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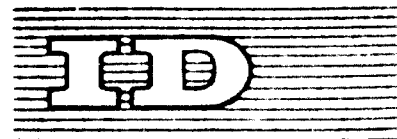
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**CONDITIONS FOR SETTING UP AND OPERATING TECHNICAL SERVICES FOR
SMALL-SCALE INDUSTRIES ON A REGIONAL OR SUB-REGIONAL BASIS,
IN THE LIGHT OF THE EXPERIENCE OF ICAITI^{1/}**

by

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^{1/} The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO and UNESOB. The document has been reproduced without formal editing.

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**CONDITIONS FOR SETTING UP AND OPERATING TECHNICAL SERVICES FOR
SMALL-SCALE INDUSTRIES ON A REGIONAL OR SUB-REGIONAL BASIS,
IN THE LIGHT OF THE EXPERIENCE OF ICAITI**

Presented by

Manuel Noriega Morales and Stefan Wittkowsky

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TABLE OF CONTENTS

	<u>Page</u>
Summary	i
1. Summary of the principal characteristics of industry in Central America and the importance of small-scale establishments	1
1.1 General description of Central America and principal economic characteristics	1
1.2 The Central American Common Market	2
1.3 Principal industrial activities in Central America and importance of small-scale industry	3
2. Technical Services rendered to small-scale industries in Central America by national and regional institutions; ICAITI as a regional organization providing services to small-scale industry in the area	5
3. Conditions required for setting up a regional or sub-regional centre for providing technical services to small-scale industry	11
3.1 Functions that lend themselves to be carried out on a regional or sub-regional basis and possible specialization of the regional centre	11
3.2 Advantages and disadvantages of combining research and technical counseling in a regional centre	13
3.3 Size of the countries, basic resources and level of development as conditions required for setting up a regional or sub-regional centre	14
3.4 Economic integration and coordination of small industry planning as pre-requisites for setting up a regional or sub-regional centre	14
4. Sponsorship, organization, financing and management	15
4.1 Agreement and obligations required amongst participating countries of a regional or sub-regional centre. Desirability of national centres and the coordination with the regional centre	15

	<u>Page</u>
4.2 Basis for providing services to small-scale industry, staffing of the regional centre and physical facilities required	16
4.3 Participation of the member countries in the formulation and execution of policies and programmes of the regional centre	24
4.4 Special problems in the management and administration of a regional centre, in particular as regards the selection or acceptance of projects, programme scheduling and contractual practices	24
5. Cooperation and coordination	26
5.1 Inter-agency cooperation required for the effective functioning of the regional centre	26
5.2 Optimum utilization of foreign experts provided under technical cooperation programmes and organization of counterpart training	27

Annexes

S U M M A R Y

- **As part of the Central American Economic Integration Programme, the Central American Research Institute for Industry (ICAITI), was established in 1956 for the purpose of promoting the improvement and development of industry in the area, through industrial research, technical services and related aspects. ICAITI, as a regional technical service centre, has provided assistance to existing industries and investors within and outside Central America, an important part of which has been oriented towards small-scale establishments. Lack of funds, and other important elements, however, have not permitted it to expand its services as much as it would have liked in view of the great importance of small-scale industry within Central America's industrial structure.**
- **Aside from ICAITI, there exist in Central America development institutes, productivity centres and technical vocational schools which in one way or the other assist small-scale industries. There is no specific organization in any country, however, that is dedicated exclusively to making available technical services to small-scale establishments. The limited technical services that national organizations have been able to offer to industry, have mostly been taken advantage of by larger establishments. Recommendations have been made, therefore, to emphasize the assistance to small-scale firms in the area, through a regional programme involving the participation of ICAITI as a regional centre and various national organizations as local centres.**
- **In the light of the experience of ICAITI and of the related national institutions in the Central American area, ideas and suggestions have been developed in this paper on the conditions for setting up and operating technical services for small-scale industries on a regional or sub-regional basis.**
- **There are a number of functions of technical service centres that lend themselves particularly well to be carried out regionally, other functions lend themselves to be carried out sub-regionally or nationally, although the general programming and coordination of the same should be done on a regional basis. All of these functions, however, in order to be effective require adequate means for the implementation of the same nationally, and therefore it is of utmost importance that there exist proper and flexible local mechanisms to transmit the work of the regional centre, and to re-transmit actions to be taken by the regional centre as suggested on a local level.**
- **Local centres, if they exist, should specialize in providing the more simple technical services, management advice, productivity improvement techniques, etc. required by small-scale industries, especially in those areas in which a thorough knowledge of local conditions is indispensable. The regional centre, on the other hand, while acting as a coordinator of the services offered by each individual local centre and providing the necessary technical backstopping through its own experts and facilities, should place emphasis in those areas requiring greater resources, specialized laboratory or pilot plant equipment, highly qualified experts, greater auxiliary services such as technical libraries and documentation sections, and above all, where a higher degree of objectivity is required for arriving at decisions affecting the region as a whole or each member country or state individually. When local centres are non-existent, or impractical to set up, the regional centre has to assume the tasks as described**

above for the national centre, probably through the establishment of auxiliary or branch offices in each member country.

- Industrial research (as defined for the purposes of this Symposium), and technical counseling can be combined in a regional centre, and important advantages are gained by doing so. It involves, however, a greater initial installation and maintenance cost of the centre and therefore the necessity of the participating countries to give greater financial assistance to the centre on a permanent basis.
- Similarity in the level of economic development - particularly industrial development -, and similarity in the industrial structure of the member countries, are regarded as very important conditions for setting up a regional or sub-regional centre for providing technical services to small-scale industries. Similarity in the size of the countries, composition of population, etc. are not considered as equally important conditions. Economic integration and coordinated planning among the countries, although helpful and of great importance, are also not considered to be essential requisites for setting up a regional or sub-regional centre.
- Many of the functions of the centre - conceived as nucleus of industrial research technical assistance and information source -, have to be carried out upon the own initiative and cost of the centre. When the basis for providing services to small-scale industry is determined, it should be borne in mind that: a) the full cost of the services will rarely be recuperated by the centre, b) a large proportion of the general or overhead expenses will have to come out of direct contributions of the member countries, and c) permanent financing for programmes of general interest to the region will have to come from sources other than of the income that the centre can perceive through the services it renders. International cooperation, primarily through direct and indirect financial and technical assistance, is of great importance for establishing and maintaining a regional centre.
- If the regional centre is to function effectively, the participation of the member countries in the formulation and execution of policies and programmes has to be carried out with a genuine interest in the functions of the centre and a direct identification with its activities. Both formulation and execution of policies should be done on a cooperative basis, with adequate representation, not only of each of the member countries' public officials, but also of the various interested industrial sectors in each country. Direct participation and identification on the part of the small-scale industries themselves in the work of the regional centre, is considered of utmost importance.

Selection criteria of projects, programme determination and scheduling and contractual practices of a regional centre, are some of the most difficult and important tasks of a centre's management. In accordance with the general industrial structure of the region, its development plans and potentials, and the importance of small-scale industries within this general structure, the centre's management has to draw up its work programmes and obtain the necessary financial backing for the effective implementation of the same. This involves not only adequate contacts and coordination among the member countries' representatives in the centre, but also the establishment of the necessary links with other regional centres and international organizations.

- Inter-agency cooperation is considered as one of the essential requirements for the proper functioning of a regional technical service centre, and for the

avoidance of costly and wasteful duplication of efforts. Cooperation can take the form of simple coordination of efforts, and mutual knowledge of the activities carried out by each agency through the existence of proper communication channels. Or, the cooperation can take more direct forms, for example, in the designing of joint programmes, in the joint use of certain facilities, in the exchange of information and solution of technical problems, in temporary exchange of staff members, etc., etc. Frequent meetings of agency coordinating committees are of great use and facilitate the carrying out of coordination.

- Coordination is especially important among the agencies operating in a particular region, but is also essential between the regional technical service centre and similar centres in other regions of the world. Experiences gathered in one region can prove to be extremely valuable for other regions as well, and much time and money spent on the solution of a particular problem can be saved if there is an adequate exchange of information and coordination of efforts. General policy making of the centres can also be greatly aided through a knowledge of programmes, operating problems and results achieved in other centres. As far as the application of particular technologies is concerned, the centre involved will of course have to determine the possible utilization of the same according to the local conditions in its own region, but at the very least it can save much time and efforts in basic investigations if it can utilize the results obtained in other regions of the world.
- In order to achieve optimum utilization of foreign experts provided under technical cooperation programmes, great care has to be exercised in their selection. A regional technical service centre will require experts that not only are able to detect possible problem areas and suggest alternative solutions, but also to implement the recommendations they formulate. In this sense, a good part of the experts will have to be practical men, with actual and direct experience in plant work; this experience, moreover, will have to be in plants that are similar in size and in conditions with those existing in the particular region where the centre is located. In many cases it is also indispensable that the experts have, aside from practical experience, the ability to analyse particular industrial aspects from the point of view of a potential investor, and more so if they will be involved in the carrying out of feasibility studies or similar tasks that implicate a certain amount of desk work. This latter aspect has been found to be one of the most serious handicaps in centres that, aside from providing direct technical services to operating small-scale industries, also carry out a certain amount of work in technical-economic investigations aimed at evaluating industrial situations or determining the feasibility of establishing new enterprises. Finally, it is important that the foreign expert receives proper briefing on the existing socio-economic conditions of the region or country where he is to go, and that in carrying out his work he places emphasis on adapting himself and his recommendations to these conditions.
- Organization of counterpart training should be placed among the top priority items of a regional centre. Counterpart training should include, on the other hand, adequate training in recognized foreign universities, technological institutes, industries, etc., as well as in the centre itself, under the guidance of the foreign experts. Care should be taken that the person receiving this on-the-job training at the centre, be adequately prepared to assimilate the knowledge he is exposed to, and that the training programme be designed in such a way that the trainee has a chance to exercise gradually more and more responsibility. After an adequate period of time, the centre can then be staffed predominantly by local personnel, leaving very specialized tasks to foreign

experts that can be contracted for short periods of time as temporary consultants. Moreover, the centre can also contribute in this way to increase the general level of training of the region's population, making available qualified personnel for the industries themselves.

CONDITIONS FOR SETTING UP AND OPERATING TECHNICAL SERVICES FOR
SMALL-SCALE INDUSTRIES ON A REGIONAL OR SUB-REGIONAL BASIS,
IN THE LIGHT OF THE EXPERIENCE OF ICAITI

1. Summary of the principal characteristics of industry in Central America and the importance of small-scale establishments

1.1 General description of Central America and principal economic characteristics

Central America ¹⁾ has a total population of approximately 13 million inhabitants and a total extension of 441 000 square kilometers. The largest country, in terms of area, is Nicaragua, followed by Honduras and Guatemala. Guatemala, however, has the largest population of the five republics (around 35%) followed by the smallest country (El Salvador) with approximately 25%. Average density of population in Central America is approximately 30 persons per square kilometer, El Salvador having the highest in the region (around 130), and Nicaragua the lowest (around 11).

Population growth in Central America is considered among the highest in the world, amounting to nearly 3.3% per annum.

Although no official statistics are yet available for 1966, it can be estimated that during this year the Gross National Product of Central America reached a level of close to US\$ 4 000 million. During the past years the annual growth of GNP in the area has been in the vicinity of 7%. Agriculture accounts for 35 to 40 per cent of Central America's GNP, this figure being indicative of the great importance of this activity in the area. Principal crops are coffee, cotton, sugar, bananas, corn, beans, and other diverse products. Manufacturing industry accounts for approximately 15% of the area's GNP. The above distribution can also be seen in the composition of the economically active population, 60% being engaged in agriculture, 13 to 15% in industry and the rest in services, construction, trade, etc.

1)

For the purpose of this paper, Central America includes the following five republics: Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica. Panama lies geographically within the Central American Isthmus, but is not generally considered to form part of Central America in economic terms. It should be said, however, that there is great interest that Panama joins in the future the Common Market established by the five Central American republics in 1960.

1.2 The Central American Common Market

Due to the importance of the Central American Common Market, both from the point of view of the development of the economies of the five countries individually, as well as from the point of view of the policies regarding assistance to small-scale industries, a brief account of its structure will be given.

After entering into a series of bilateral and multi-lateral agreements and treaties, some dating as far back as 1952, the five countries of Central America subscribed in December, 1960, the treaty that marked the real outset of the common market as it exists today. This treaty, comparable to the Treaty of Rome which created the European Common Market, contains the following major provisions:

- a) On a common market: Establishment of a Central American Common Market, and free trade for all products manufactured in any of the five countries, by an accelerated process to be completed by June 4, 1966.
- b) On investments: Unification of investment incentive laws and other legislation on industrial development of the five countries.
- c) On financing economic integration: Creation of a specialized organization to serve as a regional financing agency in promoting the economic development of the area.
- d) On administrative organs: Establishment of an Economic Council, composed of the Ministers of Economy, as the policy-making body of the Central American Common Market. An Executive Council, composed of delegates from the five countries, is responsible for administering the terms of the General Treaty. A Permanent Secretariat, directed by a Secretary-General, is to carry out the administrative needs of the Economic and Executive Councils.

As further examples of the institutional framework of the Central American Common Market, the following organizations created within the Integrated Programme can be cited:

- The Central American Bank for Economic Integration (CABEI)
- The Central American Research Institute for Industry (ICAITI)
- The Central American School of Public Administration (ESAPAC)
- The Central American School of Business Administration (INCAE)
- The Central American University Council (CSUCA)
- The Institute of Nutrition for Central America and Panama (INCAP)
- The Central American Air Navigation Service Corporation (COCESNA)
- Federation of Central American Associations and Chambers of Industry (FECAICA).

Each of the organizations listed above serves as a catalytic element in the development of Central America: CABEI in the financial field; ICAITI in industrial research and development; ESAPAC in training public officials;

INCAE in training business managers; **CSUCA** in coordinating university programmes; **INCAP** in improving the nutritional situation of the region's population, and others performing valuable roles in the Central American experiment in economic integration as a means to achieving an accelerated economic growth.

From 1961 to the present date, the impact of the common market has been felt in the economic development of the region as a whole. Trade between the countries has also risen substantially, in 1960 total intra-Central American trade amounted to US\$ 32 million, in 1964 to US\$ 106 million and in 1966 to more than US\$ 150 million. During the first years of the Common Market, main items of trade were food products, in 1966 only one-quarter of the total trade corresponded to food products, the principal items being manufactured articles (such as rubber products, paper products, clothing, metal products, furniture, etc.) which accounted for approximately 45% of intra-regional trade.

Although these figures are indicative of the impetus that the Programme has given to regional trade, and of the shifting trends of regional production, mention should be made of the other gains that have been made in Central America's economic integration. In the industrial area, agreement has been reached on the stimulus and protection that should be given to local industries; in the area of commercial instruments, agreement has been reached in customs nomenclature, customs laws, uniform external tariffs for 97.5% of the articles imported by Central America from other countries, and free trade within the area for approximately 95% of the products manufactured locally. Agreements have also been signed in numerous other aspects, such as for the establishment of a Central American Clearing House, regional road programmes, telecommunications, tourism, defense, monetary and fiscal policies, university programmes, sanitation, etc.

The mention of these measures only have the purpose of illustrating the general background of the economic, political and institutional aspects of the common market, so as to understand the setting in which industry, and particularly small-scale industry, is developing in Central America and the way in which services can best be made available to small-scale industry on a regional basis, in the light of ICAITI's experience.

1.3 Principal industrial activities in Central America and importance of small-scale industry

As was mentioned in previous paragraphs, industry in Central America contributes with approximately 15% of total GNP, and employs close to the same percentage of the economically active population of the area. Total industrial production in the area amounts to US\$ 700 to US\$ 800 million, the principal activity being the food and beverage industries, which alone account for approximately 50% of this amount. Production of textiles, shoes and clothing and chemical products account for another 30%, distributed evenly among the three, and other industries share the remaining 20%. Total fixed investment in industrial activities adds up to approximately US\$ 600 million in the Central American area; the food and beverage industry takes the largest share (c.a. 35%), followed by the textile industry (10%), chemical products industry, clothing and shoe industry, wood industry and non-metallic minerals industry, each of these with a share of close to 7%. Distribution of people

employed in Central American industry (total amount c. a. 500 000) roughly follows the pattern mentioned above, the food and beverage industry employing 35 to 38 per cent, the clothing and shoe industry 23 to 25 per cent, and the rest quite evenly distributed among the other industries indicated as most important from the point of view of fixed investment and production.

Small-scale industry and handicraft industries ¹⁾ (artisan workshops) predominate in the Central American industrial structure, as can be appreciated from the following table:

CENTRAL AMERICA. Relative composition of the structure of industry, according to gross value of production, total capital invested and people employed (1962)

- Percentage -

	<u>Gross value of production</u>	<u>Total Capital invested</u>	<u>People employed</u>
Handicraft Industries (artisan workshops)	29.1	10.0	58.5
Small-scale Industries	23.2	30.2	19.4
Medium and large Industries	<u>47.7</u>	<u>59.8</u>	<u>22.1</u>
T o t a l:	100.0	100.0	100.0

Source: Joint Planning Mission, Central America.

From the above percentages it can be seen that only about one half of the value of industrial production and a little more than one half of the total capital invested, correspond to establishments with more than 50 workers. Small-scale industries and handicraft industries ¹⁾ account for the other half, while employing, however, close to 30% of the total industrial labor force. This, of course, is readily understandable when one takes into account that the smaller industries in Central America, and especially the handicraft industries are very labor-intensive and usually suffer from very low levels of productivity.

Small-scale industries employ around 20% of the total industrial labor force in Central America, contribute with close to 25% of the total value of production and have 30% of the total capital invested in the region's industry. The above figures, however, represent an average of all industrial activities and therefore tend to underestimate the importance of this sector within the regional industrial structure. When an analysis is made of the separate industrial activities, it becomes apparent that small-scale operations play a preponderant role, as is pointed out in the following paragraphs.

1)

For the purposes of this paper, handicrafts industries or artisan workshops have been defined conventionally as those employing less than 5 persons, small-scale industries as those employing between 5 and 49 persons, and medium and large industries as those employing more than 50 people.

Within the area's food and beverage industry, Central America's most important activity in the industrial field, approximately 40% of the people employed and the same percentage of the total value of production, corresponds to small-scale industries; these establishments count with 28 to 30 per cent of the total fixed investment in the food industry. The importance of small-scale in the shoe and clothing industries is also noteworthy: 60% of people employed in this sector, 50% of the fixed capital and 50% of the total value of production, correspond to small-scale industries. Within the wood industry, the leather goods industry and furniture industry, the preponderance of small-scale establishments is also apparent; in all of these activities, the share of small-scale industries of the total value of production, of the people employed and of the fixed capital, is well over 50%.

Finally, it is interesting to note that in the textile industry, one of the region's oldest and most traditional industries, small-scale establishments play a very minor role. Only around 20% of the industrial labor force within the textile industry works in small-scale firms, and these account for approximately the same percentage of the total value of production. Only 10% of total fixed investment in the textile industry corresponds to small-scale establishments.

Summarizing, although there are some industrial activities in Central America in which small-firms do not weigh very heavily within the sector's structure, as a whole small-scale industry and handicraft industries in Central America are very important and therefore a large part of the attention of governmental bodies and regional and international organizations, should be given to them.

2. Technical Services rendered to small-scale industries in Central America by national and regional institutions; ICAITI as a regional organization providing services to small-scale industry in the area

Small-scale industries in Central America have begun to receive specialized assistance from national institutions only during the past decade or so, and although the governments of the five countries are now cognizant of the fact that it is of utmost importance to provide the necessary aid to these firms, there is still much to be done. In general terms, the national organizations established to provide technical services to industry in Central America can be grouped in three categories: the first falls under the heading of development institutes, the second under the heading of national productivity centres and the third under the heading of technical vocational schools.

Before discussing each one of these three groups of institutions, it should be pointed out that isolated efforts are also being made by the individual Ministries in the countries, and also by some of the government-sponsored autonomous institutes. For example, in Guatemala, there are various examples of services being rendered to remote villages specializing in one or the other handicraft, services that are aimed at organizing the workers and small shops in order to improve their production processes and the marketing of their products. Some religious organizations and branches of international organizations also have been active in these types of assistance. These activities, however, are usually carried out on a quite limited basis and independently of any national programme aimed at assisting local industries. For this reason they have not been included in the context of this paper.

Development institutes

Towards the late 40's and early 50's the Central American countries, following the example of other countries of the world, established national autonomous organizations which broadly fall under the heading of "development institutes". The purpose of these institutes, in general terms, is to act as a catalytic element in the economic development of the country, in the fields of industry, agriculture, services, etc., through loans, carrying out of feasibility studies and promotional activities, etc. The specific functions and purposes of each of the institutes located in the Central American countries vary somewhat, but for the purposes of this paper they have one common denominator: they all have as one of their main objectives to stimulate the development and improvement of industry.

In some cases, these institutes have functioned with a relatively high degree of effectiveness and the result of their work has been apparent. In other cases, due to the influence of external factors, lack of sufficient funds, and problems of internal organization, the impact of the institute's work in the industrial development of the country, has hardly been felt, although in other areas such as agriculture, their work has been more effective.

Generally, though, the technical assistance or services that the institutes have given to small-scale industry have represented a minor part of their work in the industrial field, the major part of the activities having been in promotion and financial aspects of medium sized enterprises. This arises out of the fact that they depend to a large extent on the governmental programmes in their policy-making and for a particular government's record it is understandably more attractive to cite the biggest figure possible of investments it has stimulated, the maximum amount of new jobs it has created through its incentives to industry, etc., rather than to indicate technical services it has made available to small-scale firms.

There is another limiting factor in the role that these organizations play in the development and assistance of small-scale industries, which although not directly related with technical services does have a bearing on the emphasis given by the institutes. In their role of industrial banks, the institutes have the possibility of lending money to firms on a medium-term basis, and some of them also have the faculty of participating in the equity capital of the industry, or acting as direct promoters of the project. However, it is not usual that the institutes have taken interest in small firms and, further, their statutes do not usually permit them to lend out funds without adequate guarantees. Most small-scale industries in Central America are not in a position to offer attractive guarantees for a loan, and from a banker's point of view do not deserve first priority. The limiting factor further acts in detriment of small industries, since the scarce technical assistance that the development institutes are able to give to industries, usually circumscribes itself to those industries that receive loans from the institution, taking into consideration that the assistance is generally given for the purpose of guaranteeing a repayment of the funds lent. The smaller establishments within the small-scale category, therefore, are practically left out of the limited technical services that the development institutions have to offer.

National productivity centres

Starting in 1960, national productivity centres were established in each of the five Central American countries, with the direct assistance of the United States government and various international organizations such as the International Labour Office, the Organization of American States and others. These productivity centres have as principal purposes the improvement of productivity in industry and commerce and the development of administrative, managerial and technical skills and knowledge through the training of personnel by means of specialized courses. These courses are given by the productivity centre's staff and include on-the-job training, lectures, and direct assistance in industrial plants or offices. Some centres also carry out economic studies and act as information nuclei for potential investors.

Most centres are independent autonomous organizations, financed through the contribution of the governments, assistance of international organizations and private enterprise. The policy-making bodies are formed by representatives of these groups.

Up to the present time the principal activity of the centres has been in the carrying out of courses aimed at improving the productivity in commercial and industrial enterprises. The courses are advertised and interested firms send their employees to take them, paying nominal attendance fees. Interested enterprises can also request specific assistance from the centre, in which case experts will visit the firm and prepare programmes to advise them.

With a few exceptions, it can be said that the work of these productivity centres has been of direct benefit to the countries, and that the enterprises making use of their services have, as a result of the same, improved their operations in the sense that their employees have acquired a sense of responsibility and have understood the benefits to be accrued from the application of better organization and methods.

The direct assistance and technical services to industrial plants has not been as important as the instruction given to employees and managers of the respective firms through the courses offered. These courses, in the case of the Guatemalan centre, for example, were attended in 1966 by a total of 2 230 persons representing approximately 300 firms. It should be pointed out, however, that these figures include industrial plants, banks, commercial firms, retail stores, etc., and that the courses offered ranged from advanced shorthand for secretaries to cost control in the textile industry. On the other hand, the Guatemalan centre only gave direct assistance to six firms (all industries), and three of which are included among the biggest in the country. Notwithstanding, through these centres small-scale industries can learn of new methods of organization, cost control, personnel administration, programming, etc., and the potential importance of the same should not be underestimated.

Central American productivity centres have, as a general rule, not been able to pay as much attention as would be desired to small-scale industries, especially in the field of direct assistance, mainly because they are not yet sufficiently equipped and organized to extend these services on a wider scale.

Technical vocational schools

With the assistance of international organizations and governments of various

countries (especially the United States and European countries), a number of technical or industrial vocational schools have been established in the area during the past years. These schools have the purpose of instructing Central Americans in skilled and semi-skilled occupations and in this way make available to industry and other activities properly trained personnel. Assistance in these schools is usually free of charge, since the programmes are aimed at people who cannot afford the cost of specialized schooling.

The various schools throughout Central America have varying programmes, some limit themselves to the giving of a simple diploma of attendance after one or two years of instruction, and others have four or five year curricula leading to a specialized degree of technical secondary education. Areas covered by these schools usually include: carpentry and woodworking, metal-working, automotive engine maintenance and repair, general machine repair, soldering, electricity, ceramics, masonry, radio and television, and others.

Although no comprehensive statistics on the subject are available, there is no doubt that small-scale firms have already reaped some of the advantages of these technical vocational schools, since a percentage of the so-trained persons have gone to work in these industries. Furthermore, it is quite probable that a number of the more recently established small-scale industries have been either built by, or with the assistance of, graduates from these schools. However, the real impact of these training centres upon small-scale, medium and large scale industries, will be seen in a number of years, taking into account that many of them have only recently been established.

The Central American Research Institute for Industry (ICAITI)

The Ministers of Economy of the five Central American countries, meeting as the Committee on Economic Cooperation in Central America, adopted a resolution in August of 1952, requesting the Technical Assistance Administration of the United Nations to provide a mission which could make recommendations on the establishment in Central America of an Institute for Industrial Research and Technology. An UNTAA mission studied this request, and in May, 1955, its report was known and approved by the Committee. Later that year, the Basic Agreement establishing ICAITI was subscribed to by the five countries, and on January 20, 1956, the Institute was officially inaugurated in Guatemala City, Guatemala, where its offices and laboratories are located.

The main purposes of the Institute are the following:

- To act as consultant to private enterprise in all phases of the study and implementation of industrial projects.**
- To give practical advice to manufacturers in solving production problems.**
- To conduct technical investigation on the utilization of regional raw materials, on the development of new manufacturing processes and on the adoption of the latest manufacturing methods.**
- To promote and foster the application and adaptation of advanced production methods in the development of the Central American industry so as to raise productivity.**
- To act in an advisory capacity for all public and private institutions engaged in industrial and economic development.**

- To participate in the Central American integration programmes.
- To establish Central American ICAITI Standards for quality of raw materials, intermediate and finished products.

As part of its general programme to further Central America's industrial development through applied research and technology, available ICAITI services include market research and studies, economic and technical feasibility studies prior to the establishment of new industries and for the expansion of existing enterprises, technological advice for the planning and implementation of industrial projects and advice on the types of manufacturing processes, purchasing of equipment and machinery, site of plants and industrial installations. ICAITI also performs laboratory testing, analysis and research, pilot plant experiments on manufacturing processes and finally, is charged with the elaboration of Central American Quality standards.

At the present time the Institute has on its staff a total of 120 employees, more than half of which are professional and technical people. These include economists, cost accountants, industrial engineers, mechanical engineers, chemical engineers, chemists, bio-chemists, geologists, mining engineers, and others. Within this grouping, there are specialized professionals in food technology, leather technology, pulp and paper, textiles, oils and fats, wood technology, standardization, and others. Most of these experts are Central Americans, although during the early stages of ICAITI's development the largest percentage of professionals were foreigners.

The present organization of the Institute includes the following Divisions: Industrial Economics, Engineering and Industrial Services, Technological Research, Geology and Mining, Standardization, Documentation and Library, Finance and Administration. At the head of the Institute is the Director, who is named by the United Nations with the agreement of the Executive Committee, integrated by the five Ministers of Economy of Central America. The Executive Committee is the top policy-making body of the Institute; the Director also receives orientation on the part of the United Nations, and of an Advisory Committee, composed of leading industrialists and economic integration officials of Central America (Further details of the organization of ICAITI can be appreciated in the organization chart included as an annex to this paper).

A large percentage of the services that ICAITI has made available to Central America during its first eleven years of existence, has been to small-scale industries and investors in small enterprises. This is not to mean that ICAITI has not served also larger industries and more powerful groups of investors, as could be appreciated from an analysis of the origin of total income that ICAITI has received from the work it has done. However, this figure is not illustrative of the total amount of individual services ICAITI has given or studies it has carried out on a paid basis. It should be explained in this connection that ICAITI has a double role in the industrial development of Central America: the first arises out of its obligations as an instrument of the Central American Common Market, in which it is the technical advisor and impartial body giving opinions and performing studies to solve regional industrial problems or contributing with elements utilized by the political bodies of the Common Market to orient the direction of economic policies of the member countries, and to carry out technological research aimed at improving the utilization of Central American raw materials and waste products. These activities are largely financed by the contributions it receives from the Central American governments. The second role of ICAITI is as an industrial consultant giving

servicest to local and foreign private enterprise, development banks and other interested sectors. The discussion in this paper is oriented towards this second role.

In general terms, the type of services that ICAITI offers on a paid basis to firms, investors or institutions have been mentioned in previous paragraphs. Amongst the most important ones are the carrying out of market or feasibility studies for new projects and the working out or evaluation of expansion or diversification programmes for existing enterprises. For the performance of these services, work proposals are submitted to the interested client together with estimates or possible time of completion and cost. Also important are the laboratory analyses, testing and solving of technical problems - or development of new processes - on a pilot plant scale. These services are also usually performed on a paid basis, following a general pricing schedule. Geological studies, analyses and quantitative evaluations of mineral deposits are also gaining importance within the total service pattern of the Institute.

As important as the services mentioned above, are the technical consultations, organizational and management advice, library and documentation information, investment opportunity ideas, etc., that ICAITI gives to interested persons and firms that seek the advice of the Institute. A large proportion of these services are given free of charge or with very nominal fees, since they usually only involve a few hours time of one or more of ICAITI's experts. As a result of these consultations, the need is often felt to analyze the problems of the ideas in greater detail, in which case a proposal is submitted to the interested person or firm.

Small-scale firms in Central America make use of ICAITI's services more in the direction described in the preceding paragraph, since most smaller enterprises are not yet familiar with industrial investigations, or are not convinced of the benefits to be had from the same, and therefore the cost they involve do not seem to compensate with the foreseeable results. It should be pointed out, though, that this attitude is not only limited to small-scale plants. A number of investors and industrial enterprises in Central America, are still not cognizant of the advantages to be gained from studies of projects or consulting services relating to production problems, processes, internal organization appraisals, etc. This way of thinking is rapidly changing with the onset of competition arising from the Central American Common Market, and in the future from the Latin American Common Market, but innumerable examples could be cited in which the Institute has had to battle against this problem.

There is an added factor which up to a certain point has conspired against a full utilization of the Institute's services by Central American industry, and especially small-scale industry. This arises out of the fact that ICAITI has not been able, in spite of its strenuous efforts, to expand its radius of action equally to the five regional countries, and even not enough within the same country its offices are located, because of financial and other limitations. Due to its present budgetary problems it unfortunately has to limit the services it can give free of charge, and it has not been able to really advertise the available assistance as much as it would have liked to in order to attract more attention of small-scale enterprises in the area. This aspect is so important because in order to convince small-scale firms of the advantages of technical services, these have to sell themselves before the proprietor or managing group is willing to pay for them, and although it is desirable to maintain the principle that for any service there should be at least a nominal charge, many services to small-scale firms have to be given on a cost free basis - particularly in the beginning.

The above remarks should, however, not overshadow the general experience and actual situation regarding the services that ICAITI gives to industry and investors in Central America. Every year the total amount of consultations and studies that ICAITI makes for these groups increases, and there is no doubt that with adequate financing the Institute could continually expand its sphere of influence in the area. Attempts in this direction have continually been made, and one of the ideas has been to create within ICAITI a new Productivity Division, integrated by a number of specialized experts in small-scale industries and an equal number of Central American counterparts, which would serve as a supporting body and backstopping centre for the individual Productivity Centres in each of the Central American countries. It was thought that in this way the individual centres would have the benefit of added advice, technical backstopping and regional coordination of programmes, and ICAITI would have the chance of helping the national organizations and of giving direct assistance to the numerous small-scale industries in each country.

ICAITI is cognizant of the fact that it is of utmost importance that it expands its services to small-scale industry, in close coordination with the various national organizations active in the field, and it will continue exerting all possible efforts to obtain the necessary backing for such a programme. The Institute believes, moreover, that its experience in the field and its organizational structure make it the most feasible candidate for coordinated efforts to assist small-scale industry within the Central American area.

The ideas that are contained in this paper on the conditions for setting up and operating technical services for small-scale industries on a regional or sub-regional basis are, therefore, the product not only of ICAITI's past experience, but also of the recommendations it can make for future action both in Central America and in other regions of the world.

3. Conditions required for setting up a regional or sub-regional centre for providing technical services to small-scale industry

3.1 Functions that lend themselves to be carried out on a regional or sub-regional basis and possible specialization of the regional centre

A number of functions of technical service centres lend themselves particularly well to be carried out on a regional basis, and even should be carried out on a regional basis to achieve optimum effectiveness. Other functions lend themselves to be carried out on a sub-regional or national basis, although the general programming and coordination of the same should be done on a regional basis. All of these functions, however, in order to be effective require of adequate means for the implementation of the same on a national basis, and therefore not enough emphasis can be placed from the beginning that there have to exist proper and agile mechanisms to transmit the work of the regional centre, and to retransmit actions to be taken by the regional centre, as suggested on a local level.

Functions that can be performed by regional technical service centres for small-scale industries, can generally be grouped as follows:

- **Collection and dissemination of economic and technical information, particularly related to the identification and study of small industrial plants or artisan workshops that are economically feasible to be established within the region or on a regional scale;**
- **Application of new technologies or adaptation of technologies utilized in other regions;**
- **Standardization and quality control;**
- **Specialized technical counseling, relating to processes, organization, programming, layout, design, working methods, etc.;**
- **Management assistance and marketing assistance as explained below.**

The regional centre is best equipped to handle these functions, in the first place, because it can appreciate and analyze the general situation affecting the region as a whole and can take into account the collective interest rather than the respective national interests. This objectivity is important in the evaluation of the needs and development possibilities of the regional industrial sector vis-a-vis available resources, established local interests, and interests and competition of other regions of the world. The above is especially the case in, for example, the identification of new investment opportunities or the evaluation of existing projects, the dissemination of technical information, and application of technologies from other parts of the world to the particular region where the centre is located. Especially in the case of dissemination of technical information and application of new technologies, the process of previous study, selection, testing and dissemination requires of substantial financial resources and highly qualified technicians and experts; these conditions cannot always be met by a national centre. The same applies in areas of standardization and quality control; a regional centre will generally have more resources to develop adequate standards applied to local conditions and will be able to do it with greater objectivity than isolated national centres. In the case of quality, although it is desirable to have the backing of the regional centre, in practical terms it is difficult to perform the necessary inspections and regular daily advice when the geographical distance separating the plant and the centre is great. Here it is desirable to enlist the cooperation of the local centre with capable personnel, with the necessary technical backstopping and control on the part of the regional centre.

As far as general technical counseling, marketing assistance and management assistance are concerned, it is desirable to have a regional centre coordinate the action on the various national levels and to act as a sort of senior counselor. However, the practical work and services on a day-to-day basis should be handled by the local centre with the possible help of very experienced resident experts linked with the regional centre. This link is considered important for the following reasons: there are many services that the local centre can give with its existing staff, and can give better because of a greater knowledge of particular local conditions. However, a number of technical services and economic assistance may require the opinion of more experienced experts, or of experts that have a greater contact with similar situations in other parts of the world. Also, the aspect of objectivity is important in many cases where advice is sought in areas of, for example, possible export markets for the products manufactured by small-scale firms.

Specialization of the regional centre therefore, should be, first, in those areas in which the local centres cannot offer adequate services, due to financial, personnel or other limitations. Second, in those areas in which a duplication of facilities or staff is not desirable or where it is simply not possible due to the financial requirements in setting up the centres. Specifically, it is felt that the local centres, if they exist, should specialize in providing the more simple technical services, management advice, productivity improvement techniques, etc., required by small-scale industries, especially in those areas in which a thorough knowledge of local national conditions is indispensable. Further, they should place emphasis in the organization and carrying out of specialized courses for workers, administrative personnel and managers, aimed at improving working methods, teaching of new techniques, broadening of knowledge, etc. The regional centre, on the other hand, while acting as a coordinator of the services offered by each individual local centre and providing the necessary technical backstopping through its own experts and facilities, should place its emphasis on those areas requiring greater resources, specialized laboratory or pilot plant equipment, highly qualified experts, greater auxiliary services such as technical libraries and documentation sections, and above all, where a higher degree of objectivity is required for arriving at decisions affecting the region as a whole or each member country or state individually. When local centres are non-existent or impractical to set up, the regional centre will of course have to assume the tasks as described above for the national centre, probably through the establishment of auxiliary or branch offices in each member country.

3.2 Advantages and disadvantages of combining research and technical counseling in a regional centre

Industrial research, as defined in the AIDE MEMOIRE sent to the participants of this Symposium, should imply "technological research undertaken to solve a specific problem of a small industrial enterprise, but not general technological research".

In this context, it is believed that the combining of research with technical counseling is beneficial to the centre, to the country or countries and to the industrial enterprises. It involves, however, a greater initial installation and maintenance cost of the centre and therefore the necessity of the participating countries to give greater financial assistance to the centre on a permanent basis.

The advantages to be gained of combining research and technical counseling are, in the first place, the possibility of integrating the assistance and recommendations made by experts of the centre with actual application of the same through previous research at the centre's laboratories or pilot plant. Secondly, a particular problem of a small-scale enterprise can be analyzed thoroughly outside the plant by the centre's specialists, with adequate equipment required for the research and analysis, obviating in this way the necessity of costly shut-downs of plant sections or of the whole factory for periods of time. This of course presupposes adequate laboratory and pilot plant facilities at the centre, which, in one sense, could be considered a disadvantage of combining research and technical counseling due to the much higher initial and maintenance costs of the centre. An added advantage of combining these two functions is the practical training that is given to national technicians and experts working at the centre; aside from increasing the general level of technical knowledge of the country's or region's population, which in itself is of great importance, a num-

ber of trained experts or technicians are gradually made available for being hired by the industries directly or for continuing advisory services through the technical service centres.

3.3 Size of the countries, basic resources and level of development as conditions required for setting up a regional or sub-regional centre

Although undoubtedly there exist many cases in which regional centres could be set up with the participation of countries of varying levels of development, and considerably different resources and sizes, the experience of ICAITI in Central America induces to recommend that these differences be as small as possible. The basic resources and level of development are very similar among the member republics of the Central American Common Market, which at the same time constitute the participants of ICAITI. This similarity has facilitated the work of ICAITI as the regional centre for industrial development in the sense that common programmes and objectives can be established for the region as a whole, and that the implementation of the same can be made on a more rational basis.

This is not to mean that all member countries have to have identical levels of development or resources; the Central American countries, for example, although very similar in their general economic structure, are quite different in terms of size, population composition, etc. The only really important factor for the efficient functioning of the regional centre, from this point of view, is that all the member countries feel that they individually can gain from the establishment of the centre. However, it is very possible that one country derives more benefits than others from the centre in some of its functions or activities, and another country in different ones. In the case of Central America, ICAITI's experience has shown this to be perfectly feasible and in many cases even beneficial for the economic development of the region as a whole. It should be taken into account, notwithstanding, that within the industrial structure of Central America each member country has an important percentage of its labor force and distribution of establishments within the small-scale enterprise range. As was pointed out in the first paragraphs of this paper, small-scale industries and handicraft industries play a very important role in the region's industrial activity, individually and totally.

Summarizing, similarity in the level of economic development - particularly industrial development -, and similarity in the industrial structure of the member countries, are regarded as very important conditions for setting up a regional or sub-regional centre for providing technical services to small-scale industry. In other words, the organization and operation of a regional centre will be considerably more difficult if within the participating group there are countries with great differences in their degree of progress and with considerable variances in the participation of small-scale industries within the national economic and industrial structure.

3.4 Economic integration and coordination of small industry planning as pre-requisites for setting up a regional or sub-regional centre

In Central America economic integration has been an important factor in making possible the provision of technical services to small-scale industry on a regional basis. Uniform customs policies, industrial promotion policies, common incentives, etc., have created a favorable climate for the planning and coordi-

nation of a regional centre's activities, and have permitted a more rational approach in the advising of development plans for the industrial sector. Especially in areas of marketing assistance and feasibility studies for the establishment of new industries or the expansion of existing ones, a common economic denominator has been of great help.

The same is the case in general terms, with respect to small industry planning, and probably in this connection even of greater importance. As was mentioned before, one of the main advantages of a regional centre over isolated national centres is the degree of objectivity that the regional centre can have in the over-all appreciation of the industrial potentialities of the individual member countries, and the areas in which emphasis should be placed vis-a-vis the region's resources, interests and the interests of other regions of the world. This function of the regional centre can of course be greatly enhanced if, to begin with, there is a common framework for smaller-industry planning.

The above remarks do not imply, however, that economic integration and small industry planning are essential pre-requisites for setting up a regional or sub-regional centre. A regional centre could be set up even without these important elements and there are good possibilities that it can function with effectiveness. Economic integration and joint small industry planning will obviate, however, many problems of the regional centre, and will facilitate its organization and programming; in this respect it is certainly recommendable and, whenever possible, economic integration and coordinated planning among the countries, should exist previously, but the essentiality and pre-requisiteness is, to a certain extent, questioned.

4. Sponsorship, organization, financing and management

4.1 Agreements and obligations required amongst participating countries or a regional or sub-regional centre. Desirability of national centres and the coordination with the regional centre

The type of agreements and obligations required amongst participating countries depend, basically, on two aspects: first, the functions that are given to the regional centre, and second, the existence of national centres. If there exist national centres, the agreements to be reached amongst the participating countries have to include not only aspects of the regional centre itself, but also of the coordination between the national and regional centres. If the regional centre is set up to cover a number of countries where national centres are non-existent, the agreements would have to be somewhat different. On the other hand, if the regional centre's functions include, aside from technical assistance and economic consultations, industrial research and other programmes of wider coverage - such as standardization, quality control, etc. -, the agreements and obligations of the member countries will have to be much more extensive.

A basic agreement will have to be drawn up by the member countries, in which the following aspects will probably be included:

- Purposes and objectives of the centre
- Scope of work. Functions to be performed by the centre

- **Structure and organization of the centre**
- **Location and staffing of the centre**
- **Financing of the centre and other means required for its operation**
- **Coordination of the centre with national organizations and agencies**
- **Other aspects.**

With the purpose of extending the services of the regional centre as much as possible, especially if the area covered by it is large, it will probably always be desirable to establish in the agreement the way in which small-scale industries throughout the region will be able to receive this assistance. It seems that the general trend in this direction is to work through national centres if they exist, or to create them if they are not yet organized. Failing this, to set up branches or units in the participating countries.

If this line of thinking is followed, and it appears reasonable to do so, the principal obligations of the member countries would be to provide the necessary backing not only to the regional centre, but also to the national centres. In addition, the member countries would have to agree that the regional centre acts as coordinator of the national centres; this of course implies an adequate representation of the member countries in the governing body of the regional centre, so that regional decisions are executed on a national level.

The regional centre would, then, be in charge of drawing up a master plan for the region as a whole in areas of technical services, counseling, small-scale industry planning, industrial research, etc., and would, in close coordination with the various national centres, determine the specific functions to be carried out by each organization. In accordance with this determination, work programmes would be set up, means determined, and once activities start to be carried out, adequate control and coordination mechanisms would be put into effect. In this way the work of each individual centre will be more productive and the resources so allocated will be better utilized, as described in previous sections.

4.2 Basis for providing services to small-scale industry, staffing of the regional centre and physical facilities required

If the work of the regional centre is to be effective, and if it is desired to make the biggest possible impact on the development and improvement of small-scale industry through such a programme, the centre has to be well organized, properly staffed and equipped, adequately financed, and as was indicated above, well coordinated with the activities carried out on a national level.

Many of the functions of the centre - conceived as a nucleus of industrial research, assistance and information source -, have to be carried out upon the own initiative and cost of the centre. This is especially the case in countries where industry, and more so small-scale industry, is not yet accustomed to consulting services, and where consequently a large part of the initial efforts of a regional service centre have to be spent on selling the advantages to be gained from technical assistance. Moreover, if the region where the centre is to be set up is relatively underdeveloped, and in order to provide the necessary impetus for the rational exploitation of industry preliminary studies have to be

carried out for the creation of new enterprises or for breaking of traditional defects of existing ones, adequate financial resources have to be made available to the centre.

In the initial stages of the regional centre, therefore, generous financing has to be given to it by the participating countries; as time goes by and the centre has established itself and has gained the confidence of the region's entrepreneurs, contributions of the member countries can diminish somewhat, but never completely since many of its services will have to continue being given on a cost free basis in the interest of the economic development of the region. In addition, permanent staffing of a regional centre involves considerable fixed costs for the institution. Many of these costs are reimbursed by the paid services the centre can offer to firms, but it cannot be assumed that the total payroll of the centre's staff will come out of this income. And, finally, if the centre is to include industrial research, equipment not only has to be made available at the beginning of the centre's operation, but an adequate financial reserve has to be on hand for maintenance and renewal of the same and for the acquisition of modern machinery, in accordance with technological developments.

The purpose of pointing out the above aspects is to emphasize that when the basis for providing services to small-scale industry is determined, it should be borne in mind that: a) the full cost of the services will rarely be recuperated by the centre, b) a large proportion of the general or overhead expenses will have to come out of direct contributions of the member countries, and c) permanent financing for programmes of general interest to the region will have to come from sources other than of the income that the centre can perceive from the services it renders. In consequence, the provision of services to small-scale industries should be on a paid basis in principle, although for the reasons indicated in previous paragraphs, many of these will have to be given cost-free in the initial stages of the centre's operation.

Staffing and physical facilities required will depend on the particular type of services to be rendered by the centre. If the functions assigned to it involve consultations or studies in very specialized industrial aspects, it will be necessary to have the specialized equipment and facilities, the corresponding experts, and adequate documentation and library sections. If, on the other hand, not very specialized assistance is foreseen, the staff will probably be composed of experts with more general backgrounds and experience, and not necessarily limited to one particular industrial activity. Physical facilities in this case will also consist of versatile and readily adaptable equipment, and appropriate office space and laboratory buildings.

Staffing of a regional centre is of course of utmost importance, and should be one of the primary preoccupations of its organization. Experience has shown that it is advisable to spend adequate funds on the training of local professionals and technicians, both at the centre as well as through schooling and practical experience abroad. Foreign experts are indispensable in the first years of a centre's life, but these should gradually be replaced by national counterparts who have had the opportunity of working side-by-side with the foreign experts for adequate periods of time, and who have also had the chance of receiving specialized training abroad. As time goes by the centre will be able to handle most services with national experts, and when very specialized aspects come up or particular technical assistance or advice is required, foreign experts can be called in as temporary consultants for short periods of time.

Usually the regional centres will want to count in their permanent staffs with at least an adequate number of industrial engineers, mechanical and electrical engineers, civil engineers, chemical engineers, chemists, economists, industrial economists, statisticians and accountants. However, as was said before, the exact intimation of a centre's staff will depend on the type of small-scale industries in existence in the region, the type of development programmes, and the specific services the centre is to make available.

4.3 Participation of the member countries in the formulation and execution of policies and programmes of the regional centre

If the regional centre is to function effectively, the participation of the member countries in the formulation and execution of policies and programmes has to be carried out with a genuine interest in the functions of the centre and a direct identification with its activities. Both formulation and execution of policies should be done on a cooperative basis, with adequate representation not only of each of the member countries, but also of the various interested sectors within each country.

Governmental authorities, public servants, civic and business leaders, and international experts can have excellent ideas on the way a centre should be organized and the types of programmes it should carry out, and can draw heavily on known experiences in other countries in order to expedite matters and prevent costly mistakes. Representatives from these sectors will, probably, be mainly responsible for the organization and management of the regional centre, if for no other reason than that the centre's principal financial contributions will be coming from the governments of the member countries and from the assistance of international organizations. It is very important however, that the private industrial sector be taken into account, and that advisory committees be formed or a representative be named to act on behalf of this sector.

In this connection it should be pointed out that it is desirable that in the formulation and execution of programmes and policies, the potential users of the services - or representatives of the same - , have a direct voice in pointing out their interests, needs and requirements, so that the activities of the centre - especially those that have to do with counseling and industrial research - , are oriented in productive directions and, most important of all, so that the centre is fully utilized. In this way the centre can become part of, and probably the nucleus of, a cooperative development scheme, in which governments, international organizations, public servants, industrial organizations and executives and proprietors of small industries themselves, are participating. This participation, moreover, will reflect itself in a full identification with the policies and programmes of the centre and consequently the centre will better be able to serve the purposes for which it was created.

4.4 Special problems in the management and administration of a regional centre, in particular as regards the selection or acceptance of projects, programme scheduling and contractual practices

Management of a regional centre providing services to small-scale industries is a complicated task which requires not only a very clear view of the existing situation in the region as regards the development and problems of small-scale industries, but also great executive ability. The managing body - and especially

the Managing Director, has to be able to awaken the interest of the participating countries, has to maintain this interest, has to coordinate the varying needs and requirements of each country and industry group, has to constantly sell the services of the centre, and has to administer the centre internally in such a way that it functions efficiently and with positive results. This is no simple task, and the problems involved in each one of these obligations require the participation of able men with direct experience in the region's practical day-to-day activities. It requires also an efficient and modern internal organization, based on scientific principles of administration applied to the particular conditions existing in the country or region.

One of the essential tasks of the centre's management, aside from its obligations as a liaison body between the centre and the member countries and other regions of the world, is the elaboration of adequate work programmes and control mechanisms for the implementation of these programmes. The latter will of course be designed according to the particular requirements and interests of the region under consideration, and will probably follow a general development plan in which small-scale industry is integrated within the overall industrial scheme. In accordance with these terms of reference, particular selection criteria will be established internally in the centre for the acceptance or promotion of projects. Although it cannot be expected that the centre's management act in all cases with complete impartiality and according only to technical criteria for selection of projects, these should fit into the recognized needs and development possibilities of the region as a whole. This, particularly, is the advantage of having a regional centre and constitutes one of the principal arguments in its favor.

Programme scheduling in a regional service centre is of great importance, as is the control of the execution of the established programmes. It is, at the same time, a very difficult task since it is not always possible to foresee difficulties that can arise, no matter how much experience the centre's programme officers may have. However, within the general operations plan of the centre, and in accordance with recognized priorities and needs, programme scheduling can be effected and, if properly done, constitutes one of the main management tools of the centre's executives. It should be borne in mind, notwithstanding, that individual programme scheduling of projects or similar activities, as well as general programme scheduling of the centre, should be carried out on a team basis with the participation of all executives and experts involved, so as to arrive at schemes that are within acceptable limits of probability and that have the direct involvement and identification of the people that have to carry them out.

The obtention of the necessary financial backing from public, international or private sources, should be one of the principal preoccupations of the management of the regional centre. Without adequate financial backing, as described in a preceding section of this paper, the activities of the centre will be greatly handicapped and an unstable image will be created in the minds of its users. The contractual practices of the centre, therefore, have to reflect a basic solidity of the centre, but at the same time following serious business practices. This is to say that the users of the centre's services should not get the impression that the centre is a lucrative organization trying to make as much profit on them, but at the same time they should not think that the centre is a philanthropic organization or a public organization that has the obligation of giving free technical assistance and services to anyone who asks for them, even though many of the services should indeed be given to small-scale industries on a cost free basis. It has been found to be useful that any request for services be channeled

through a high official of the centre, who is responsible for determining the proper person within the centre's staff who can handle the request. At this time the request is carefully defined, the scope of work established, and the contractual system to be used determined. Excepting those cases in which the services to be rendered are given on a cost free basis, the proposal usually includes the objective and scope of the work, the means to be utilized, the time of completion, the total estimated cost and the method of payment. Depending on the particular centre's policies and its financial resources, payment is made once the work has been finished or report handed over, or proportional payments are made during the course of the work. In some cases, the centre may be willing to defer payment until the proposals have been put into operation or the plant has been established.

5. Cooperation and coordination

5.1 Inter-agency cooperation required for the effective functioning of the regional centre

Cooperation between national centres and the regional centre has already been discussed in previous sections; the type of inter-agency cooperation referred to in this section is between similarly organized agencies created to offer services to industry, agriculture, etc., or branches of international organizations operating in the same region. In the case of Central America, for example, there are a number of agencies - national and international, public, and semi-public -, that offer direct or indirect assistance to industry. There are innumerable examples where these agencies have not been able to function well due to conflicting areas of interest and duplication of efforts; one of the most important conditions for the effective functioning of regional centres dealing with services to small-scale industries, therefore, is the avoidance of duplication programmes on the part of different agencies. Duplication not only results in wasteful efforts exerted by a number of people and organizations, but in confusion on the part of the small-scale industries who do not know where they should go if they need technical services. Cooperation is a different matter, and if properly planned and organized can be of great use to increment the activities and the range of services that the centre can offer.

This cooperation can take the form of simple coordination of efforts, and mutual knowledge of the activities carried out by each agency through the existence of proper communication channels. Or the cooperation can take more direct forms, for example, in the designing of joint programmes, in the joint use of certain facilities, in the exchange of information and solution of technical problems, in temporary exchange of staff members, etc. etc. No matter what form this cooperation takes, there is no doubt that if there are common areas of interest, advantages will be gained by everyone concerned. Moreover, if there are areas of conflict, it is better to solve them through mutual cooperation than to waste the resources of the region and of the financing entities in the duplication of efforts.

One of the first steps to achieve this much desired cooperation between agencies, is to determine which agencies are operating in a particular region and what they are doing or are supposed to be doing. The next step is to establish the necessary communication channels so that information can be funneled into one

particular place, and an exact inventory can be taken of the situation. Once this is done, it is a matter of achieving a positive attitude among the participating agencies in determining the particular areas in which each one is best suited to work in the region, taking into account the needs of the countries and the legitimate interests of each agency. At the same time areas of cooperation are determined and the mechanisms for carrying out this cooperation are established. Finally, frequent meetings of a coordinating committee should be organized, in which the activities of the various agencies are made known to each other and possible conflicts are jointly discussed.

Coordination is especially important among the agencies operating in a particular region, but is also essential between the regional technical service centre and similar centres in other regions of the world. Experiences gathered in one region can prove to be extremely valuable for other regions as well, and much time and money spent on the solution of a particular problem can be saved if there is an adequate exchange of information and coordination of efforts. General policy making of the centres can also be greatly aided through a knowledge of programmes, operating problems and results achieved in other centres. As far as the application of particular technologies is concerned, the centre involved will of course have to determine the possible utilization of the same according to local conditions in its own region, but at the very least it can save much time and efforts in basic investigations if it can utilize the results obtained in other regions of the world.

5.2 Optimum utilization of foreign experts provided under technical cooperation programmes and organization of counterpart training

During the first years of a centre's existence, particularly in less developed areas of the world, great reliance has to be placed on foreign experts to staff it. Gradually, as local personnel becomes available and counterpart training has been completed, foreign experts are less indispensable to fill certain positions; in very specialized fields, however, more time may elapse until properly trained local experts will be found.

In order to fully utilize these foreign experts, it will be necessary to:

- a) determine, on the basis of previously established programmes, the exact requirements of the various positions to be filled;
- b) provide the necessary facilities and logistic support so that the experts can fulfill their obligations without obstacles;
- c) organize the work of the experts in such a way that they will have as much contact with local conditions, especially, in the beginning, so that their experience and knowledge can be applied beneficially taking into account the particular situation prevailing in the region;
- d) establish the necessary mechanisms for review of their work during adequate intervals, and
- e) promote their active participation in the carrying out of the established programmes and in the formulation of new programmes or revision of existing ones.

The above are some of the most important aspects that have to be taken into consideration, but other conditions and organizational aspects are also as important.

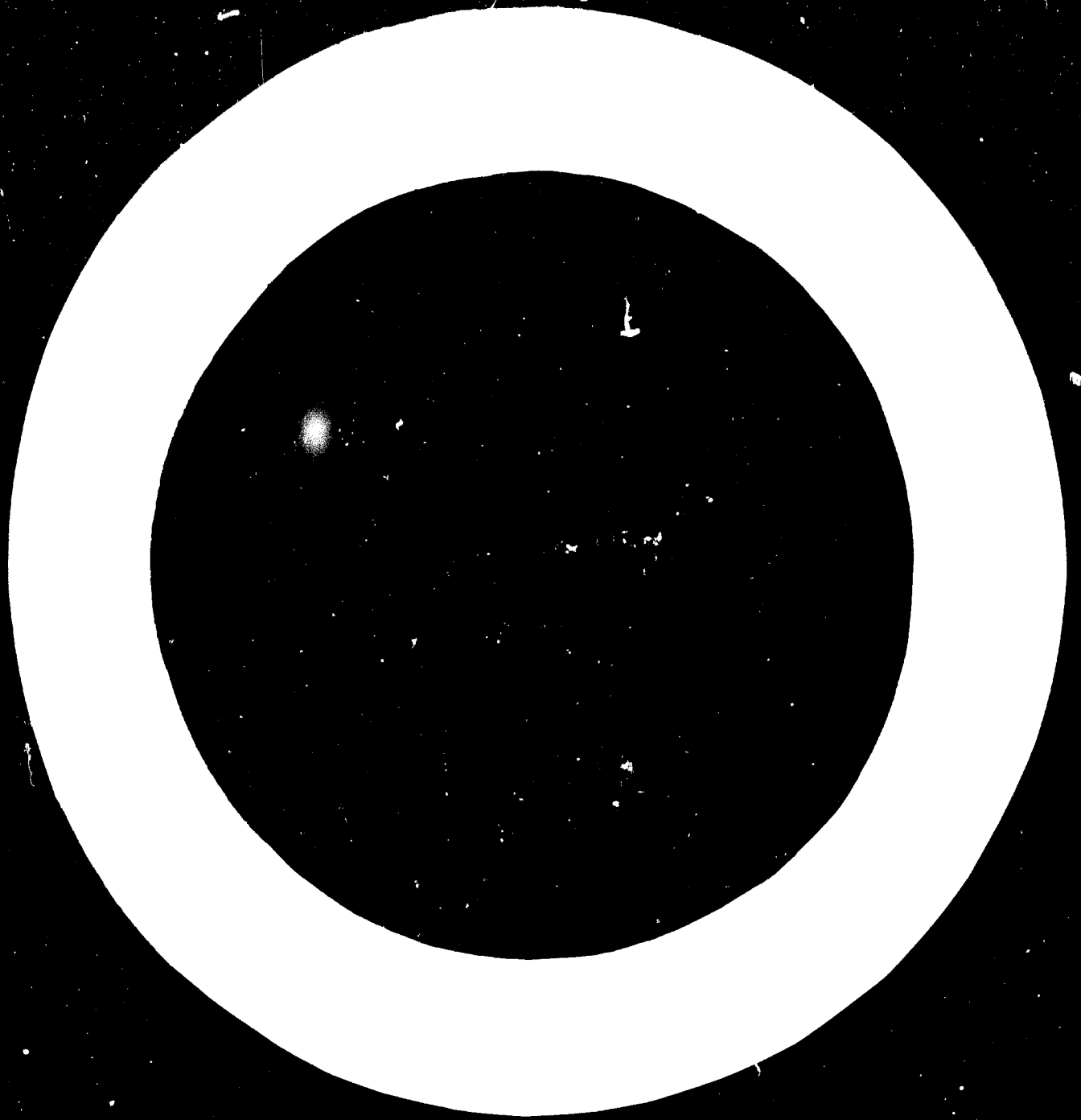
In order to achieve optimum utilization of foreign experts provided under technical cooperation programmes, great care has to be exercised in their selection. A regional technical service centre will require experts that not only are able to detect possible problem areas and suggest alternative solutions, but also implement the recommendations they formulate. In this sense, a good part of the experts will have to be practical men, with actual and direct experience in plant work; this experience, moreover, will have to be in plants that are similar in size and in conditions with those existing in the particular region where the centre is located. In many cases it is also indispensable that the experts have, aside from practical experience, the ability to analyze particular industrial aspects from the point of view of a potential investor, and more so if they will be involved in the carrying out of feasibility studies or similar tasks that implicate a certain amount of desk work. This latter aspect has been found to be one of the most serious handicaps in centres that, aside from providing direct technical services to operating small-scale industries, also carry out a certain amount of work in technical-economic investigations aimed at evaluating industrial situations or determining the feasibility of establishing new enterprises.

It is also of great importance that the foreign experts have a basic understanding of the local socio-economic conditions and that in their work they take into account the region's or country's particular problems and customs, especially in the human relations aspects. This of course involves previous briefings and preparation prior to the arrival to the country assigned to the foreign expert.

Taking into account the difficulties involved in finding experts that can assist regional centres in less developed areas, and especially experts that meet the necessary qualifications as outlined above for a particular situation, the technical cooperation organizations have to try to avoid recommending candidates that are not suited for the type of work required in the centre that is requesting assistance. This means that in many cases the cooperating organization will have to support the regional centre in the determination of the job specifications, especially where the centre itself is new and the people directing it are not yet aware of their exact requirements or do not yet have precise working programmes. In this respect, the experience of similar regional centres can be of great assistance in the initial stages of a new centre.

Organization of counterpart training should be placed among the top priority items of a regional centre. If after a few years of existence the centre has not started to develop its own personnel, and if it continues relying on foreign experts, it will have serious difficulties in maintaining itself; more so if its creation has been possible due to outside help, which can be cut at any particular moment. Not only is it detrimental for the region to have to rely on foreign experts, from the point of view of the high cost they represent in comparison with other types of staffing, but the opportunity is lost to train local personnel and in this way to increase the human investment of the region's population. If a centre's contribution to the development of the region is nothing else than having trained a good number of local experts, it already has achieved something very important. If, however, the development of a region will continue to depend on the advice of foreign experts, the centre will have done nothing more than to increase the degree of dependency of less developed regions on developed countries.

In this light it is of utmost importance that the regional centre provides the necessary conditions for counterpart training, not only within its own boundaries, but also by establishing long-range training programmes in cooperation with specialized universities, technical institutes, centres in other countries, etc. This may create an added financial burden for the centre, and there will always be opponents to the scheme, for this reason, but in the interest of the region and of the centre itself, it is certainly worth it. Moreover, for local personnel to be able to assimilate the experience and knowledge of foreign experts, it will usually be necessary for them to previously have attended a series of training programmes in educational centres and foreign industries; this means that the total number of years that the centre will have to rely on foreign experts increases, but in most cases there is no other viable alternative. Once the local expert returns to the centre, he can work side by side with the foreign expert for some time and gradually take over his functions. As time goes by, the centre will be nearly fully staffed with local personnel and foreign experts will only be required for very specialized activities and for short periods of time. The technical service centre will then be able to call itself "regional", in the full sense of the word.



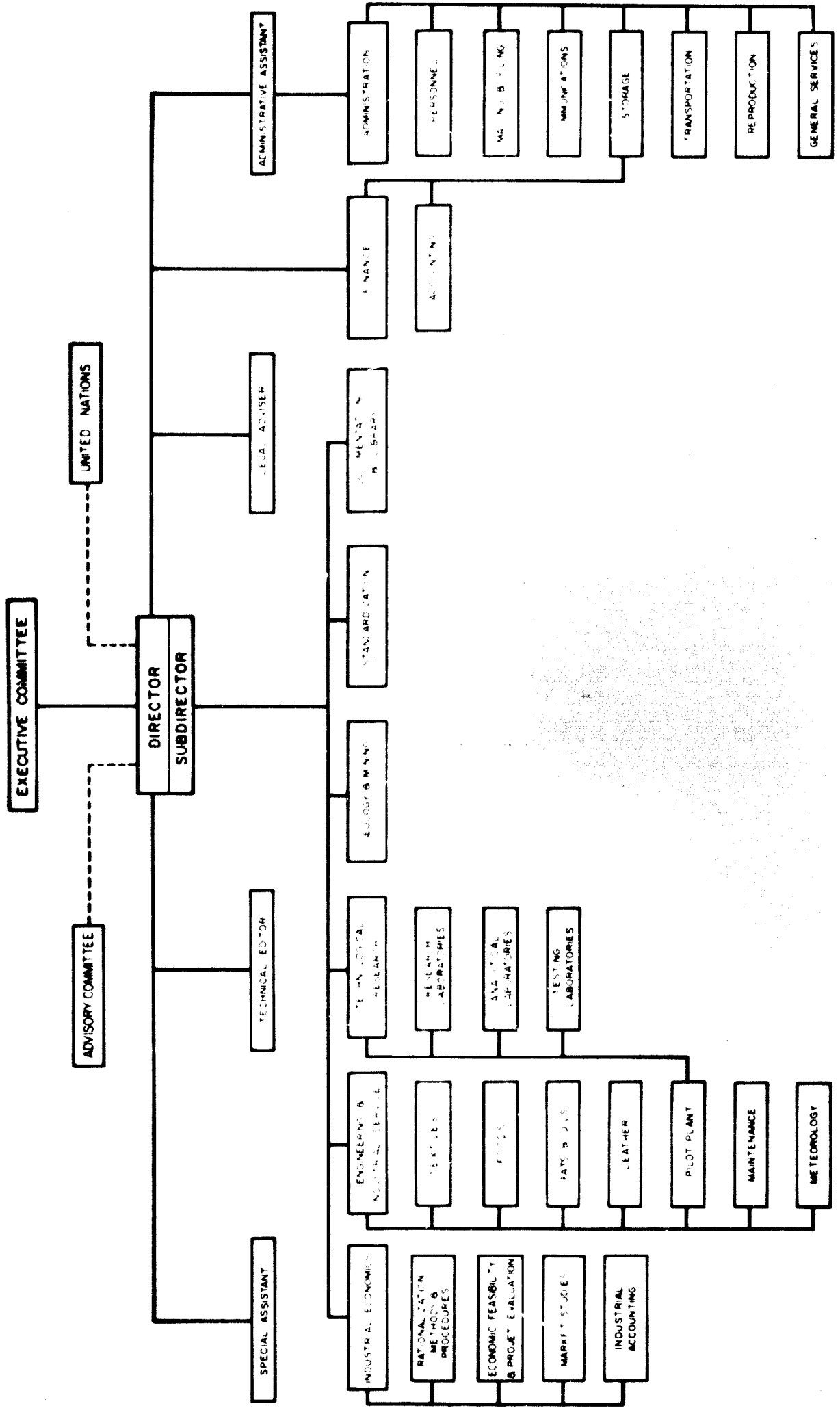
ANNEX I

**Organization chart of the Central American
Research Institute for Industry (ICAITI)**

ANNEX I

**Organization chart of the Central American
Research Institute for Industry (ICAII)**

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ANNEX II

Small-scale industries in Central America

(For illustrative purposes, and in the absence of official information, ICAITI has compiled from available sources the following tentative list of the principal groups of small-scale industries in Central America)

SMALL-SCALE INDUSTRIES IN CENTRAL AMERICA

Food industry and related products:

- Bakeries (bread, cakes, biscuits, etc.)
- Tortillas production and corn mills
- Manufacture of fruit and vegetable products
- Manufacture of meat products
- Manufacture of milk and dairy products
- Manufacture of various corn products
- Manufacture of sugar and sugar products
- Manufacture of canlies
- Manufacture of cocoa and cocoa products
- Manufacture of fish products
- Manufacture of edible oils, fats and related products
- Manufacture of jams, jellies, etc.
- Manufacture of ice cream
- Manufacture of soups
- Manufacture of rice products and rice milling
- Manufacture of cereals
- Manufacture of various preserves
- Manufacture of chewing gum
- Manufacture of gelatines
- Manufacture of pastes (spaghetti, etc.)
- Manufacture of mayonnaise, mustard, etc.

Carbonated beverage production

Alcoholic beverage production

Tobacco products manufacture

Yeast and baking powder

Coffee roasting

Manufacture of starches

Manufacture of spices

Clothing manufacture and repair

Textile production

Various textile fabric manufactures

Manufacture of cotten products, absorbent cotton, etc.

Shoe manufacture and repair

Tanneries

Various leather products

Sawmills

Wood products manufacture - various

Wood furniture manufacture

Manufacture of mattresses, beds, pillows, etc.

Salt extraction and preparation

Wax products manufacture

Candle production
Chemical products manufacture and pharmaceuticals
Soap manufacture and related products
Cosmetics manufacture and related products
Paper products manufacture
Printing presses and printed materials production
Cardboard products manufacture
Manufacture of firecrackers
Cement products manufacture - various
Brick and brick products
Manufacture of toys
Manufacture of paints, varnishes, etc.
Manufacture of animal feeds
Manufacture of baskets, brooms, brushes, etc.
Manufacture of hats, bags, ropes, etc.
Manufacture of jewelery and related products
Match production
Rubber products manufacture
Plastic products manufacture
Manufacture of cooking utensils
Manufacture of metal products for construction, metal windows, doors, metal structures, etc.
Manufacture of metal containers and related products
Manufacture of metal furniture for home and office use
Manufacture of metal handtools for agriculture
Manufacture of metal articles for construction, plumbing, etc.
Manufacture of batteries for cars
Manufacture of flashlight batteries, etc.
Manufacture of automotive parts (mufflers, springs, etc.)
Assembly of radios, television sets, etc.
Assembly of truck and bus chassis
Assembly of various metal products for industrial and home use
Assembly of electrical utensils
Assembly of bicycles and other two-wheel vehicles
Assembly of transportation equipment
Assembly of cooling and refrigeration equipment
Assembly of various apparatus for industrial use.



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