987*	1975-1980	1980-1985
Consumer Goods	77	78	79	79	8.0	-2.0
Intermediate Goods	13	13	12	12	7.1	-3.1
Capital Goods	10	9	9	9	5.7	-3.1
TOTAL	100	100	100	100	7.6	-2.2

Source: Bank of Guatemala and Instituto Nacional de Estadistica (INE)

* Note: Figures for 1987 are estimates

TABLE VII

Number and location of Manufacturing Establishments by Department*

Department	1980	1981	1982	1983	1984	1985
Nation	2,092	1,769	1,910	1,910	2,101	2,055
Guatemala	1,359	1,161	1,343	1,343	1,431	1,348
El Progreso	15	13	9	9	14	13
Sacatepéquez	45	33	29	29	38	35
Chimaltenango	28	23	25	25	23	19
Escuintla	67	64	65	65	64	72
Santa Rosa	201	183	164	164	182	208
Sololá	6	2	1	1	4	3
Totonicapán	12	9	7	7	10	8
Quetzaltenango	93	73	82	82	97	104
Suchitepequez	43	31	22	22	30	30
Retalhuleu	35	28	21	21	28	29
San Marcos	15	9	15	15	16	17
Huehuetenango	36	26	18	18	27	25
El Quiché	7	6	2	2	9	7
Baja Verapaz	10	8	8	8	9	8
Alta Verapaz	25	18	22	22	28	30
Petén	16	23	13	13	17	19
Izabal	14	13	15	15	17	14
Zacapa	29	20	26	26	27	30
Chiquimula	6	3	4	4	4	7
Jalapa	13	8	6	6	7	9
Jutiapa	17	15	13	13	19	20

Source: Instituto Nacional de Estadistica (INE), cited in USPLAME, Diagnóstico del Sector Industrial, 1980 - 1985.

* Note: Includes only manufacturing establishments with 5 or more employees

TABLE VIII

Number of Employees in Manufacturing
by Type of Industry
1980-1985

(in thousands)

Type of Industry	1980	1981	1982	1983	1984	1985
Consumer Goods	45.0	38.1	39.0	37.2	38.4	41.9
Intermediate Goods	30.6	31.9	31.4	30.1	30.0	30.8
Capital and Durable Consumer Goods	9.4	8.4	6.9	5.9	5.7	5.7
TOTAL	85.0	78.4	77.3	73.2	74.1	78.4

Source: Instituto Nacional de Estadistica (INE)

* Note: Includes only manufacturing establishments with 5 or more employees.

TABLE IX

Median Salary of Employees in
Manufacturing Sector, by branch
of Activity

1980-1985
(in thousands of current Quetzales)

Activity	1980	1981	1982	1983	1984	1985
Food Processing	1451	2125	2090	2343	2131	2668
Beverages	3333	3700	4000	4595	4343	4886
Tobacco	3545	4444	4900	5400	5000	5700
Textiles	1805	2021	1568	1676	1733	1627
Clothing	1595	1710	1226	2321	2194	2480
Leather	1714	1667	1500	1500	1667	1500
Shoes	1720	1833	1290	816	738	587
Wood	1414	1370	1409	1350	1150	1125
Furniture	1556	1900	1900	2150	1900	2087
Paper	2684	3111	3533	3429	3571	4083
Publishing	2182	2600	2581	3000	2893	3320
Chemicals	3528	3750	4000	4117	4329	4460
Non-Metallic Minerals	2689	2783	3000	3426	3405	3857
Metal Mechanics	2064	2512	2696	2881	3000	3721
Other	2000	2800	2200	2333	2200	2250
TOTAL	33280	38326	37893	41327	40164	44351

Source: Instituto Nacional de Estadistica (INE), cited in USPLAME, Diagnóstico.

* Note: Includes only manufacturing establishments with 5 or more employees.

TABLE X

Average per Capita Salaries and Wages in Manufacturing
by Branch of Activity *
1980 - 1985
(in thousands of Quetzales)

Activity	1980	1981	1982	1983	1984	1985
Food-processing	1.5	2.1	2.1	2.3	2.1	2.1
Beverages	3.3	3.7	4.0	4.6	4.3	4.9
Tobacco	3.5	4.4	4.9	5.4	5.0	5.7
Textiles	1.8	2.0	1.6	1.7	1.7	1.8
Clothing	1.6	1.7	1.2	2.3	2.2	1.9
Leather	1.7	1.7	1.5	1.5	1.7	1.5
Shoes	1.7	1.8	1.3	0.8	0.7	1.1
Wood	1.4	1.4	1.4	1.4	1.2	0.8
Furniture	1.6	1.9	1.9	2.1	1.9	2.0
Paper	2.7	3.1	3.5	3.4	3.6	3.3
Publishing	2.2	2.6	2.6	3.0	2.9	3.0
Chemicals	3.5	3.7	4.0	4.1	4.2	4.5
Non-metallic minerals	2.7	2.8	3.0	3.4	3.4	3.1
Metal mechanics	2.1	2.5	2.7	2.9	3.0	2.8
Other	2.0	2.8	2.2	2.3	2.2	1.8
Total	2.1	2.5	2.5	2.7	2.6	2.6

Source: Instituto Nacional de Estadistica (INE), cited in USPLAME, Diagnóstico.
* Note: Includes only manufacturing establishments with 5 or more employees

TABLE XI

Value of Fixed Assets by Type of Manufacturing Activity
1980 - 1985
(in millions of current Quetzales)

Activity	1980	1981	1982	1983	1984	1985 p/
Consumer Goods	339	352	405	435	448	487
Food-processing	219	227	270	295	305	335
Beverages	60	67	71	73	69	75
Tobacco	14	14	15	16	17	18
Clothing	13	8	11	11	13	12
Shoes	6	7	6	6	7	6
Furniture	4	4	4	4	5	5
Publishing	20	21	25	27	28	31
Others	3	4	3	3	4	4
Intermediate Goods	288	323	354	379	386	423
Textiles	76	86	84	98	106	112
Leather	5	5	5	4	5	5
Wood	12	11	9	9	9	8
Paper	17	21	19	20	24	24
Chemical products	107	116	139	146	148	165
Non-metallic minerals	71	84	98	102	94	109
Capital and Consumer Durables	60	65	67	67	64	68
Metal mechanics	60	65	67	67	64	68
Total	687	740	826	881	898	978

p/ Projected figures
Source: Instituto Nacional de Estadistica (INE), cited in USPLAME, Diagnóstico.
* Note: Includes only manufacturing establishments with 5 or more employees

TABLE XII

Value of Loans Granted to Manufacturing Industries
and Percentage of Loans Granted by Credit Institutions
1980 - 1985
(in millions of current Quetzales)

YEAR	TOTAL	INDUSTRIAL SECTOR	% GRANTED TO INDUSTRY
1980	842.1	285.7	33.9
1981	1004.2	406.5	40.5
1982	869.8	278.9	32.1
1983	1089.1	369.4	33.9
1984	1260.5	378.2	30.0
1985	1207.6	424.1	35.1
1980-85	6273.3	2142.8	34.2

Source: Superintendencia de Bancos, cited in USPLAME, Diagnóstico.

TABLE XIII

Value of Loans Granted to Manufacturing Industries
by Credit Institutions, according to type of expenditure
1980 - 1985
(in millions of current Quetzales)

Year	Total		Operating Expenses		Investment		Others	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1980	285.7	100.0	251.3	87.9	34.3	12.0	0.1	0.1
1981	406.5	100.0	250.2	61.5	156.2	38.4	0.1	0.1
1982	278.9	100.0	260.8	93.5	17.3	6.2	0.8	0.3
1983	369.4	100.0	355.8	96.3	13.1	3.6	0.5	0.1
1984	378.2	100.0	361.6	95.6	15.7	4.2	0.9	0.2
1985	424.1	100.0	402.8	94.9	20.6	4.9	0.7	0.2

Source: Superintendencia de Bancos, cited in USPLAMF, Diagnóstico.

Appendix I: Investment Promotion Training Program

INVESTMENT PROMOTION TRAINING PROGRAM

The following is an investment promotion training program conducted by Development Consortium. Included is the Scope of Work of the project, and a description of the training program for people who might be attending the program.

A. SCOPE OF WORK

1. PERIOD OF CONTRACT

Eight months (45 days of billable time)

2. CONTENT

Whole group, small group and individual instruction will be given to develop the industrial promoters' ability to attract industry to the region. The program, consisting of three (3) hands-on workshops, is structured to transfer economic development theory, research, and experience into locally driven action. Participants will learn specific skills and techniques that can be implemented immediately. Information will include sales strategies for industrial promotion, how to prepare effective proposals based on the client's needs, how to effectively negotiate win-win decisions, and finally, how to write, implement and evaluate your promotion plan.

Each workshop is designed to emphasize the application of acquired knowledge through a variety of learning experiences. The use of prospects as case studies, role play and other simulations, and group team-building exercises will be both informative and motivational. The theme is always on achieving personal and organizational excellence. The approach is to plan the work and work the plan in an informal, problem-solving atmosphere.

3. DELIVERABLES

Three (3) workshops

Building the Economic Development Organization
Building Technical Excellence
Planning for Results

Supporting documentation

B. PROGRAM DEFINITION

The program is comprised of a series of on-site briefings for managers, key staff persons and businessmen responsible for industrial development. It is designed to transfer economic development theory and research into action. You will learn specific skills and techniques that you can implement immediately

HOW TO ACHIEVE PROFESSIONAL EXPERTISE

Your professional excellence starts with your commitment to succeed. At our briefings you will learn the skills achievers use to accomplish their goals.

- Characteristics of successful people.
- Two techniques to enhance your powers of persuasion.
- How to conduct a productive business negotiation.
- Sales techniques that work for industrial promoters.
- "Do it now" and other self talk.
- How to improve your professional image.

HOW TO PREPARE FOR ECONOMIC GROWTH

It's been said that excellence is a game of inches. In our briefings you will learn that there are few things in business more powerful than giving people more that they expect.

- How to plan your strategy.
- How companies make site location decisions and why.
- What companies expect from you.
- How to negotiate to achieve the results you want.
- How to evaluate, and publicize your results.
- How to keep investments long term.

HOW TO STRUCTURE YOUR IDC FOR INVESTMENT RESULTS

All excellent organizations have a culture. You'll learn a step-by-step program for shaping a culture that supports your organization's and your country's goals.

- Characteristics of successful organizations.
- How to plan the work and work the plan.
- How to streamline your procedures and simplify your work.
- How to thrive in the multi-project environment.
- Learn to prioritize and increase your productivity.

HOW TO CREATE QUALITY WITHIN THE IDC

As a professional, you help to create the tone in your organization. Setting high standards is one of the steps to a commitment to quality.

- Techniques for measuring and rewarding quality.
- Crucial How to handle mistakes - yours, your organization's, your client's.
- Leadership and team building and their role in successful organizations.
- How to get the best ideas, and the most helpful feedback.

HOW TO MAKE THINGS HAPPEN

If you are like most of us, at one time or another you find your organization getting bogged down. Learn how to get through these times and keep your organization responsive.

- Seeing the opportunity. Lucky breaks don't come labelled.
- When and how to replace analysis with experimentation
- How to develop your business and professional networks.
- Developing sales strategies that work.
- The checklist quantifying your weekly progress.
- Closing deals.
- Policy options as an incentive to investment.
- Techniques of project appraisal.

Appendix J:
Selected Bibliography

SELECTED BIBLIOGRAPHY

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Appendix K: Desarrollo de la Industria Maquiladora de Productos Electrónicos

DESARROLLO DE LA INDUSTRIA MAQUILADORA DE PRODUCTOS ELECTRONICOS

I. INTRODUCCION

A. Problema

La economía de Guatemala está basada principalmente en la agricultura, y con razón, este sector recibe mucha atención en la promoción del desarrollo económico de Guatemala. Sin embargo, la agricultura no puede generar un "empleo productivo" en la Ciudad de Guatemala ni en los otros centros urbanos crecientes de Guatemala. Esto lo puede lograr la manufactura, y es necesario determinar cuales son los sectores industriales que pueden mostrar un crecimiento alto.

B. Situación

El Mercado Común Centroamericano no está en buenas condiciones. Por muchas razones, se ha disminuido la demanda regional de algunos productos guatemaltecos, y se han cerrado algunos mercados. El sector privado guatemalteco carece de los conocimientos mercadotecnios necesarios para ingresar al mercado extranjero con sus productos y capacidades. Tampoco tiene la tecnología necesaria para desarrollar y diseñar nuevos productos, ni la capacidad manufacturera requerida. Esto significa que la industria fabril guatemalteca no puede sostener un crecimiento substancial.

C. Solución

La industria maquiladora de productos electrónicos combina la mercadotecnia y experiencia extranjera con la mano de obra local. A continuación presentamos una descripción de la industria electrónica en Guatemala, así como una discusión de sus requerimientos de infraestructura, y evaluación de los mismos. Además, hemos hecho algunas recomendaciones relativas al desarrollo de la industria maquiladora de productos electrónicos en Guatemala.

II. LA INDUSTRIA ELECTRONICA

A. Definición

La industria electrónica consiste en productos y procesos diversos, los cuales se pueden dividir en dos grandes grupos: equipo electrónico (productos para uso del consumidor, equipo de comunicaciones,

instrumentos electrónicos, mercancías militares e industriales, y computadoras), y componentes electrónicos (resistores, condensadores, rectificadores, relevadores, interruptores, cuadros de circuitos impresos (PCB), y subensamblajes). Para el propósito de este informe, la electrónica incluirá productos eléctricos, electromecánicos, y subensamblajes.

B. Crecimiento

Desde 1981, la industria electrónica de los Estados Unidos ha crecido anualmente en un promedio de 9.5 %. Se prevee que la industria global crecerá en un 6.6% entre 1987 y 1990, con ventas en 1990 que sobrepasarán los $500 mil millones. También se prevee que, durante los próximos 5 años, el segmento de componentes crecerá anualmente en un 6.8%, comparado con un crecimiento más moderado de un 4.5% en productos de comunicaciones. Los Estados Unidos consume casi la mitad de los productos electrónicos que se producen en el mundo. Esto significa que, desde el punto de vista del transporte, casi la mitad de todos los productos electrónicos terminan en los Estados Unidos.

C. Tendencias

Es obvio el cambio constante de la industria electrónica, siempre dinámica e innovativa. Un gran número de estos cambios consisten en productos nuevos y mejorados. Muchos de estos cambios no afectan de manera drástica la manufactura de los productos, aunque las fábricas deben mantenerse flexibles para acomodar los cambios en la planificación y definición de los productos. Esta flexibilidad es una característica importante de la industria electrónica.

Algunas de las tendencias en la industria electrónica son sumamente importantes para el desarrollo de la industria de la maquila de productos electrónicos en Guatemala. Algunas de estas tendencias son favorables al crecimiento de la industria maquiladora; otras no lo son.

Favorables

- Incrementa el uso de subcontratistas.
- Debido a problemas con el Lejano Oriente, las firmas regresan a sus países de origen.
- Se establecen nuevas compañías.

No Favorables

- El componente laboral disminuye.
- La automatización crece.

1. El aumento en el uso de subcontratistas empezó en 1981 cuando IBM comenzó la subcontratación en la mayoría de los componentes de la nueva computadora personal IBM, en vez de fabricar la computadora

entera en sus propias plantas. Desde entonces, la industria subcontratista electrónica crece rápidamente. Se estima que esta actividad comercial llegará a unos $5 mil millones.

Hay varias razones que explican este crecimiento. Para el fabricante que, básicamente, es un ensamblador mecánico y que, de pronto, encuentra componentes eléctricos en sus productos, el subcontratista se encarga de ensamblarlos. Para la compañía que necesita pequeñas cantidades de productos diseñados especiales para un mercado limitado, el subcontratista puede suministrarlas económicamente. Para el ensamblador que se organiza para producir líneas de productos en gran cantidad, el subcontratista puede fabricar económicamente cantidades limitadas. La subcontratación es cada vez más popular debido también al ciclo de vida más corto de algunos productos, en una tecnología cambiante que puede rápidamente convertirse en obsoleta, y a la infraestructura de algunos de los gigantes de la industria electrónica. Si una compañía desarrolla un producto nuevo, se concentra en la investigación y en el desarrollo y deja que otro se dedique a fabricarlo. Esto es particularmente cierto en nuevas compañías e inventores que no tienen ni la capacidad ni los recursos necesarios para fabricar productos de manera competitiva.

Según el estudio "Tendencias Críticas en el Montaje por Contrato", elaborado por Gnostic Concepts, Inc., el montaje de cuadros de circuitos impresos se divide entre la manufactura del equipo original (MEO), y contratistas, tanto domésticos como extranjeros. Según el estudio, el crecimiento y la división del mercado para el montaje de PCB es el siguiente:

VALOR DEL MONTAJE DEL PCB EN EL MERCADO

	1986	1992
MEO (en la propia planta)		
$	$15.05 mil millones	$22.16 mil millones
% del mercado	85%	80%
Crecimiento Anual promedio	--	8%
Subcontratistas Domésticos		
$	$1.95 mil millones	$3.88 mil millones
% del Mercado	11%	14%
Crecimiento Anual promedio	--	12%
Subcontratistas Extranjeros		
$	$0.7 mil millones	$1.66 mil millones
% del Mercado	4%	6%
Crecimiento Anual promedio	--	15%
Mercado Total		
$	$17.7 mil millones	$27.7 mil millones
Crecimiento Anual Promedio	--	8%

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Con el aumento de la subcontratación, la promoción debe dirigirse a los empresarios locales y a los subcontratistas ubicados en los Estados Unidos.

2. Los problemas con el Lejano Oriente contribuyen a que las compañías se acerquen más a sus propios países; existe una creciente tendencia de traer la manufactura del Lejano Oriente a los Estados Unidos una vez más. Hay varias razones que explican este cambio. El período de devolución es mucho más corto. Los productos cambian constantemente y las compañías necesitan mantener un control estrecho de la calidad y de inventarios. Los industriales piensan que pueden mantener un mejor control de la calidad cuando la producción se lleva a cabo a sólo dos o tres horas de sus ingenieros. A las compañías estadounidenses también les preocupa el yen japonés cada día más fuerte, el aumento en el costo de la mano de obra en el Lejano Oriente y la necesidad de mantener un control más estricto de sus inventarios y costos. Parece ser que el costo, tiempo y los problemas de transportación, en muchos casos, no compensan lo que pueda economizarse con la mano de obra más barata en el Lejano Oriente.

En la manufactura al por mayor, existe la tendencia de establecer operaciones de montaje altamente automatizadas en los Estados Unidos donde existe la posibilidad de más flexibilidad. El subcontratista doméstico también puede utilizar cortos y confiables canales de comunicación cerca de la misma zona de tiempo donde está el cliente. Estas ventajas de comunicación permiten una más rápida implementación de los frecuentes y complejos cambios de ingeniería; además, los problemas de producción pueden ser comunicados y resueltos en forma más expedita.

El subcontratista doméstico puede reducir la necesidad del cliente de pago en efectivo debido a que sus gastos normalmente toman un mínimo de 30 días después del recibo de los montajes ya terminados y probados. No hay gastos iniciales, ni cartas de credito, ni letras a la vista.

Además, a corto tiempo después de efectuado el contrato con los fabricantes en el Lejano Oriente, muchas compañías que habían utilizado fabricantes orientales comprendieron que los competidores pronto producían productos similares. Apple Computer ha tenido que luchar contra la entrada de imitaciones de los "Apples" en el mercado de los EEUU.

Los fabricantes extranjeros podrían remediar algunos de estos problemas con el establecimiento de oficinas en los Estados Unidos. Las compañías en los Estados Unidos citan el precio FOB (Libre a Bordo) en los Estados Unidos, y se encargan de las gestiones relacionadas con el embarque. Debido a que todas las transacciones se hacen en US Dólares, no hay fluctuaciones en la tarifa de cambio. Además, si surge un problema legal (es decir, confidencialidad del producto), las dos partes son

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americanas. Esto significa que no existe una tercera firma en otro país, con un idioma diferente y con un sistema legal distinto.

Las operaciones de montaje del subcontratista del Lejano Oriente representan una buena alternativa, pero existen problemas con éstas, y las compañías americanas son cada vez más conscientes de los mismos. Los subcontratistas y las operaciones fabriles más cercanas con mucha frecuencia se hacen más conocidas.

3. Se establecen nuevas y diferentes compañías. Los Estados Unidos es cada vez más un país orientado hacia los servicios. Esto lo demuestra la industria electrónica por el número de compañías que se ocupan solamente de diseñar productos, mercadearlos, y luego administrar la producción de estos productos sin la necesidad de fabricarlos. Por otra parte, esta clase de compañía orientada hacia una capacidad profesional, no requiere de mucho capital, y es más fácil de iniciar. También, hay un renacimiento en el espíritu empresarial, siempre característico de la industria electrónica, con un número creciente de nuevas compañías. Por ejemplo, en 1986, 28 de las 200 compañías principales en la industria electrónica, no se incluían en la lista de 1985, lo que indica una reestructuración o una transformación de las compañías más importantes de la industria. Mientras las compañías nuevas desarrollan estrategias iniciales, y las compañías de crecimiento rápido se ven forzadas a elaborar nuevas estrategias, se les presenta una tremenda oportunidad para que los promotores de inversiones podrán influenciar estas empresas . A estas compañías no tienen que ser convencidas para efectuar cambios; ellas tienen que cambiar para sobrevivir; no les queda otra alternativa.

4. Otra tendencia importante en la industria electrónica es la disminución de la mano de obra en los productos fabricados. El porcentaje de mano de obra directa en el costo de un producto electrónico fluctuaba entre el 50% y el 70%, y los materiales aproximadamente entre el 10% y el 35%. Sin embargo, el costo de la mano de obra directa de productos fabricados en los Estados Unidas oscila entre el 5% y el 15%. Este procentaje baja aún más cuando se fabrica el producto en el extranjero. Este cambio en los requerimientos de la mano de obra en relación a los materiales resulta en una existencia más alta de componentes electrónicos de alto costo en un producto, y una tendencia creciente a que las compañías enfoquen su trabajo en el diseño y mercadeo, hasta tanto consigan más contratos que cubran sus necesidades de fabricación. Por lo tanto, el área más importante en la reducción de costos ya no es la mano de obra, sino el costo reducido del material. Esta tendencia hace más importante el papel del departamento de compra de la compañía. Como resultado, muchas empresas establecen oficinas de compra en el extranjero como su primera operación en el extranjero, inclusive, los fabricantes subcontratistas ofrecen servicios de compra como parte del arreglo al derecho de llave (turn key).

5. Otra tendencia importante es el aumento de la automatización. Dentro de la industria electrónica, se ha cambiado el empuje estratégico fundamental de fabricación. En el pasado, la minimización de costos era el enfoque principal, pero hoy en día, es igualmente importante la maximización de calidad. Una compañía electrónica con operaciones en México encontró que el costo de sus desperdicios sobrepasaba al costo de su mano de obra. La maximización de flexibilidad es la tercera prioridad. Dentro del plan para el mejoramiento tanto de la calidad como del flujo de producción, hay una tendencia creciente hacia el montaje electrónico directo a través del diseño ofrecido por la computadora (DAC). El sistema DAC que diseña el PCB, también elabora los programas de los robots para el montaje del PCB. Ciertas localidades extranjeras encuentran que existe una escaséz de mano de obra. Todo esto significa un aumento en la automatización, inclusive en la automatización en las operaciones en el extranjero.

Desde el punto de vista económico, es difícil justificar el uso de automatización en el extranjero salvo para mejorar la calidad o el rendimiento de los materiales. Con sueldos de $ .50 hasta $1.00 como pago a la mano de obra calificada en el extranjero, es imposible justificar el uso de automatización basado en el costo de la mano de obra. Por lo tanto, se debe justificar en términos de seguridad de calidad. Algunos de los equipos que se pueden justificar más fácilmente son las máquinas de soldadura ondulatoria, microscopios de haz electrónicos para la manufactura de componentes, dispositivos para la detección de defectos, equipo automatizado de "seleccionar y colocar" para montaje de PCB, para protección de soldadura pre-ondulatoria, y para la preparación de componentes.

Uno de los problemas de la automatización en el extranjero es la falta de apoyo técnico para el mantenimiento de equipo especializado. En el Lejano Oriente no es problema crítico ya que existe una capacidad técnica local, debido a que un gran número de fabricantes de equipo automatizado los montan allá mismo. El problema tampoco es crítico en operaciones cerca de la frontera mexicana porque la capacidad técnica está disponible al otro lado de la frontera con los Estados Unidos. Mientras que aumenta el nivel de automatización, también se establecerán compañías de servicios en el extranjero para prestar apoyo. Casi todos los fabricantes principales de productos electrónicos de los Estados Unidos utilizan la automatización en una forma u otra en sus operaciones en los EEUU, tendencia que también incluye las operaciones en el extranjero.

III. REQUISITOS DE INFRAESTRUCUTRA

A continuación se incluyen los requisitos preferibles de infraestructura de una compañía electrónica. Aunque éstos se pueden

generalizar, el órden de importancia (prioridad) de cada ejemplar varía de una compañía a otra.

A. Transporte

Probablemente, el requisito de infraestructura más importante es el costo y la disponibilidad de transporte confiable. Existen cuatro categorías de transporte disponibles, a saber: aéreo, marítimo, expreso aéreo y terrestre.

- Aéreo - Los vuelos directos diarios desde el continente de los Estados Unidos son lo más deseables. No se recomienda la programación de carga ni de viajes basados en servicios de vuelos que no sean diarios. La necesidad de vuelos directos evita el transbordo con un agente expedidor de flete extranjero. También se prefieren jets grandes en vez de aviones relativamente pequeños, de travesía limitada. Debido a que los pasajeros, por motivos económicos, adquieren prioridad, la carga tiene una importancia secundaria. Además, los aviones pequeños no pueden acomodar contenedores de carga. Por estas mismas razones, lo deseable es un servicio regular de carga (no solamente cuando se necesita) directamente al continente de los Estados Unidos. También es importante la eficiencia del aeropuerto.

- Marítimo - Lo más deseable consiste en embarques semanales de carga al continente de los Estados Unidos. Sin embargo, con embarques de contenedores, el transbordo no es un problema grande. La capacidad de "roll-on and roll-off" asegura un itinerario puntual. También es importante una operación portuaria eficiente.

- Expreso aéreo - Algunas emergencias requieren servicios de expreso aéreo de 24 o de 48 horas. Esto incluye embarques de materiales, herramientas, medidores, y carteles de despliegue grandes. La disponibilidad de este servicio de expreso aéreo se convierte en una póliza de seguros para el fabricante.

- Terrestre - La transportación dentro del país incluye un sistema de carreteras suficientemente desarrolladas. También implica un servicio de camiones de contenedores desde el aeropuerto y el puerto marítimo a la localidad del fabricante. También es importante el servicio de transporte público para los empleados. Las operaciones pequeñas pueden transportar sus propios empleados; las compañías grandes dependen de servicios ofrecidos por otros. Este transporte público es especialmente necesario para operaciones de dos y tres turnos.

Evaluación del Transporte - La infraestructura del transporte en Guatemala es bastante buena. Hay vuelos directos diarios y salidas de buques semanales. Las carreteras y el transporte público alrededor de la capital son buenas. Aunque existen posibilidades de mejoría, la infraestructura de transportación en Guatemala es capaz de sostener una industria grande de la maquila.

B. Zonas Francas

Se necesita la seguridad de pasar los embarques por la aduana rápidamente. Las zonas francas proveen una manera de entrada y salida del país de bienes con un mínimo de líos y sin la necesidad de un sistema de tarifas y reembolsos (drawbacks). La mayoría de los países permiten la entrada de materiales libre de derechos si es que son para exportación. En una zona franca, la mercancía entra en fianza, y no se pagan derechos. Fuera de la zona franca, se paga derecho de importación cuando entra el material al país y ese derecho es reembolsable cuando se exporta el material. En vista de que no se paga derechos en una zona franca, la mercancía pasa por la aduana rápidamente.

Las zonas francas cuando son parques industriales de servicios completos también pueden proveer servicios adicionales. Estos servicios incluyen selección de personal, servicios médicos, energía eléctrica de alta tensión, comunicaciones por satélite, seguridad, transporte de empleados, facilidades de embarques, facilidades para la capacitación de los empleados, y edificios industriales disponibles.

Evaluación de zonas francas - Las zonas francas para la industria maquiladora de productos electrónicos no están, en la actualidad, disponibles en Guatemala. La única zona franca está demasiado lejos del aeropuerto internacional y del área principal de la industria fabril guatemalteca. Se necesitan más zonas francas en Guatemala. (Ver recomendación No. 16 en el Capítulo III.)

C. Utilidades

Se requiere la disponibilidad de energía eléctrica confiable de 220 de voltaje y de 60 ciclos en operaciones fabriles. El voltaje y las frecuencias diferentes requieren un transformador en la misma planta. Los servicios no confiables requieren la capacidad de respaldo en el mismo local. El generador de emergencia normalmente sólo es capáz de mantener las necesidades básicas de electricidad que requiere la planta.

La mayor parte de la industria electrónica no consume mucha agua ni gas.

Evaluación de Utilidades - Guatemala no tiene problema eléctrico. Los generadores de emergencia normalmente no son necesarios ni recomendables. Hay agua suficiente para cualquier industria electrónica.

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D. Comunicaciones

Es preferible el servicio directo de líneas múltiples dentro y fuera del país y fácilmente disponibles. Muchos negocios ahora requieren servicios de facsímiles y transmisión rápida para comunicaciones de computadoras. Aunque muchos países ofrecen este servicio, a menudo no están oportunamente disponibles (sin un período de espera de un año) y no están disponibles fuera de la planta industrial (por ejemplo, en las residencias de la gerencia).

Evaluación de Comunicaciones - Guatemala tiene un problema muy grande en lo que se refiere a servicio de telecomunicaciones. (Ver el primer IMPEDIMENTO bajo INFRAESTRUCTURA). Aunque este es un factor limitante al crecimiento de la industria maquiladora de productos electrónicos, no lo impide totalmente.

E. Capacidad de Adiestramiento

La disponibilidad de mano de obra calificada se logra con una capacidad adecuada de adiestramiento. Se necesita el adiestramiento al nivel directo de mano de obra para capacitar al personal en las operaciones básicas del montaje electrónico. Esto lo puede desempeñar el fabricante en sus propias plantas si es necesario - pero esto se convierte en un costo adicional. La educación básica de los técnicos se debe llevar a cabo fuera de la localidad del fabricante. El fabricante todavía tiene la responsabilidad de entrenar a los técnicos en las especificaciones de sus productos y procesos. La universidad es responsable del adiestramiento o la educación de ingenieros electrónicos y eléctricos. Normalmente se utilizan los ingenieros educados localmente en la administración fabril (supervisión de producción, control de calidad, y control de materiales). Con el adiestramiento avanzado y la experiencia en el trabajo, estos ingenieros pueden llegar a involucrarse en el diseño del producto, y en la investigación y el desarrollo del mismo. La disponibilidad de este apoyo técnico local determinará el grado de conocimiento industrial posible y el apoyo técnico aportado por los extranjeros.

Evaluación de Capacidad de Adiestramiento - Aunque Guatemala tiene una escasez de mano de obra calificada y experimentada, hay ingenieros electrónicos y eléctricos que han sido adiestrados localmente. Mientras crece la industria electrónica, estos ingenieros ganarán experiencia industrial y capacidad local de eficiencia industrial; además, el diseño electrónico mejorará. Esto constituye una ventaja importante para Guatemala.

F. Industrias de Apoyo

Las industrias de apoyo incluyen trabajo con herramientas y patrones, moldeo plástico, metrología (calibración), servicios de reparación,

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información y de compras. Si no están disponibles estas industrias, el fabricante debe autoproveerse de estos servicios, en fábricas locales o en los Estados Unidos. Esto podría resultar costoso e ineficiente.

Evaluación de Industrias de Apoyo - Guatemala no tiene suficientes industrias de apoyo. Estas industrias deben ser el enfoque principal de esfuerzos hacia la promoción de inversiones en Guatemala. A medida que prospere el sector industrial en Guatemala, la industria de apoyo deberá, asímismo, expandirse y prosperar.

G. Servicios Comerciales de Apoyo

Los Servicios Comerciales de Apoyo incluyen la banca, servicios jurídicos, contables, computacionales y de transporte. Todos ayudan a las operaciones empresariales de la compañía. Cuando no están disponibles localmente, el fabricante tiene que utilizar servicios extranjeros. Un aspecto adicional consiste en la calidad de estos servicios y su comparación con servicios acostumbrados. El idioma y la similaridad también son factores importantes.

Evaluación de Servicios Comerciales de Apoyo - Los servicios comerciales de apoyo son muy buenos en Guatemala. Aunque el idioma es español, se habla mucho el inglés y muchos de los servicios vienen de los Estados Unidos. Esto da al inversionista estadounidense un sentido de familiaridad.

H. Capacidad de Subcontratación

Si un fabricante no quiere invertir en su propia operación fabril, puede utilizar subcontratistas. Los subcontratistas tienen que ser flexibles en cuanto a precios, y tienen que saber operar una facilidad industrial. El fabricante estadounidense busca a alguien que pueda entregar oportunamente productos de calidad. La capacidad industrial específica requerida varía de una compañía a otra. El monto de control que ejerce el subcontratista varía desde la contratación de empleados (operación de maquila como en la frontera mexicana), hasta el diseño del producto y especificaciones funcionales, la compra de materiales, y la manufactura y prueba del producto.

Evaluación de Subcontratación - Guatemala no tiene capacidad de subcontratación electrónica en este momento.

I. Agencia Promotora

Un requisito crítico de infraestructura consiste en la facilidad con que una compañía pueda establecer y operar una operación industrial. Una parte de esto depende de los incentivos de inversión que ofrece el país, y del grado de control que demanda al fabricante (tiene que acogerse a las leyes y agencias reguladoras). La facilidad de establecerse y operar

también es agilizada por una agencia promotora efectiva. Esta agencia debe tener presencia local y en los Estados Unidos, y debe asistir al fabricante en todos los aspectos de su proyecto. Debe ser visible, disponible, competente y responsable en la información que ofrezca.

Evaluación de Agencias Promotoras - Guatemala ha dado un paso gigante en la creación de un ambiente favorable al desarrollo de una industria maquiladora de productos electrónicos con la aprobación del Decreto - Ley 21-84. Aunque se necesitan algunas mejoras, la ley básicamente provee los incentivos necesarios. Sin embargo, hay una falta de legislación que permita el desarrollo de zonas francas en el área de la capital. Esto debe ser corregido. También hay una falta de funciones bien definidas por parte de la agencia promotora.

IV. RECOMENDACIONES ESTRATÉGICAS

Con base en la evaluación de tendencias en la industria y en la infraestructura que requiere la industria, las tres recomendaciones principales para el desarrollo de la industria maquiladora de productos electrónicos en Guatemala son:

- Establecimiento de una agencia promotora fuerte.
- Mejoramiento de la capacidad local de subcontratación.
- Desarrollo de contratos y seguimiento.

A. Establecimiento de una Agencia Promotora Fuerte

Esta es la Recomendación No. 7 en el Capítulo III.

B. Mejoramiento de la Capacidad Local para Subcontratación

Una tendencia principal en la industria electrónica es el uso aumentado de subcontratistas. Los siguientes dos pasos proveen una esquema de un programa para desarrollar la capacidad local de subcontratación en Guatemala:

- Encuesta de fabricantes locales.
- Desarrollo de estrategia y programas de asistencia técnica.

1. Encuesta de Fabricantes Locales

Se debe elaborar un estudio para identificar la capacidad actual y potencial de la manufactura electrónica. Se deben presentar seminarios pequeños de medio día para explicar la industria electrónica del subcontratista, definir la tecnología y el capital necesario, y mostrar ejemplos concretos del mercado de subcontratación.

Otro aspecto importante del estudio consiste en identificar la asistencia técnica requerida por los subcontratistas locales. Esta asistencia puede ofrecerse en áreas tales como cotización o administración, o en ramas técnicas específicas.

2. Desarrollo de Estrategia y Programa para Asistencia Técnica.

Según el tipo de asistencia técnica requerida, hay varias alternativas. Una alternativa consiste en el establecimiento de enlaces entre las escuelas vocacionales técnicas y el sector privado. Estos enlaces pueden resultar en lo siguiente:

- Cambios en el curriculum para cumplir mejor con las necesidades del sector privado.
- Uso de la facultad de la escuela técnica como consultores del sector privado.
- Empleo de estudiantes como internos de verano.
- Desarrollo de programas cooperativos. (Seis meses de educación en la sala de clase seguido por seis meses de experiencia en el trabajo).

C. Desarrollo de Contratos y Seguimiento

La industria electrónica es cambiante y creciente. Nuevas compañías entran a la industria y las más antiguas crecen. Ambas situaciones indican que el número de compañías que necesitan operar en el extranjero cambia. Guatemala debe continuar buscando y desarrollando nuevos contactos a través de esfuerzos activos de mercadeo. Este mercadeo se debe enfocar en la participación en eventos programados y de promoción pública.

1. Eventos Programados

Hay varios tipos diferentes de eventos promocionales programados disponibles dentro de la industria electrónica. Se utilizan ferias industriales, seminarios industriales, seminarios comerciales

internacionales, seminarios del Departamento de Comercio de los EEUU relacionadas con la Iniciativa de la Cuenca del Caribe (CBI), y varios seminarios individuales para la promoción de países en la industria electrónica. Estos eventos han tenido varios grados de éxito. Las ferias industriales y los seminarios industriales han resultados ser los más efectivos. Los seminarios generales (no específicos a la industria) a menudo son presentados a audiencias de personas que no están en el negocio (la mayoría de los participantes no están en posición de invertir en la manufactura), pero es difícil medir la efectividad de éste y de otros eventos. Muchas veces, una compañía o una persona escucha una presentación y no toma ninguna acción por meses, incluso, por años.

2. Publicidad

Aunque hay un presupuesto limitado para la publicidad, el enfoque de la publicidad pagada debe encontrarse en la alta administración de la industria electrónica -- y no en los ingenieros fabricantes ni en el personal de compras. Las dos publicaciones que mejor alcanzan la alta administración de la industria electrónica son Electronic Business y Electronic News.

Estas dos publicaciones son similares aunque difieren en algunos aspectos. Son similares en que circulan en una audiencia parecida y son diferentes en su enfoque. Electronic Business es la revista Fortune, y Electronic News es el Wall Street Journal de la industria electrónica.

El establecimiento de contactos es de poco valor sin un seguimiento adecuado y oportuno. El objetivo consiste en mantener y fortalecer las relaciones. El proceso entero de seguimiento es una mezcla de perseverancia y reacción. Los enfoques generales al seguimiento incluyen cartas, teléfonos, visitas a las plantas, utilización de un sistema computarizado de seguimiento, y respuestas a las solicitudes específicas del inversionista potencial tales como la busca de subcontratistas, el análisis de costos y la planificación de viajes.

V. CONCLUSION

Guatemala puede atraer a la industria maquiladora de productos electrónicos, y la misma puede tener éxito con el logro de dos cosas:

Primero, mejorando el ambiente industrial - Esto significa facilitar la conveniencia y rentabilidad de una operación fabril. Es muy difícil crear este ambiente por todo el país. Sin embargo, es posible crear este ambiente en áreas pequeñas de Zonas Francas. Una Zona Franca permite el uso directo de US Dólares, quita muchas de las restricciones burocráticas, y provee una mejor infraestructura. Además del establecimiento de los mismos en el Departamento de Guatemala, estas Zonas Francas pueden

ser desarrolladas en áreas urbanas remotas para promover el desarrollo por todo el país y disminuir la migración hacia la capital.

Segundo, promoviendo la industria maquiladora de productos electrónicos - Las funciones de promoción deben ser desempeñadas por una organización claramente definida, bien capacitada y agresiva. La promoción debe basarse en la capacidad actual electrónica en Guatemala. También debe dirigirse a las inversiones extranjeras. El objetivo de estos esfuerzos promotores deben ser principalmente las áreas de mercadeo y capacitación técnica, así como también las inversiones de capital. La organización promotora debe también desarrollar la capacidad local de la industria de la maquila de productos electrónicos.

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