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UNITED NATIONS INDUSTRIAL
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Distr.
RESTRICTED
UNIDO/ICIS.36
26 July 1977
ENGLISH

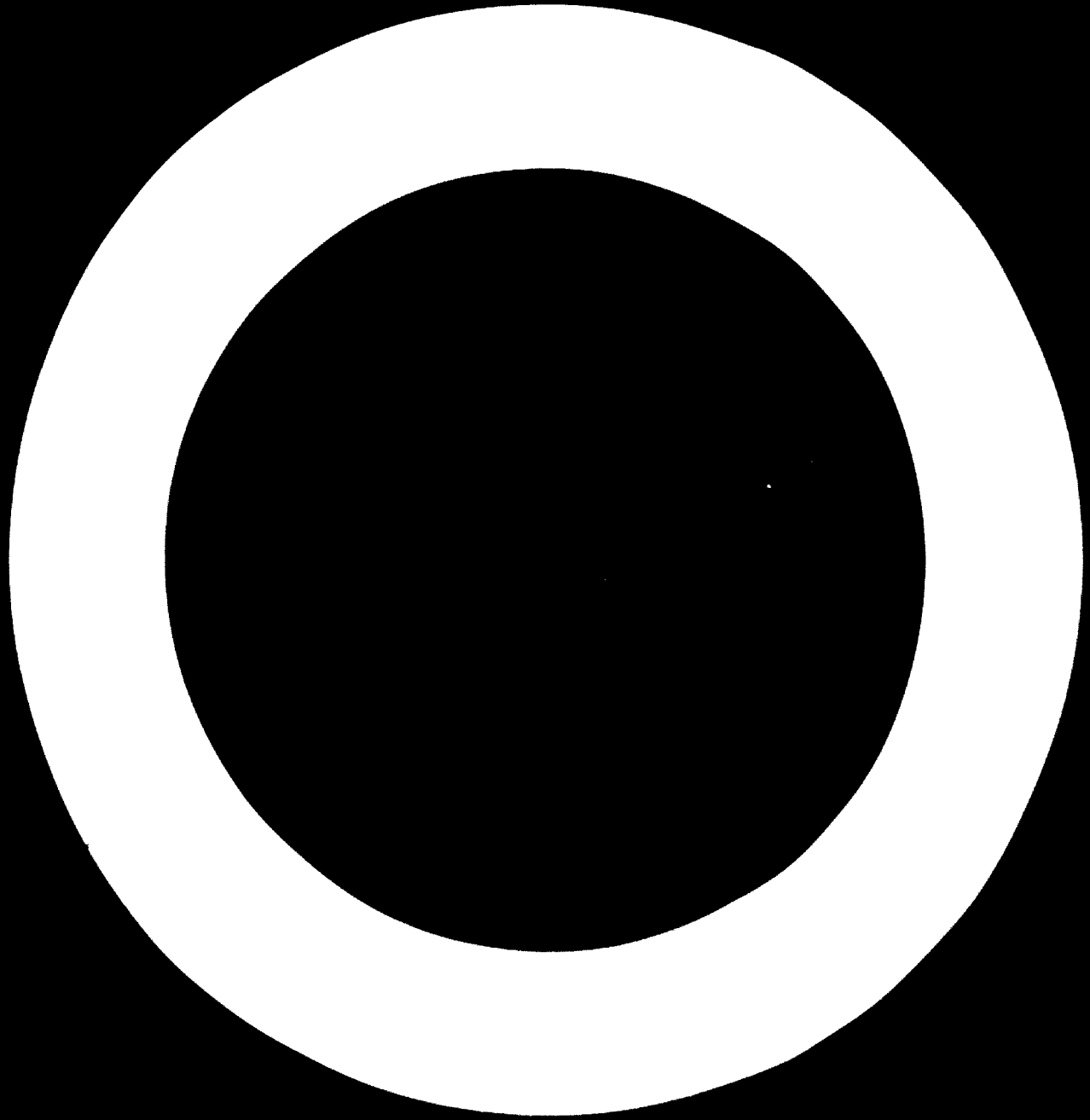
- 6 SEP 1977

INSTITUTIONAL INFRASTRUCTURE FOR INDUSTRIAL DEVELOPMENT ^{1/}

prepared by

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P R E F A C E

During the past few years international discussions and declarations have emphasized the need to supplement political independence of all countries by improved economic freedom and development. Industrialization is an essential element in that economic development. The immediate aims are to increase the industrial capacity of developing countries and seek a greater balance of industrial output among all nations including those which are now least developed. Yet industry is not an end in itself but only a means of achieving more basic objectives: to improve living standards, broaden the distribution of income, and promote greater self-reliance among countries which have been excessively dependent on others.

A. The New International Economic Order and the Lima Declaration

In April/May 1974 the United Nations General Assembly held a special session to study the world-wide problems of raw materials and development. It found that the existing international order is in direct conflict with current developments in international political and economic relations. The developing world has become a powerful factor which is making its influence felt in all fields of international activity. Active, full, and equal participation of the developing countries is necessary in the formulation and application of all decisions that concern the world community.

The session adopted a "Declaration on the Establishment of a New International Economic Order." The general goals of that Economic Order were to be the correction of existing inequalities and injustices among states, elimination of the widening gap between the developed and the developing countries,

and insurance of steadily accelerating economic and social development for the future. Specific measures were proposed to lead toward those goals.

The accompanying Programme of Action emphasized inter alia, that all efforts should be made by the international community to encourage the industrialization of the developing countries in order to increase their share in world industrial production. Special mention was made of the need to develop local processing of raw materials, facilitate the transfer of technology, train industrial manpower, expand imports, and control transnational corporations.

An important step toward implementation of the industrial aspects of the New Economic Order was taken at the Second General Conference of UNIDO, held in Lima, Peru, in March 1975. A resolution of the United Nations General Assembly which immediately preceded that Conference had entrusted it with establishing the main principles of industrialization and defining ways in which the international community might co-operatively promote through industrial development the establishment of a new international economic order.

The Conference adopted what is known as the "Lima Declaration on Industrial Development and Co-operation." That Declaration stated a "firm conviction of the role of industry as a dynamic instrument of growth essential to the rapid economic and social development of the developing countries, in particular of the least developed countries."

It set a number of goals for the industrialization of developing countries, including an increased share by them in total world industrial production. Although the developing countries

had 70 % of the world's population they generated less than 7 % of world industrial production. A target of 25 % of such production by the developing countries by the year 2000 was set.

The Lima Declaration was supplemented by a Plan of Action, which set a number of guidelines which countries at various levels of development should follow in working toward the goals of the Declaration. These called for internal action by each country as well as co-operative action in their relations with one another.

B. Industrial Institutions as Tools for Development

National policies and strategies of industrialization need to be supported by a variety of functional activities, which usually are provided by organized institutions. The goals of the New International Economic Order and the Lima Declaration mean new responsibilities for industrial institutions. The Lima Declaration particularly called for the "development and strengthening of public, financial and other institutions in order to protect and stimulate industrial development in the developing countries." It noted a number of areas in which institutions were needed. The listing is neither exclusive nor complete, but specific mention was made of:

- a) Introduction of institutional machinery for formulation, execution, appraisal and adjustment of long-term industrial plans and strategies;
- b) Establishment of agro-industrial research centres;
- c) Intensification of manpower development programmes and the professional training of management staffs;

- d) Stimulation of research, technological adaptation and innovation, industrial information and standardization;
- e) Adequate role for the State in direction of industrial development and the private sector in the expansion of industries;
- f) Establishment and strengthening of machinery and institutions to regulate and supervise foreign investment and promote the transfer of technology;
- g) Technical assistance toward (i) the development of structures for professional and middle management training and for research laboratories, and (ii) the financing of integrated training programmes and scientific research;
- h) Subregional and interregional action toward creation of the necessary institutional machinery for consultation and co-ordination to obtain better terms for acquisition of technology, expertise, licenses, and equipment by developing countries;
- i) Strengthening of regional institutions to promote economic co-operation between developing countries.

The totality of industrial institutions should form a service infrastructure and work as a comprehensive industrial service support system. It is not sufficient that all the needed institutions exist; they must provide effective service. A distinguished minister of a developing country recently complained, "My country has all the institutions it needs, but they don't work."

If institutions are to fulfil their responsibilities in development toward the New International Economic Order, they must provide satisfactory answers to several questions:

(ix)

Is their structure adequate for performance of those responsibilities? Are they individually properly defined and organized, and do they jointly form a cohesive service system?

Are their programmes properly oriented toward national development goals, and do they concentrate sufficiently on the new industrial priorities such as increased national processing of natural resources, development of small-scale industry, and expanded training of industrial manpower?

Do the actions of these institutions result from consultation with industry; are they fully integrated with industry's operations; and do they practically meet industry's needs?

Are the attitudes of the institutions and their staff based on concepts of co-operative dynamic service to industry, to the users of industrial products, and to the people of the country as a whole, as well as on an appreciation of the international implications of their institutional work?

C. C. Aims and Scope of the Present Study

When UNIDO's International Centre for Industrial Studies was established in 1976, one of its priorities for study and research was to analyze the institutional infrastructure which exists or is needed to support industrialization in the developing countries of the world. The present document results from the initial part of that project, carried out from April 1976 to July 1977 by Dr. Laurence L. Barber as a consultant to UNIDO, in co-operation with the Centre's Regional and Country Studies Section. It will be followed up through more detailed enquiries during the next two or three years.

(x)

A basic aim of the study has been to review the progress which countries are making in building and strengthening institutional structures adequate to support their efforts toward industrialization. At the same time a search has been made to identify ways in which industrial institutions in various countries have especially been able to facilitate industrial development, as well as to note deficiencies which have hampered progress and need to be remedied. This may indicate how improvement can be brought about in these institutions and hence in industrial development.

It has of course not been possible to analyze all of the vast number of industrial institutions in the many developing countries, nor to study in depth institutional action to carry out all of the wide range of functions needed for industrial development. Instead it has been necessary to be selective.

Much information was obtained from numerous documents already available as a result of UNIDO's continued interest in various aspects of institutional support to industrial development. That support is described in Annex I, and a selection of UNIDO documentary titles is given in Annex II.

During 1976 and early 1977 the consultant and members of the staff of the Centre visited a number of countries to interview government officials, international assistance personnel, and others concerned with industrial development. Each trip also included visits to regional international centres. Interviews were carried out in:

Afghanistan	Republic of Korea	Thailand
Bolivia	Senegal	Trinidad and Tobago
Haiti	Somalia	Turkey
Hong Kong	Sri Lanka	Venezuela
Jamaica	Tanzania	

Supplementing these visits, local consultants prepared in-depth reviews of industrial institutions, procedures, and problems in Ecuador, Egypt, El Salvador, Ghana, Nepal, and the Philippines, while a UNIDO regional adviser made a similar study of institutions in Bangladesh.

Thus a large number of government officials and other individuals throughout the world have contributed to this project. Special thanks is due for their helpful information and their interest. Needless to say, they should in no way be held responsible for the analyses and conclusions of this report.

From the outset it has been recognized that every country in the world differs substantially from every other, in stage of development, in pattern of industry both present and planned, and in political and administrative system. The industrial institutions it needs and desires, and the way they are organized and operated, must be individualized by the country itself. Because of this, no world-wide model would be acceptable, and even any series of alternative models would require country by country modifications to be useful. Hence we have presented no models but instead have concentrated on samples of experience and syntheses of advice from which one can draw as the need or particular situation arises.

UNIDO expects that this study of industrial institutions will be useful in a number of ways. For instance:

a) The highlighting of a number of successful, innovative, and experimental forms of institutional action should encourage other countries to borrow from such examples, amending them to fit local needs. They may in turn develop still newer and better examples for the future.

b) The statement of a number of problems found in several or many countries should at the very least draw the attention of national officials who are concerned with the planning, supervision or operation of industrial services. They should review their own institutions to see if these problems are to be found, and be advised to take corrective action. Ways in which they might deal with some of these problems are suggested in the present report.

c) Strengthening of industrial institutions often requires outside technical advice and help. Assistance available to any country is generally more limited than the totals needed, while that which can be supplied by any donor is generally less than the totals requested. Hence both country and donor must set priorities. Within the past decade the role and resources of industrial institutions in most developing countries have changed markedly. The present UNIDO study may well suggest areas which no longer require priority in assistance, as well as new or unnoticed ones which now need support.

CHAPTER I

INDUSTRIAL INSTITUTIONS AND NATIONAL DEVELOPMENT

The setting of goals for industrial development means that ways must be found to stimulate and accelerate that development. This is true whatever a country's present degree of industrialization, but it is especially important for the less industrialized but developing countries. If industry is to grow and operate productively it must not only be planned and promoted; it must also receive a variety of infra-structural supports. Some are physical. Others are part of the country's general economic and social structure. Still others are institutional, consisting of organized promotional, servicing, and regulatory activities, both technical and administrative, which can foster and improve the development of industry. It is with these institutions in developing countries that the present UNIDO study has been particularly concerned.

Industrial institutions are never ends in themselves. They have reason to exist only as they meet the demands of existing industry or are tools for policies of industrial development. Hence their creation, objectives, structure, and programmes must be measured against their utility in accomplishing those ends. One of the findings of the present study, noted in Chapter II, has been that the linkage between policy and institutions needs to be strengthened. Institutions have been created without sufficient consideration of what their role should be in carrying out adopted policy; institutional programmes have been established without sufficient thought as to whether they are in accord with overall national industrial policy or are the most effective ways of implementing that policy.

Improvement of this linkage is especially important in the procedures of national planning. Many countries have not yet created comprehensive industrial policies leading toward the goals of the Lima Declaration, nor sufficient to serve as a basis for detailed industrial planning. Development itself is dynamic, and as industrial conditions change the needed role of institutions also will change. In most countries much greater provision is needed to enable those who are directly concerned with industry to participate in preparation of national economic plans. Participation by industry itself, whether public or private, is particularly inadequate. Once a plan with specific industrial projects has been prepared and adopted, the existence of adequate machinery for supporting and following up the implementation of those projects becomes of major importance. Underlying many of these real problems is the lack of recognition in nearly all countries that the pattern and activities of institutional infrastructure should also be an integral part of industrial development plans, projected as completely and carefully as the industrial projects themselves.

Most developing countries do not have a rational and comprehensive institutional infrastructure for industry, but merely a random collection of institutions. As emphasized in Chapter III, this is one of the most serious and most widespread defects in industrial support. In the absence of any planned, balanced and integrated system, each institution is created and operates alone, with little incentive to co-ordinate or co-operate with others, and often with motivation to compete. Gaps or duplications are common, and it becomes impossible to marshal a country's resources for a concerted dynamic promotion and support of industry.

Even within individual institutions it is difficult to create and sustain a dynamic, flexible and imaginative programme of activities. Each institution must be so organized and so

managed as to be able to carry out its function or functions effectively. As Chapter IV shows, industrial institutions whether public or private are subject to the usual disabilities of bureaucracy. In developing countries new institutions face a number of problems in finding qualified staff and in building services that can be most useful to industry which is itself new. One special difficulty is in determining the proper location for decision-making, securing adequate information on which to base decisions, and ensuring that they are properly implemented.

To be effective tools for transforming policy into action, industrial institutions almost by definition must be intimately related to industry itself. Industry should participate in the framing of industrial policies and plans, take part in the programming and management of institutions, and be an active partner in institutional services and actions. As emphasized in Chapter V, this is rarely the case, and the gap between institutions and industry is a matter which ought to be of deep concern to developing countries. Industry in most countries has a number of organizations which should be representative of its interests, but those organizations are usually weak and are limited in outlook and resources. Rarely is there sufficient mutual outreach between them and industrial institutions. Of particular concern is the absence almost everywhere, of machinery for expression and participation by industry from the increasingly important public sector.

The functions of industrial institutions are numerous, and it has not been possible in this limited study to consider all of them in depth. However, some have been selected as examples of the operations of institutions and the types of

problems indicated in those operations. Chapter VI deals with several single-function activities. In many cases one particular institution is charged with special attention to the function; in other instances it may be one of the varied responsibilities of a multi-functional institution.

If the volume of industry in a country is to increase, some institution is needed to promote new industry, encourage investment, and assist in the movement from idea to realization. Closely allied to this is the provision through institutional means of financing by direct investment, by loans, or by assistance in seeking financial support. Some countries have a reasonably strong development body which performs one or both of these functions. Others rely on the ministry of industry, planning agency, or chamber of commerce to promote industry, and assign industrial financing as one of the responsibilities of a more general banking institution. Again the linkage between policy and action is often weak, so that industrial development policy does not receive the effective implementation it should. In some cases linkage between promotional and financing institutions needs strengthening.

Developing countries are in a position of needing to secure industrial technology from more developed countries. It is through the process of transfer and adaptation of technology that innovations gradually move from one country to another for industrial use. Industry in a developing country needs institutional machinery to assist in the selection of most beneficial technology, in its adaptation, installation and use, and in the development of newer and more useful technology. Much of this is a scientific, technical, or research matter, but other types of institutions are also concerned. When technology is acquired from abroad, its financing must be examined, monitored, and facilitated. The conditions for that

financing must be studied, to safeguard the interests of the recipient. Institutions supplying advisory and consultancy services must assist in selection, adaptation, and problem solving. Industrial personnel must be trained in operation of new technology. Underlying all such actions are policy decisions regarding sources of technology, acceptable degree of complexity, adaptation to local social customs, and other matters. Indeed, a declared technology policy is often required.

Research is intimately linked to the development and transfer of technology, and although not always sufficiently a recognized need of industries in developing countries yet is nonetheless one of the stronger institutional functions. Most research institutes in developing countries are multipurpose, but with the growth of industry specialized institutes are often created to meet the needs of particular branches of industry or to study particular kinds of materials. Although researchers appear aware of the need to emphasize application and problem-solving rather than merely basic investigation, there is need to strengthen relations between research institutes and industry, in order to give those institutes greater support and to provide industry with the most practical and needed research programmes.

As industry grows in a developing country there is an increasing need for some institution to establish and monitor the standards of industrial products. There is need to protect domestic consumers, and at the same time to establish export quality. Standardization is not only a matter of technical specification; where most successful it has a high public relations component. Industry has not always become aware of the savings in cost and the gains in productivity to be derived from more careful manufacturing to uniform standards. Another problem facing new standards institutions is the multiplicity of standards to be framed, with decision as to how far foreign or international standards can be adopted, or how much local adaptation is needed. Quality control both in institutional

laboratories and in plant is an associated part of standards work, and this calls for advisory service and training. In turn, production to standards requires instruments and primary standards of measurement in the allied field of metrology, expensive and complex for a developing country.

Although nearly all industrial support functions involve advice to enterprises, developing countries rarely have one specific advisory or extension institution. Yet industry, especially in a developing country, needs frequent and varied assistance both on technical matters and on managerial problems. Its two major difficulties are in knowing where to find the needed advice or help, and in being able to pay the costs of that help. Institutions themselves have problems in finding and financing the varied and qualified staff required, since the demands of industry can cover such a wide range, since advisers must be more knowledgeable than those being advised, and since industry is often located far from the institution. A special area of concern is the organized type of advice known as consultancy, where developing countries are endeavouring to build their own groups of experts and reduce dependence upon foreign consultants. These efforts encounter difficulties in securing qualified local consultants, supporting their use in competition with foreign firms, and building their reputation with industry.

Industry needs not only technology and advice; it must have skilled manpower in a variety of specialties. In developing countries this is rarely available, especially in the volume required by growing industry. As a result, a massive amount of training is necessary. Fundamental to this, but often not sufficiently available, is data concerning the supply of skills already on hand or being trained, and the expected needs of industry.

One bottleneck in training is the shortage of qualified trainers, for whose skills industry competes. Nonetheless, developing countries have made unusual efforts in training, and many have now reached the point where, aside from shortages at the skilled labour and technician levels, they are becoming able to put greater concentration on quality and upgrading of skills and more careful fitting of training to the specific needs of industry.

As developing countries increase their industrial production, marketing becomes a function on which institutional assistance is needed. This is especially true of exporting, where individual enterprises may lack necessary information and contacts. Most developing countries now have some export support machinery, but often its effectiveness is less than it should be, because the country lacks a clear-cut export policy, or because the institutions to promote exports are not well designed, or simply because those institutions and their staff lack adequate experience. More than with most industrial support functions, export promotion is an area of experimentation and improvisation, where international assistance and professional interaction can be of special value.

Many of the goals of industrialization as set forth in the Lima Declaration and in national development plans are of a multifunctional nature. They involve targets and programmes which require action on a broad front, usually by several industrial institutions at once. A clear specification by government of its goals and plans and tools is thus necessary, as well as effective co-ordination of all institutions concerned. Chapter VII considers several of the more important types of programmes requiring multifunctional action which are common throughout the world.

Small-scale industry, along with handicraft or cottage industry, is an important part of the economic structure of nearly every developing country, and its growth and strengthening is thus a major industrial goal. Adequate support to small-scale industry is made difficult because of the sheer number of enterprises to be serviced, as well as the limited technical and managerial resources available within those enterprises. Their needs for advice, information, and direct help are great, and frequently are beyond the ability of institutional resources to answer. Few developing countries have yet been able to focus service efforts in a planned coherent programme to aid small industry. Generally the limited available assistance is fragmented and uncoordinated. Yet a number of countries are experimenting with use of instruments such as industrial estates or industrial co-operatives, which suggests that greater exchange of experience and co-operation from country to country could be of great value.

Developing countries are especially concerned with the most desirable utilization of their natural resources, and one purpose of industrial development is to increase their processing of local raw materials into advanced industrial products. Along with mineral resources, most developing countries find agricultural crops to be a major base for industry. Hence there is an essential interdependence between agriculture and industry, as domestic industry provides tools, fertilizer, and other inputs for agriculture, which in turn provides raw materials for agro-based processing industries. Because of these forward and backward linkages, industrial services to agro-industry need to draw upon the institutional resources of the agricultural sector as well. This broadens the range of planning, action, and co-ordination required and makes delivery of adequate services more difficult. At the same time, agro-based

industry, which needs the same variety of service support as does all other industry, has additional service needs to meet special problems of production planning and techniques due to unpredictable variations in the volume or nature of the agricultural crops which are its raw materials.

The public industrial sector is of substantial importance in most developing countries, and in many of them it supplies the major proportion of industrial production and employment. It therefore warrants a sizeable part of industrial institutional attention. Yet the majority of developing countries have not created complete and coherent servicing systems for their public industrial enterprises. One reason for this is the frequent lack of a long-term plan for the organization, as well as the development, of the public sector itself. Enterprises are scattered among a number of ministries, with little organic contact with service institutions. The larger public industries or their public holding corporations begin to build their own services but do not always link them with existing general industrial service institutions. The institutions themselves sometimes are not able or willing to reach out as successfully to public industry as to private firms. Public industry in turn lacks almost completely any devices through which it can participate and make its needs known in the programming of industrial institutions and even in the planning of industrial development as a whole.

One of the phenomena of recent years, of special concern to developing countries, has been the concentration of vast numbers of people into metropolitan centres. At the same time, social and economic services have become more completely available in large cities than in rural areas, and industry has settled in the larger urban centres. Because of this a growing number of countries are giving special attention to the development of

industry in provincial cities and rural areas, while some are actively trying to prevent additional industry in central cities or even to force existing industry out to other parts of the country. Industrial institutions are affected by policies of devolution and rural industrialization in several ways. To the extent that those policies set new priorities for industrial development, the pattern of institutions may need to be adjusted to follow and support those priorities. Similarly, institution programmes of promotion and servicing may need to be changed to concentrate upon those new priorities. To facilitate this, existing geographical points of delivery of institutional services may have to be adjusted, with greater use of regional and field offices and staff. Devolution also calls for action by a variety of institutions, since it needs financing, training, marketing and other types of support. As it is a relatively new trend in government industrial policy, institutions have not yet adjusted fully their service programmes and geographical structure, nor have countries yet been able to link together a pattern of institutional participation to carry out a clear policy of deconcentration.

Unlike the subjects of many other multipurpose industrial programmes, industrial estates are a tool for accomplishing other programmes of industrialization. Two of these are paramount: deconcentration, and support to small industry. Industrial estates are an advantageous way of stimulating the location of industry in places the government wishes. As such they are a convenient aid to policies of deconcentration and of spreading industry widely throughout the country. They are also of special advantage to medium and small industry, which usually finds it difficult to secure and finance adequate plant facilities and services. Partly because of this dual utility, the organization and operation of industrial estates shows no clear pattern from country to country. There is also insufficient definition of objectives, which often has led to

ineffective management and financial loss. One interesting trend, where goals are clear and management alert, is for industrial estates to move beyond merely providing physical facilities to become true industrial service centres with growing functional support from industrial institutions.

The Declaration on the New International Economic Order and the Lima Declaration and Plan of Action emphasize that world economic and industrial improvement cannot be through individual national action alone. It must result from co-operative action by countries with one another. Much of this would be through interaction of developed and developing countries, but much must also be through joint through joint action of developing countries with each other. Given the large number of those countries, their geographical spread, and their various circumstances, a large part of that action must be on a regional or even sub-regional basis. Although regional institutional action to carry out industrial support functions is relatively new, it is gradually beginning to take place and grow. Chapter VIII describes a number of ways in which this is occurring.

Aside from the benefits of pooling efforts and sharing experience among countries at a somewhat similar stage of development, regional or subregional co-operation in industrial promotion and support can be especially helpful if it stimulates response to the needs of least developed countries. Their institutions as well as industry are almost always at an initial or rudimentary stage, and they can profit from the recent experience, the experiments, and even the mistakes of their more developed neighbours. While the developing countries of the world are becoming aware of this responsibility and opportunity, actual institutional assistance by them to the least developed countries is still only sporadic. Its expansion may be an appropriate

activity for many of the new regional industrial organizations.

Many of the conclusions reached in this study are summarized in greater detail in Chapter IX with a number of recommendations for the improvement of industrial infrastructure. In no way do these form a blueprint or complete programme for change, either generally or for any individual country. They are preliminary and indicative proposals, which any country should consider in the context of its particular development conditions and industrial needs.

CHAPTER 11

THE ROLE OF INSTITUTIONS IN INDUSTRIAL
POLICY AND PLANNING

A. The Structure of Policy and Its Application

National development is a goal of practically every country. However, it does not occur merely for the wishing. It must be planned and worked for. That planning must be based on a series of economic and social goals and on policies designed to attain them.

The new commitments and responsibilities resulting from the Declaration on the New International Economic Order and the Lima Declaration make broad forward thinking and planning essential. One major need in nearly every developing country is the creation of a small but highly able "think unit" which should have the responsibility of a global and long-range attitude toward economic and social development. This unit would analyze the implications for its country of such expressions as the Declarations. It would interpret those implications to the nation, and lead it toward appropriate domestic action. At the same time it could lead in prompting national attitudes and instruments toward effective participation in further international discussion and action.

It is not sufficient, however, for a country merely to set development goals and policies. It must prepare concrete means or strategies to attain those goals by carrying out those policies. Strategy has value as a broad long-term guideline, but even this does not produce direct or concrete results. This can only be done through detailed plans of economic development, consisting of specific projects and actions. These projects and actions require instruments of persons and other resources to carry them out. These resources must be organized, in a form which we call institutions. Thus, the ultimate tools of the entire process, and of economic development as a goal, are these implementing institutions.

B. Industrial Infrastructures

All industrial establishments, whether public or private, require support from, and interrelationships with, outside activities. No enterprise, even the very largest, can be completely self-sufficient. Even in the most free-enterprise countries industry cannot escape being part of a total economic pattern, each sector of which affects the others.

The totality of the support services required by industry is called the "industrial infrastructure", or more accurately the "infrastructure for industry". In fact there are several forms of infrastructure. Each is composed of a number of services which must work in balance and harmony. Thus it is most accurate to define industrial infrastructure as being composed of several related "comprehensive industrial support systems".

(i) Physical Infrastructure

Many of these outside supports are physical. An industrial plant requires access to transportation, to bring raw materials in and to take products out; hence roads, railways and ports are essential. Generally a plant requires outside supplies of water, electricity, and often other inputs such as natural gas. The employees must have housing, transportation, and services such as shops, clinics, schools and recreation facilities. All of these can be considered as part of the physical infrastructure without which an industrial enterprise cannot operate effectively.

While an extremely large industrial plant may provide for itself much of that infrastructure, this is clearly beyond the resources of medium or small industry, especially in a location where those services are not already available nearby for other users. In most cases, especially in developing countries, the physical infrastructure must be provided through government action.

(ii) Socio-Economic Infrastructure

An economic and social infrastructure is also required for successful industrial action. Industry cannot grow and operate without a supply of literate manpower, without trained skills, without experience in organized group production, without knowledge in entrepreneurial direction. At the same time, industry depends upon a complex of organized subsidiary systems for supplying raw materials, for maintenance and repair of plant, for sub-manufacturing and sub-assembling, for marketing and advertising, etc. Industry in developed countries relies heavily upon this infrastructure, which is part of the total national socio-economic complex and always available as needed. In contrast, more than generally recognized the absence or insufficiency of such an infrastructure inhibits the establishment, growth, or success of industry in a yet-developing country, especially in areas outside a metropolis.

As with physical infrastructure, the socio-economic support generally must be provided by government. Much of it is a long-term task. It involves education in literacy, in group action, in supervision and management, and in technical skills. It requires organization and stimulation of agricultural or extractive sources of supply or importation. It frequently calls for development of a market economy with structures and facilities for cash, credit, and wholesale and retail sales.

Nearly all of these programmes concern themselves with improvement of the economy or society as a whole. They will benefit all sectors, such as agriculture, commerce,

mining and fisheries, as well as industry. Thus while essential to industrial development, a country's general socio-economic infrastructure, like much of its physical infrastructure, is not purely or even primarily an industrial support structure.

(iii) Institutional Infrastructure

All countries do have, however, a mass of organized action intended to provide specific support to industry. This support is carried out through a variety of institutions which participate in the process of transforming a government's economic hopes into operational industrial plants producing capital or consumer goods.

In developing countries the overwhelming proportion of this support is provided through governmental institutions. However, in some cases this is supplemented by activities of groupings of employers or workers and by private agencies such as consultants, training bodies, laboratories and banks, or by co-operative organizations.

Frequently, the term "industrial services" is used as equivalent to "industrial institutions." In many governments it is now common to designate a department or bureau as a "Service", and hence there is an added tendency to speak of "industrial services" when the real subject is the offices which are providing the services.

A question is sometimes raised whether a ministry or division thereof can be considered as an institution. We have employed a pragmatic rather than purist definition. Industrial services are performed by a variety of bodies. Some are private associations. Others are public corporate authorities, agencies, banks, or boards. A few are a public/private mixture. An important proportion of industrial services are provided by ministries of industry or their subdivisions, or by other ministries. There is no logic inherent in the function or service itself why one form should be chosen, or is chosen, over any other. Nor would it be logical for us to study a service in country A provided by a chartered board, while ignoring the identical service in neighbouring country B because it happened to be delivered by a section of the ministry of industry. Even the argument that ministry personnel are unique because of their status and restrictions as civil servants has decreasing validity in developing countries where the distinctions between the traditional civil service departments and the burgeoning newer "public authorities" is rapidly blurring and beginning to vanish.

Some industrial institutions, especially those of government, may act to regulate industry rather than directly helping or assisting it. While such regulations may in the long run benefit industry by providing checks against ill-advised actions, nonetheless the immediate reaction of industry is that it is a restriction rather than a service.

A distinction might be made between support of "industry" as such, and support of "industrial development." The former can be fixed or passive, involving merely the operation of on-going programmes and relationships, or at most reacting to demands from existing industry. Industrial development, on the other hand requires dynamic and innovative support by institutions performing an active role of leadership.

It is often noted that the greatest administrative tension in changing from colonial to independent status has come from the contrast between the older emphasis on maintenance of law and order and the newer concentration on economic and social development. Industrial development obviously calls for an emphasis on promotion and servicing, and any regulation of industry has to bear a clear relationship to development needs. With this in mind, it is understandable that the terms "institutions" and "services" are so often used interchangeably, on the assumption that even where the institution's activity is that of regulation it should have a visible ultimate service benefit and justification.

C. Functions and Institutions

An institution normally exists primarily to carry out a particular function or group of functions. In the case of industrial development a number of supporting functions are necessary in developing countries, supplied through the institutional infrastructure. Table I (next page) shows the range of functions which are commonly needed and which are carried out by the institutions with which the present study is concerned.

The creation of institutions for these functions varies, of course, completely from country to country. In the first place, selection of functions to be carried out, and the emphasis given to each, should depend upon the government's basic decisions on industrial policy and strategy. Obvious examples would be the functions (and thus the institutions) of support to small industry or to export of industrial products. Each of these clearly would depend upon the extent to which national policy wished to give weight to such routes of development.

In addition to selection and emphasis on functions, the creation, form and number of institutions to implement them depends on a myriad of local factors. Many of these will be considered in Chapter IV. At this point it is important to recognize that the pattern and mixture of institutions existing in any given country is unique to that place and time, and in almost all cases is the result of haphazard growth rather than systematic planning.

In this lies a major defect, for there is a growing paradox between the increasingly successful efforts of developing countries to prepare integrated economic development plans, compared to the unco-ordinated mixture of institutional instruments through which those plans are to be implemented.

T A B L E I

Industrial Development Functions

which may call for

Industrial Institutions

Planning:

- Development planning for industrial sector
- Preparation of feasibility studies
- Review of project proposals
- Implementation of industrial plans and projects

Promotion:

- Investment information and stimulation
- Provision of incentives
- Location and relocation of industry; industrial estates
- Advice and aid in financing
- Supervision of industrial credit

Use of Technology:

- Information
- Development and transfer of technology
- Industrial research
- Supervision of patents and licensing
- Setting and enforcing of standards
- Laboratory testing and quality control

Training and Supply of Manpower

Advisory Extension Services and Consultancy

Marketing Assistance and Export Promotion

Industrial Regulation and Legal Supervision

D. Industrial Institutions and National Planning

(i) Formulation of Industrial Plans

We have emphasized the role of industrial institutions as tools of economic policy, which is ultimately expressed in national development plans and in detailed projects and work programmes. It should not be assumed that this can be a process without feedback or that these institutions or industry itself should be passive instruments in that process.

Industry and institutions form a substantial repository of practical data and valid opinions as to current industrial conditions and as to the bounds within which industrial development can occur. Their view may be more parochial than is the optimistic overview of the planners. Nonetheless, in large part they are the vehicles through which any planned industrial changes will have to be accomplished. To the extent that their contributions are enlisted at an early stage, the plan becomes to a greater extent their product and they develop a greater commitment to its successful implementation.

In practice, the preparation of the industrial sector part of a national development plan is likely to take place in one of two ways. In countries where the central planning body is weak, a sectoral draft may be prepared by the Ministry of Industry or the Industrial Development Corporation. The planners then modify this in terms of policy priorities and total resources, but generally

have little basis on which to review project details. This is important, because frequently such so-called sectoral "plans" are instead primarily only a collection of more or less desirable projects for creation or expansion of industrial plants or of institutional programmes. Rarely do they concern themselves with the linkage of these projects into a package, into the matrix of existing industry and institutions, and into the long-range strategy of national industrial development.

Alternatively, where a planning agency is dominant, it may tend to ignore or patronize industry and industrial institutions. In such cases the industrial sector plan is drafted by the planners and then presented more or less seriously to industry and institutions for comment. At this stage, usually too late for major changes, "comment" may become merely another term for "acceptance", however, reluctant. The result may be a series of proposals which form a more cohesive plan, but with dangers that the detailed projects can be defective in practicality, that industry and institutions feel no sense of responsibility, and that implementation may prove to be difficult.

Rarely can one find a proper dialogue among all the interested parties. For some reason the mechanisms to accomplish this seem missing or defective. In part the problem is due to the scarcity of industrial planners, which means that in many countries it is barely possible to staff one point, let alone two or three. Another defect is in the timing of the planning process. Especially in countries newly

experimenting with plan preparation, the deadlines arrive all too soon, and time becomes too short for consultation.

Primarily, however, there seems to be a lack of will to communicate. Even where planning councils or consultative committees have been established, there is evidence that they frequently are dormant, perfunctory, or meet rarely. Not all of this is due to administrative lassitude; much of it must be attributed to disinterest.

The problem is especially acute with respect to participation by industry itself, whether private or public, in plan formulation. Even when machinery exists for effective participation by the Ministry of Industry or Development Corporation, this does not guarantee that industrial enterprises are consulted in any way, even by whatever general bodies are supposed to represent industry's interests. This in turn reflects the lack of machinery within those bodies for consultation in order to produce such representation. As an important general problem of industry - institution relationships, this will be considered at greater length in Chapter V.

(ii) Planning of Institutions

One aspect of development planning which is almost always neglected, and with which we are here especially concerned, is planning of the institutional infrastructure needed to implement policies and projects. National planning in fact should have three components: economic and physical, financial, and institutional. The first of these sets the strategies, identifies projects, determines their feasibility, and evaluates priorities. The second estimates the costs of meeting plan targets, notes probable sources and volume of income, and reconciles the availability of resources to the plan cost requirements. The institutional aspect of planning should consider the allocation of scarce resources such as qualified specialized personnel among various institutions so that the planned development projects will receive from them the support necessary for those projects to go forward successfully. In short, each development plan should contain an institutional sector portion, with detailed plans for resource allocation to each institution, specifically tied to the support needs of each planned project. The importance of this will be seen again in Chapter IV when we consider the establishment and operation of industrial institutions.

(iii) Plan and Project Implementation

Once a development plan has been prepared and promulgated, the period of implementation arrives. It is fair to say that implementation is still the weakest aspect of the planning process in nearly every developing country. In part this is the result of human optimism that the making of good resolutions or extensive plans will somehow result in their being carried out on momentum. In part it is also an unintended result of efforts by international

organizations and bilateral aid programmes to help build national planning machinery by initial concentration on plan preparation, on the logic that without a plan document there can be no plan action or implementation at all.

The present situation is that more and more developing countries are approaching the stage of having a substantial planning organization and publishing increasingly respectable 5-year plans, yet are failing to secure the industrial development called for by these plans. Frequently plans fall behind schedule, and some are even extended for an additional year or more. In part all this can be attributed to inexperience and growing pains, found in all countries however well developed, as they begin the complex task of economic planning. One notable exception seems to be the National Planning Commission in Nepal, where plan implementation is carried out effectively, with the central Bureau of Statistics and a Plan Implementation Division which is supplemented by regional offices in each of the country's four development regions, to keep special watch over implementation of regional and local projects.

For industrial institutions any weakness in national plan implementation is extremely important, since by and large they are the agencies which should be directly implementing the plan, or at the very least promoting and supporting that implementation.

An essential requirement is the establishment of a system of periodic project control reports based on the modern management tools of operational and programme auditing, to examine the efficiency and economy with which resources are managed and the degree of fulfillment of predetermined goals. These reports should provide in time the feed-back information on which changes in targets and policy measures can be based.

One gap in the planning process of some countries is that responsibility for the implementation of individual parts of the industrial plans is not definitely assigned to specific institutions or parts of the government. (One might even state this as a general criticism of most development plans in their entirety.)

Failing such clear assignment, and given the general vagueness of allocation of responsibilities among industrial institutions in any case, it is understandable that there is confusion or even honest dodging regarding who should do what.

Perhaps it is not commonly recognized how complex the implementation of an average industrial project is from the standpoint of administrative organization. When one considers the necessities of providing financing, securing a location, purchasing equipment (often from outside the country), providing qualified personnel to manage and operate the enterprise, secure an adequate flow of raw materials, and market the ultimate product, one should be amazed that the results are so often successful.

The process is especially difficult since nearly every one of these various necessary inputs or activities must ultimately be furnished by or through a different institution. One of the most obvious problems found by our study is the almost universal lack of adequate machinery to co-ordinate these disparate institutions toward the efficient implementation of specific development projects. At best, those concerned are forced to rely upon the informal benefits of personal contact, with an occasional surge of professional or patriotic pride and responsibility in trying to get a project moving and completed.

There do exist several adequate and proven devices for securing the needed project co-ordination. The most obvious but not necessarily the most satisfactory is to select one institution or one official to be completely responsible and all-powerful. This is not always successful, for reasons of personality and jealousy.

A more helpful method seems to be to create an inter-institutional task force specifically charged with advancing implementation of a particular project. This can run into some difficulties, however. If the members of the task force are of decision-making rank, they often have too many other duties. If they are of lower rank, they may not have power to commit their institutions to the actions needed. Additionally, a task force may exhibit all the disadvantages of a committee.

A frequently effective experiment in this respect is the designation of a middle-rank expediter, with full-time responsibility for implementation of a particular project. Such an official, though without direct power to command action, is in a position to push for that action. He is high enough in rank to have access to those who can issue commands, yet not high enough to threaten their prestige or sense of power. Projects move forward more rapidly. The time of senior officials is saved.

Perhaps most important, a task force or an expediter can view the project's needs as a whole, rather than from the restricted scope of any one participating institution. Thus they can move to secure joint or agreed action before misunderstandings or frictions arise and before institutional prestige becomes involved.

CHAPTER III

INSTITUTIONAL INFRASTRUCTURE FOR INDUSTRY
AS A COMPREHENSIVE SYSTEM

No industrial institution is completely self-sufficient. All have networks of relationships with sponsoring groups, associated services, and industrial clients. They form part of, and are moulded by, the socio-economic circumstances within which they operate.

This is especially true of the majority of industrial institutions which are public bodies. These are integral parts of a total national administrative structure. As such, their programmes and actions become guided by national policies. They depend upon allocated national resources. They must operate within the constraints of bureaucracy. In turn, their actions have a degree of impact upon other parts of the administrative structure. In sum, these institutions are directed by the overall administrative ethos and share its difficulties.

This means that in considering the management and operation of these industrial institutions any problems and proposals for change must be viewed within the context of that administrative totality. Very often an institution's defects or difficulties are not unique, but are common to the government's services as a whole. Examples of such common problems might be inability to attract or hold qualified staff because of low salaries, or delays due to cumbersome clearances and red tape, or lack of security and continuity in senior posts, or political influence,

or a general lassitude or low sense of responsibility; all found throughout the government. Problems such as these need to be solved but they can be remedied only to a limited extent within a single institution, which frequently cannot improve itself greatly above the national average of performance. Nonetheless, in a number of ways each institution can and should strive to ensure that its management and operation profit from the best practices found throughout the world.

It would seem unnecessary to emphasize that a basic preliminary to establishment of any industrial institution must be a clear agreement on, and specification of, its objectives. Unfortunately, this is not always accomplished. Sometimes the planning goes little further than fixing the function, such as training or research, which is to be performed. Obviously this is far too vague or general to give any guidance as to what the institution is specifically to do in performing that function. Further detailed definition is necessary for a number of reasons.

In fixing the objectives of any industrial institution, attention has to be given not merely to the professional techniques and goals of the function to be performed, but also to the over-all national objectives to be attained. It must always be kept in mind that any institution or programme is merely a means to a developmental end. Hence the primary objectives are the promotion of the national economic policies and strategies, and the servicing of the needs of industry itself. Thus in formulating specific institutional objectives the progression must move through a series of questions:

1. What are the national economic objectives?
2. What are the needs of industry (in this particular function) to achieve those objectives?
3. To what extent are any of those needs not adequately answered by existing institutions?
4. Must that shortfall be filled by a new institution or programme, rather than by strengthening an existing one?
5. If so, exactly what activities should the new institution deal with, which will not duplicate those carried out, or to be carried out, elsewhere?
6. To the greatest extent which can be determined in advance, through what programmes, resources, and timing will those new activities be developed?

Such questioning will require rather detailed analysis. In fact what is being proposed is an institutional feasibility study, very similar to the studies now usually required before approval of industrial projects, and for very similar reasons. A feasibility study forces those concerned to marshal the reasons why a particular project is needed; what its costs of all types will be, what benefits will be derived from it, and whether on balance those benefits will be worth the costs. Inherent in all this is the necessity of stating exactly what the project is designed to accomplish. There is no reason why this device or procedure should not be required for every institutional proposal.

As emphasized elsewhere in this report, many developing countries have reached a point at which at least embryonic institutions for most functions of industrial support have now been established. This means that any new proposals must be fitted into the existing framework, competing for scarce qualified personnel and competing to service industrial enterprises. This makes it all the more important that those who propose creation of new institutions and those who decide upon that creation should have clear ideas of exactly how those new institutions will fit into that framework, and exactly where and how lines of demarkation of responsibility are to be drawn. Otherwise there can be no well-based decision as to whether the new institution (or new programme for an existing institution) is worth the allocation of resources.

Obviously most of the functions which may be performed by some industrial institution are in themselves desirable, to whatever degree the nation may be able to support them. Hence the decision is not whether training as such is needed, or whether more research is desirable. Clearly the need for such services is vast and far from completely filled even in the most developed countries.

The real decision faced by most governments in dealing with a proposal for establishment of a new industrial institution is one of resources and priorities. Each institutional proposal tends to be considered in isolation rather than as part of a total application of resources. There is little recognition that acceptance of project or programme "A" may mean that resources will not be available for another project or programme "B". Planning advisers emphasize that it is not sufficient merely to ask, "Is this proposal desirable as a means toward industrial development goals?" In addition, there must be enquiry, "If this proposal is accepted, which other institutions will be given less priority or strength, and is that changed priority the best way to seek those development goals?"

An additional reason for requiring advance specification of institutional objectives is to minimize later confusion, by providing a clear mandate to those who are to direct the institution's operations. This involves a delicate balancing, even a dilemma. On the one hand such guidance is desirable to assist future directors and to prevent diversification of the institution's programme into undesired areas. On the other hand, since institutions operate in a dynamic society and should themselves be dynamic and innovative, objectives set today may be outdated tomorrow. Means are necessary for their review and amendment.

As has been suggested earlier, there are various reasons for the creation of industrial institutions. Sometimes they are the product of a personal drive on the part of a politician or civil servant. Sometimes they are promoted by an interest group. Occasionally a minister finds it politically expedient to expand his empire, perhaps by borrowing an institutional idea from a neighboring country. Far too often the institution is created because personnel from an international organization or a bilateral aid programme believe it would be helpful for a developing country, and make its creation a condition and convenient vehicle for their aid. All too rarely is creation of the institution the result of a careful objective assessment of what is needed and how it fits into a total service pattern.

This suggests the deepest criticism of what has occurred: that institutions for all these reasons have been created individually, as seemed to have been needed, but not as parts of a rational and balanced industrial support system. There is no focal point for the crystallization and expression of industrial policy and its implementing action.

In hardly any developing country, at any time, has there been occasion or opportunity to look at any creation or expansion of an industrial institution in relation to the infrastructural system as a whole. Even where Cabinet or financial authorities have power of review, their decisions have been concentrated primarily on the need for and validity of the individual institutional proposal, as recommended by a particular minister or expert adviser. In effect the decision is to accept a specific unit which hopefully will add to the totality of service, rather than to review the service total and see what is needed to complete or strengthen it.

The inevitable result is that in virtually every country the pattern of industrial institutions is a haphazard collection. Naturally there are gaps, especially in countries which are still forming their institutional infrastructures. More wastefully, there are overlappings or duplications, due to insufficient or incompetent delineation of institutional objectives or duties.

It may be helpful to note that a number of countries have adopted a course of subdividing functions and allocating portions to different but similar institutions. Such is the case when individual institutes are created to deal with textile technology, metallurgy, and chemicals, or when in a large or federal country separate provincial or regional institutions are created. In such cases the element of comparison may be retained while duplication may be minimized.

In some countries where duplication has become obvious it has been justified with the claim that competition will lead to greater efficiency. The short answer to this is that no developing country can afford this type of duplicating use of scarce resources. The desired efficiency can better be secured through improved planning and supervisory controls.

For if one thing is characteristic of developing countries it is a scarcity of skilled personnel in all specialties. Government after government reviewed in this study could not find or employ or pay all the economists, accountants engineers and other specialists needed. In ministries, institutes, corporations, and banks there were positions which could not be filled, or underqualified staff, or insufficient cadres. In laudable efforts to supply at least the beginnings of support to industry in every possible function, governments have often spread their available resources too thin, at the risk of diluting services until they become ineffectual.

Any improvement of this situation starts, however, with two major advantages:

- a) Most developing countries are well on the road to constructing effective development planning machinery;
- b) Most of them have at least in embryo a rather complete range of the beginnings of institutions to support industrial development.

What is needed, therefore, is again twofold:

- a) A recognition of the need, and a desire to act, to rationalize the institutional pattern;
- b) Development of adequate modern organizational machinery to accomplish this.

The method by which this improvement is to be accomplished, and the form it should and will take in any individual country, are for many reasons dependent on the decisions of each country itself.

Central to any improvement should be the concentration in one point of the power of decision over creation or expansion or change in objectives of any industrial institution. Each country would need to choose individually where that power should be placed. In some cases the Minister or Ministry of Industry has a broad enough range of institutional scope to be appropriate. But in most countries many industry-concerned institutions lie outside that single ministry, and a more universal-minded body such as planning agency, cabinet, or presidential office would be a more appropriate point of review and decision.

Two requirements are crucial. The body designated must be able to review the entire industrial institutional infrastructure as a whole, without special commitments to any one part of it. And sufficient staff support must be available to ensure that the decisions are based upon complete information and objective study.

In attempting to mould the various industrial institutions into a systematized infrastructure, a number of guidelines have now become clear, from the difficulties and mistakes encountered by many countries, and from the innovations and successes of others:

- a) At least one institution or part of an institution should exist to, and be specifically designated to, perform each of the needed functions.
- b) Each such body must have a clearly defined purpose and range of responsibility.
- c) The institutions and their activities must fit together into a complete and integrated system of support to industry and to industrial development.
- d) Within that total system there should be no unintended gaps unfilled by the tasks of some institution.
- e) Overlapping or duplication of institutional activities must be minimal and allowed only for intentional and productive reasons.

The system as a whole should be so constructed as to be:

- a) Properly interrelated to the nation's industrial goals and strategy, its planned development operations, and the needs of industry itself;
- b) Uniquely designed to fit the country's specific needs, rather than remaining from colonial past or borrowed from recent political fashions;
- c) Structurally rational, efficient and economical;
- d) Reasonable in view of the national priorities and available resources;
- e) Fitted to the country's current stage of industrial development; yet
- f) Flexibly adjustable to the dynamics of policy changes and industrial needs.

Because of this last point, machinery and procedures are needed to enable, and even to force, that same body which decides upon new institutional proposals to review all institutions at least periodically. The purposes should be first to determine whether institutions are achieving the objectives originally assigned to them, and secondly whether those objectives, and thus the institutions' programmes, are still valid and will remain valid to support the nation's industrial development as planned.

CHAPTER IV

MANAGEMENT AND OPERATION OF INDUSTRIAL INSTITUTIONS

A. Establishment of Institutions

(i) Legal authorization

An industrial institution, whether public or private, is a body of people which requires formal organization. That organization is almost always defined in some kind of legal document. This document fixes the existence of the institution as an entity, describes its duties and powers, and outlines its structure. Especially when the institution is a public body it receives certain powers of compulsion as well as rights and position within the governmental administrative structure.

The legal document may take any of a variety of forms. Frequently it is a specific national law or decree setting up the particular institution as a legal entity. This is usually preferred by those interested in an institution, as giving it greater security and often greater freedom and powers. It is generally necessary if the institution is to possess some sort of autonomous status, and is especially important if it is to have its own financial status or capital, as for example a development bank or a marketing institution.

If the institution is to be part of an ordinary ministerial structure, a special law may not be necessary. Instead, a directive of the cabinet or similar body, or an order from the President, or merely a ministerial order generally suffices. Obviously such actions are more easily subject to later change than is a law. They also tend to be less comprehensive than are special laws, frequently failing to give a full statement of institutional objectives.

There are obvious reasons why an institution may wish the seeming protection of a detailed legal instrument clearly fixing its status, powers, and duties. The same desire may activate those in superior positions who may wish to ensure that the institution will be kept in a defined and controlled position. Yet given the dynamics of development, future needs cannot always be anticipated. If the legal instrument is too detailed, or if its change will be difficult and slow, the institution could be unduly hampered in adjusting to new needs. If it is too general in language, or too easy to change, the institution may have too much freedom, or conversely may be at the mercy of changing ministers.

In our researches we have found cases where institutional action has been blocked because of delays or inability to secure changes in organic laws. It is notable that this difficulty appears to affect the more vigorous and innovative institutions rather than the less active or more conservative ones. It would seem that ordinarily the legal instrument should grant as broad powers as possible, and give to the institution's council or supervising body a substantial degree of ability to make changes, relying on superior review or periodic governmental oversight to ensure that those changes are reasonable and desirable.

One of the purposes of the legal authorization of a public institution is to fix its place in the governmental structure. In general it can be said that most institutions have one of two possible organizational locations. Many of them are placed within the traditional ministry structure. Increasingly, however, industrial institutions are being given a more autonomous status, although under some degree of ministerial supervision.

The broadest such body, found in the majority of countries, is a general industrial development corporation. This usually is associated in some way with the Ministry of Industry, but has a board representing other governmental bodies and often private industry. The role of development corporations is primarily one of promoting and building new industrial projects. Whether those projects are public or private depends to a great extent on the political and economic orientation of the government, but generally the basic financing of them will be from the government or from outside sources through the government. Once the development corporation has selected its projects and arranged for their financing, it usually continues to be concerned with their operation, either because it holds some equity participation or because the enterprise is a wholly-owned subsidiary of the development corporation. Many industrial development corporations find themselves to an increasing extent becoming holding companies with responsibilities to government for their operating subsidiaries, involved in management review and control, and needing to supply technical assistance on accounting, production, marketing and other enterprise problems. In some countries policy is that the industrial development corporation should after promotion divest itself of this ownership responsibility and move on to new projects, but this is not always possible.

For reasons suggested earlier, the institutions which provide financing to industry usually have autonomous status, ordinarily under the aegis of the minister of finance. Industrial research institutions almost always have considerable autonomy and the same is sometimes true of standards institutions. Nearly every country has some type of autonomous management training centre.

A notable recent trend is toward the establishment of autonomous multifunctional institutions to support the development of small industry. In part this is a reflection of the growing attention being given to small industry in most developing countries. Additionally, this form of institution allows the grouping of the several types of services needed by small industry. These umbrella organizations for small industry will be described in more detail in Chapter VII.

(ii) Place in Structural Hierarchy

It would be a mistake to emphasize too greatly the formal or legalistic placement of industrial institutions in the bureaucratic hierarchy. The bureaucracy of most developing countries is still relatively small, and personal ties and contacts have a major importance. In our interviews we found a refreshing lack of emphasis on organization charts and formal lines of authority, and a constant noting that problems were usually resolved through personal negotiation.

This degree of informal relationships has both advantages and disadvantages. It can cut through red tape, but it leaves an institution greatly at the mercy of personal changes. Administrative thinkers disagree as to what should be the proper ratio between the formal and the informal, although all stress that the latter will exist in any human organization. Judging from our enquiries, industrial services in developing countries currently derive substantial benefits from their informal organizational relationships, but undoubtedly need to pursue those advantages within certain broad guidelines provided by a more formal structural position.

B. Supervision and Control

Since any industrial institution should be part of a coherent system for development and servicing, it must be subject to some arrangements for over-all review or supervision, to ensure that its programmes and work fit properly into that system.

In nearly every country there is one supreme central organ charged with over-all supervision of policies and actions. The designation varies from country to country. It may be a strong presidency, or a cabinet of ministers, or a military or political council. Whatever the form, it is always a body with many and varied responsibilities. One cannot expect it to be able to give detailed attention to any individual industrial institution. In fact we found several instances in which institutions in developing countries had been waiting for some time for this supreme body to consider some of their problems.

The standard form of delegation or devolution of decision is to the individual sectoral minister, such as the minister of industry. One finds that most industrial institutions do consider some minister as their usual final supervisor or decision-maker.

In practically no country is there one single minister in charge of all industrial services. While the pattern of allocation differs in every country of the world, commonly there is a planning ministry or commission, the concerns of which include the industrial sector; the ministry of finance is concerned with

Industrial financing; the ministry of labour with manpower and training. Often there is a ministry of scientific affairs which deals with research; while the ministry of commerce handles matters of marketing and foreign trade, with some help from the embassies of the ministry of foreign affairs. Raw materials used in industry are developed by ministries of agriculture, livestock, or mining, while the ministry of education and the universities educate potential employees, engineers, economists, and managers.

Even the most ardent advocate of a strong ministry of industry could not justify incorporating most of these activities into that ministry. Yet all are interrelated, and programme decisions for one may affect many others. Small wonder that matters which seem trivial are passed to the cabinet or supreme council for "interministerial decision". A suggestion has been made that countries establish national industrial advisory committees which could facilitate exchange of views, formulate industrial policies, and assist in co-ordination. Such committees could include senior representatives of various interested ministries and experts from other sources.

Another device which is ordinarily used is that of inter-ministerial consultation at lower levels, either on an informal basis or through some type of joint committees. These can have a definite value not only in dealing with the problem immediately at issue but also in breaking down the communication vacuum which is often found between ministries and between industrial services.

A number of difficulties are eased for the growing number of autonomous agencies which have supervisory boards. It is common for these boards to have powers fixed in an organic statute and for them to be rather broadly representative of concerned ministries, clientele, and other institutions. As a result they can look at the affairs of the institution from a sectoral point of view, can resolve interministerial or inter-agency frictions, and can represent the institution's needs to the parent bodies from which they come. Often there is a cross-representation of institutions on each other's boards.

A question might be raised whether institution managing directors might resist the interference or control by a board over their running of the institution's affairs. Happily, in our visits to a large number of these institutions we found that nearly always the directors seemed honestly in harmony with the board, and that their usual desire was to see the board more rather than less vigorous. It appeared that where the director and his staff actively prepared proposals for board consideration, they found the board inquisitive but sympathetic, serving as a valuable review body and then as a helpful advocate. The only criticism was that often those appointed to a board, especially those serving ex officio, were so busy that they could not apply the time or interest they should to the institution's affairs. The role of the board chairman was crucial. In a few cases he expanded his position to become virtually a super-manager. At the other extreme, his inertia became a drag on the institution's progress.

Not all the supervision of industrial institutions comes from officials or bodies directly superior in the hierarchical sense. Given the interlocked nature of modern government administration there is also indirect supervision by other bodies to whom the institution is responsible in some particular aspect. One thinks immediately of the controls exercised by the government's personnel and budget authorities. We have already noted the degree to which the national planning agency may control the plans of industrial institutions and monitor the carrying out of those plans. Occasionally an industrial institution may find itself within the supervisory orbit of a functional co-ordinating body, such as an investment board, a research council, or a training committee.

C. Work Programmes

(i) Formulation

Within all this network of supervision and controls, each industrial institution still has a large degree of power and responsibility to fix its working programmes and to carry them out. By and large the greatest constraint upon this is not any lack of legal authority, but the sheer restriction of staff and money. Directors are constantly saying "we could do this and that if we only had a larger budget and could recruit the needed personnel", not "we could do this but we don't have the authority."

The supervising minister, and often a board, have some responsibilities and powers with regard to institutional programming. Yet the minister rarely plays much part in the actual forward programme development. His intervention in operating decisions usually comes in one of two ways, either on the appeal of the director or as an occasional even erratic, personal intervention in some particular matter. The usual feeling of institution directors seems to be that they would prefer, but fail to secure, a periodic and continued consultation with their ministers on the course of institution work.

As we have seen, an institution board should be better able to carry on such a dialogue with the director. In most cases, however, the board's role in policy formulation is one of reviewing plans and programmes prepared by the director and his staff. It is not a convenient vehicle for their initiation. Nor is a board in a strong position to pass on operations, since it lacks much of the information regarding operational details and reasoning. It must rely on the director to inform it or to refer matters to it.

Hence most decisions regarding programming and operations are made within the institution itself. In practice this means that they are usually made by the director. Some directors accept this both in theory and in practice as a basic responsibility and power of their position, and exercise it almost completely and individually. As a result, some of them are admired as leaders; others are disliked as dictators.

However, the directors of many industrial institutions tend to operate through "consultative management". A number of them openly recognize that a growing proportion of their staffs are rather highly trained professional specialists, sometimes with even higher qualifications than those of the director himself. As a matter of courteous relations with sensitive persons, as well as from a practical need to utilize their knowledge and judgement, consultation is only sensible. Hence it is correct to say that programme formulation usually involves joint study at some stage if not throughout, while in major operating decisions the director either consults senior staff or at least is carefully aware of their views. It may be that formal consultation with staff is less common within ministerial institutions than in autonomous ones where civil service hierarchical habits are perhaps less ingrained.

Probably less than half of industrial institutions, even autonomous ones, seem to utilize periodic staff meetings. Even where they do occur, they tend to be used more for information and training than for discussion and decision.

Within recent years the concept of worker participation in management has become widely discussed. It is increasingly applied in industry and has been promoted in bureaucracy. Interestingly, it does not yet seem to have had practically any impact on industrial institutions. Even in socialist developing countries the views of staff appear to be expressed indirectly through a party structure rather than through any system of direct participatory decision.

An innovative exception exists in the Sri Lanka Institute of Management. Staff of each of the Institute's various sections select a 3-person committee which chooses one of its members as chairman. The committee plans and reviews programmes for its area. Each section also has an Executive Director appointed for a 6-month term by the Institute's Director; in most cases the staff committee chairman is appointed to this position. A co-ordinating group of section executive directors, staff committee chairmen and the Institute Director decides on allocation of projects and work.

(ii) Review and updating

A recognition that plans cannot be completely fixed but must be kept flexible, especially in details of application needs to be inherent in any system of programming. This is particularly true for industrial institutions, most of which depend upon unscheduled client requests for services. While an institution can plan to allocate its staff time for the fiscal year in particular proportions, or to mount a given number of special training courses, it cannot predict exactly what consultation or research requests it will receive several months hence, nor exactly which industries will demand in-plant training. Nor can most institutions afford to reject or postpone such requests by a rigid stand that these particular bits of service were not anticipated in formulating a work programme which now cannot be changed until next year.

National economic planners are coming to recognize that their once-sacrosanct 5-year plans must be revised on an annual "rolling" basis or else amended by supplementary annual operating plans. It may be helpful for industrial institutions to experiment with the same technique on a shorter time basis, by preparing annual work programmes for budgeting and staffing purposes, but adjusting them quarterly or even monthly to meet the realities of accomplishments and new requests.

D. Personnel

(i) Staffing

Effective staffing of any institution depends not merely on numbers of personnel but perhaps more important on the qualifications of the officers. This is where developing

countries face the greatest difficulty. If anything, it is too easy to fill any industrial institution with bodies, even though those may know nothing about industry or how to service it. It is greatly to the credit of most of these institutions that by and large they have resisted pressures to do this, and have tried to recruit only persons with some degree of qualification. Most institution directors with whom we discussed staffing indicated that they had few extremely unqualified staff members, although they maintained a healthy desire to raise the average standard by seeking even better personnel.

This maintaining of standards has led in nearly all cases to understaffing. Any definition of "understaffing" naturally leads to consideration of what would be an "adequate" level of staffing. Those planning any institution usually set their goals as to size of staff obviously high. There are a number of reasons for this. Bureaucrats expect their proposed budgets and manning tables to be cut. In Parkinsonian style, high grades for senior officers may depend on the number of staff they will be expected to supervise. Above all, those concerned with building an institution see honestly and properly unbounded needs for service, which require large and complex staffing.

In building any organization, there are two possible patterns of staffing. One is to plan a very limited group of personnel, with the expectation of steady expansion over the years as work and prestige grow. The alternative is to outline the entire expected staffing structure in the hope that approval and budgeting for most or all of it can be secured at an early stage, but with recognition that for many months or years vacant

posts could outnumber those for which qualified persons can be secured.

While the largest number of industrial institutions appear to follow, perhaps perforce, the first route, there are a number which do have large tables of organization which turn out to be largely paper shells. We feel this is undesirable. It gives an illusion of size which is unrealistic. Often the available vacancies are filled on a haphazard basis when an ostensibly qualified individual appears, rather than as direct response to growing programme needs. The large but illusory structure inhibits proper organization of actual present staff on a smaller but tighter scale. It can lead to the ridiculous situation of sections with only one or two staff members, often with status of acting chiefs not because of their qualifications but merely because a section naturally must have a chief officer of some sort.

This is not to criticize efforts to plan an institution's future staffing on a larger scale than at present. The director of any institution should be encouraged to have in his mind and in his files ideas as to the directions in which staff expansion should move, and to have hopes for this to be done. Nor is it to argue that occasionally an institution should not seize the opportunity to add prematurely to its staff a needed specialist who suddenly becomes available, rather than losing him by waiting until the post he will fill comes up later in the staffing plan.

Three other factors should be kept in mind with regard to the variation between tables of organization and posts actually filled. One is that in developing countries there has been, and often still exists, a real shortage of persons qualified to fill even essential posts.

Hence at its outset an institution may find it difficult to fill all of its limited number of basic positions. Yet one would usually argue that it is better to begin with an incomplete group rather than to delay in providing at least some service.

Secondly, we should keep in mind that in most cases the establishing of an institution is associated with some arrangements for training its future staff members, often through foreign study. If the institution can expect specific individuals to be available in the near future as they return from training, it is reasonable to create positions which they are to fill. It often strengthens the morale of the individual to know that there is a designated job which he is preparing himself to fill and which will be waiting on his return. From a broader point of view, it is desirable that the government try to match all its advanced training to specific job needs.

Meanwhile it is common for governments to rely on expatriate specialists to fill some of these key vacancies. The uses and desirability of this have been the subject of innumerable conferences and analyses, and we shall not go into the matter here. However, it is appropriate to note that any temporary use of expatriates ought to be tied closely to the recruitment and training of national replacements. Otherwise the foreign personnel will have to remain indefinitely, or as they leave there will suddenly be serious gaps in the institution's programme.

(ii) Training

The difficulties of recruiting properly qualified personnel indicate that industrial institutions usually need to do substantial training of staff after they have been employed. New staff will need not only some basic grounding but also orientation to the institution as well as specialization in the particular work they are to perform.

Large institutions may be able to set up periodic in-service training courses. Occasionally they may be able to train outsiders along with their own staff. For instance one course of the Somali Institute of Development and Management for training of trainers included not only persons from SIDAM's own staff but personnel from the Ministry of Education and training officers from public enterprises.

Less formal in-service training is sometimes carried out as a part of staff meetings. One important form of training for staff which is too frequently neglected is practical training directly in industrial plants, either by study visits or more beneficially through secondment to plants for periods of actual work.

Additionally, in-service training is supposed to be an integral part of the relationship with expatriate personnel, who are employed not only to take part in current operations but also nearly always have a responsibility to train counterparts and other staff.

In any institution the line between initial training and refresher or upgrading instruction is never clearcut. Many of the mechanisms just mentioned are used for both. Refresher training is especially important as regards the technical aspects of work, where new techniques or discoveries appear from time to time. Institution staff in developing countries are acutely aware of the dangers of professional or technical isolation. They emphasize this as a reason why they need to secure massive documentation from other countries, and for their frequent attendance at professional gatherings where they can meet colleagues from other countries. Occasionally these needs can be eased by periods of advanced study abroad.

(iii) Incentives and morale

The shortage of qualified personnel in developing countries leads to a competition among institutions for the persons they need. This competition leads to efforts to attract staff from other institutions and to attempts by employees to move to other posts with higher rank and better income. These dangers can be partially but not totally alleviated by regulations such as those found in most of the East African countries preventing transfers except with the approval of some central personnel authority.

In countries which have a sizeable private sector, industrial institutions lose personnel to private industry, while in countries with a large public industrial sector they face competition for personnel from public enterprises.

Much of the competition is simply a matter of salaries. Industrial institutions which are within the ministerial structure almost always must pay their staff as civil servants and at civil service rates. Although in some countries civil service salaries (bolstered by the security of ministry employment) are more attractive than those outside, increasingly in developing countries salaries in the public corporations or in private industry have moved higher.

Institutions have tried to meet this challenge in several ways. An often hidden but major reason for establishing an institution as an autonomous agency is to free it from civil service salary restrictions and allow it to pay competitive higher salaries. Where this is not possible, institution directors press for inflated rank for staff in order to pay them higher individual salaries. Ultimately, unless the institution is growing substantially, this can produce a top-heavy organization structure, with nearly all of the staff in senior ranks. At the least, it reverses the proper basis of fixing salary to match the level of rank and responsibility, by setting the salary at an attractive level and then awarding a commensurate rank.

Occasionally an institution has been able to secure authority to pay a supplemental allowance, supposedly justified by the special training and qualifications of some group such as engineers, accountants, economists, etc. Experience in several countries has shown that once any allowances are established they tend to proliferate, and eventually nearly all professional and technical staff throughout the government are receiving these "special" allowances.

In industry itself, fringe benefits have become an important and attractive adjunct to wages. Industrial institutions on the whole do not have much opportunity to use fringe benefits as a means of attracting and holding staff, and the opportunities do not seem much more common even in those which are autonomous agencies. Research and training units, especially those located outside a central city, sometimes provide staff housing. In some other cases, government housing is available at preferential rates for institution directors, but because of their high rank as government officers.

Institution hours of work, amount of leave, and social benefits for health and recreation seem much the same as for all other government employees. The occasional chance of study abroad or travel to professional meetings mentioned earlier might be considered as fringe benefits, and are in fact so considered by some institution directors, but again these opportunities are not much greater than elsewhere in public or even private employment.

In some countries it is common for civil servants with professional or specialized skills to hold second or third jobs. Even in other countries than these, one finds industrial

institutions where staff members are allowed, more or less openly, to supplement their institution salaries by teaching, consultancy, or other outside employment. If uncontrolled, this may result in an empty institution during much of the work week. On the other hand, a number of institution directors, recognizing the financial needs of their staff members, raise little objection to their taking on moderate amounts of evening or week-end supplemental employment. Some even encourage it, on the reasoning that it can be good publicity for the institution and broadening experience for the staff member. In the Korean Institute of Science and Technology staff are allowed to teach university graduate courses if they have special needed expertise; this teaching is part of their KIST work load, and income from it goes to the Institute.

One attraction which is always considered important is the opportunity for promotion and career advancement. In part this is a matter of increasing salary, but beyond this is the factor of job interest and personal satisfaction. Unfortunately the industrial institutions in developing countries are usually small, and the number of very senior posts is tiny. Hence the promotion chances for a professional-level staff member are limited. We have noted earlier the dangers of inflating the number of senior officers, section chiefs, and other higher posts merely to provide higher salaries. While the prestige of ranking as a section chief, for example, may bring some career satisfaction, it is nonetheless something of an empty honour if the section consists of no one but that chief.

It would appear that most industrial institutions must reconcile themselves to the prospect that many of their employees, and unfortunately often the best, will eventually seek career advancement outside these institutions. Despite all the efforts of incentive which we have described, an institution may not always be able to remain competitively attractive to all of its able staff. However, it is a matter of concern that turnover of staff in many industrial institutions is so great.

It is understandably frustrating for an institution after investing recruitment efforts, fellowship training, and months of in-service supervision to lose an able young professional just as he or she is becoming most productive and valuable. Yet some directors see brightness even in this. Some accept this turnover as part of a process of developing needed expertise for the government as a whole or for the industrial sector in particular. A few even feel that this should be considered as part of their institutions' mission. Less altruistically, several directors have pointed out that such a turnover creates a network of former institution staff members throughout government and industry. These contacts help the institution by calling upon it for services such as research, training or consultancy, and by giving it practical help. Occasionally these "graduates" become designated liaison officers to the institution, or the nuclei of mini-service units in their new ministries or enterprises.

Morale in an institution is hard to measure objectively, but we find that it is an important factor in staffing. It appears to be the major reason why some institutions have very little **turn-over** of staff even though their salaries or career possibilities are no more favourable than elsewhere.

In one standards bureau the director attributed the stability of staff to two factors: that many employees had family income or other resources so that salaries were not crucial, and that the nature of standards work was such that it was interesting and professionally challenging. However, the staff members themselves gave less weight to either of these factors, but stated that they enjoyed their work and stayed with the bureau largely because of the personality and leadership of its director.

As this suggests, institution morale clearly is a result of several factors. Salaries are important; equally important is a feeling that the institution and those who sponsor or supervise it are doing everything possible to seek optimal financial conditions for staff. The nature of the work also determines morale. This is not only a matter of interest, since often even advanced professional tasks involve drudgery, but a broader sense that the work as a whole has personal, professional, and national importance.

That sense can be fostered largely by the institution director, assisted of course by his senior aides. Here, as in so much of the life of an institution, success becomes a matter of the zeal, judgement, and quality of its director. In this particular matter, his personal qualifications in human relations and leadership are undoubtedly the major factors in determining institution morale.

E. Financing

(i) Budgeting

From the standpoint of budgeting, industrial institutions can be considered in three categories: ministerial, autonomous, and private. The budgets of ministerial institutions usually form part of a total ministry budget, with control resting in the ministry financial office and beyond that in the ministry of finance. Autonomous institutions have a greater degree of control over the formulation of their budgets and spending of them, but they too must look to an overseeing sectoral ministry and the ministry of finance for approval and appropriations, and ultimately are responsible to them in

accounting. Even private institutions must present their budgets and accounts in some way to their members or contributors. All three types are alike in that the budget is usually drafted internally and presented by the director to the board or minister for approval before it goes to the financing sources.

(ii) Income

By far the largest proportion of the income of industrial institutions comes from the general public treasury. As such, it is subject to a mass of regulations and restrictions. This is to a large extent true even of bulk appropriations to autonomous agencies and public grants to private institutions.

The other major institutional income is from fees or charges of services. These vary in type, including interest charged by development banks, tuition fees for training courses, and charges for feasibility studies, consultancy, research and testing. When an institution is first established it may receive few service requests and thus cannot be expected to maintain itself from this type of income. Even when it is well established, there may be social policy reasons why full charges cannot or should not be assessed against some of those serviced, such as small businesses, or experimental exporters, or enterprises requesting innovative research.

Nonetheless there is a visible trend in most countries toward gradually increasing the proportion of institution income from service charges and decreasing the proportion from direct public appropriations. In a few cases a goal of 100% fee-financing has been set. More realistically, a number of institutions now are expected to secure half or more of their necessary income from service charges, with government providing the rest to support socially needed non-charge services and even overhead costs.

Senegal's Société National d'Etude et de Promotion Industrielle makes an annual contract with the government to perform certain tasks which are costed, with justifications. This forms the basis for the government's grant. It is not too different from the practice in some private institutions of balancing the costs of services provided to individual industrial enterprises against the amount of their membership fees or contributions.

The Korea Productivity Centre, once supported by government appropriation, now relies entirely on membership fees and on sale of services. Government, public corporations, and private industry all pay standard rates for consultancy or training services. Members receive in return for their membership fees the right to a certain number of free places in training seminars. They also get a 20% discount on consultancy work and receive publications free of charge.

Many institutions receive income from other sources, notably from donations and from foreign or international aid. As we indicate elsewhere, these are usually either for special purposes or for financing during an institution's initial period, and cannot ordinarily be counted on for permanent operating needs.

The new Haitian Institut National de Formation Professionnelle receives income from a 1% government tax on salaries, while some export promotion institutes, especially in Latin America, receive the revenue from a tax on exports. In some countries specialized institutions servicing agro-industry benefit from a levy on sales or exports of particular agricultural crops. It should be noted that in all these cases the income bears no necessary relationship to the institution's financial needs.

While it is perhaps too much to expect that the average institution will receive fully as much income as it feels it needs, it is proper to hope that the level of income will have at least a certain stability. Otherwise the institution will be unable to plan its staffing and work, let alone to grow. Several institutions have been rather severely crippled when government appropriations or foreign assistance suddenly were reduced or ended. One lost a large government subsidy which covered nearly all of its expenditures. It was forced to dismiss half of its professional staff. Since then it has slowly rebuilt its programme and staff on new financing from memberships and services.

(iii) Expenditure

Expenditures by industrial institutions are subject to many of the same lines of control as are budgeting and income. However, institutions often have some flexibility in reallocating funds from one item or sub-item to another. Usually this requires approval of the board or minister, occasionally with oversight by the ministry of finance. Institution directors seem reasonably satisfied with their amount of freedom to reallocate budgeted money to meet changing needs, when they can justify that reallocation.

The greatest problem in financial matters seems to arise from the practice in most governments of channelling service payment receipts through the central treasury rather than directly to the institution. This acts as disincentive against efforts to increase institution services and fee income. In effect it sets the government appropriation as the maximum the institution can receive. The institutions feel this is unfair and unwise, since there is a rather direct relationship between a rising income from fees and a rising cost of providing the greater service which produces those fees.

Various mechanisms have been devised to move around this restriction. A few institutions have tried to dodge it by setting up membership systems, by receiving "donations" from industrial enterprises instead of payments for services, and by arranging to receive payments in kind rather than in cash. However, only limited use can be made of such devices; they ultimately may be blocked by the financial authorities, and they fail to solve the basic problem. In at least one case the government has agreed to let an institution receive a proportion of all its service fees as an addition to the annual appropriation. In several other cases the fees are received by the treasury but specifically credited to the institution as an offset against part of the government appropriation. In all those instances the understanding is

that if fee income should exceed the amount of the appropriation the institution would receive that excess. In practice, however, fee income has never yet reached that point, and there are fears that if it does the treasury will capture any excess.

B. Decision-making

Decision-making is a process. Its most visible part is the actual point of decision, but that is preceded by an initial recognition of the need to decide, the assembling of data upon which alternatives are formed, and the presentation of those alternatives for a selection, while once the decision is made it needs to be implemented or put into effect.

Decisions involving industrial institutions may be of many types. There are large ones such as the framing of industrial policies or the commitment to establish a costly manufacturing plant. There are small ones, such as day by day allocation of staff to individual tasks. Many decisions concerning institutions are internal, relating to their programmes and management. Others are external, in which an institution participates with industry or other institutions or organs of government.

(i) The background for decision

It has been argued that the chief limiting factor in industrialization in developing countries is the lack of ability to make decisions. There are two prerequisites to any decisions. The power to decide must be clear and clearly-assigned; and there must be a willingness to make the decision. Power of decision may be a matter of location: who or what organ possesses the legal or other authority to decide. An institution must know clearly the area within which it can make decisions. The same is needed by each person within the institution, as a division of labour is paralleled by a sub-division of responsibilities for decision. Along with the allocation of decision-making power must be clear indication of the degree or volume of power to decide. For instance, a development bank may be authorized to grant loans up to a specific amount, but may not commit more than a certain percentage of resources to a single project. The third dimension of power, is based upon the level of the person or organ deciding. In general, personnel at low levels in an institution are given power to make only relatively minor decisions, with that power broadening as one moves toward the levels of director or board or minister.

Power to decide is frequently bounded, and at the same time aided, by guidelines which establish the limits of power while indicating how the decision is to be directed. Laws or regulations may set these guidelines. In routine matters there may be administrative manuals or circulars. Even in new developing countries precedents rapidly develop which not only will help later decision-makers but eventually can restrict their freedom.

Those to whom power of decision is assigned also need the will to decide. Every industrial institution has its complaints about failure to secure some necessary decisions because those with power to do so appeared unwilling to make those decisions. More than recognized, failure to decide is in itself a form of decision, not to take new action but to leave matters in status quo. Thus failure to make decisions to approve a new industrial plant or to grant an import licence for raw materials means that at least for the time being the plant will not be built, or the raw materials will not become available. In many developing countries delay in decision is culturally a polite way of saying "no". In any case, a decision delay of weeks or months can eventually mean that an industrialist will be forced to abandon his plans or an institution its desired programme. Even if the decision eventually is completed

before this is necessary, the delay may have been costly to the industry or institution. The most obvious examples are seen in the escalating costs of major projects due to inflation while waiting for approval to let contracts for construction or equipment.

On a smaller scale are the costs to an enterprise of **idle** equipment or workers while waiting for approval to import repair parts or clear them from customs. Recently a spokesman for industrialists in certain developing countries justified the paying of secret gratuities to officials in order to expedite decisions simply as a matter of accounting, balancing the cost of such payments against the otherwise far greater expense of delay.

Not all delays are due to a conscious unwillingness to make the necessary decisions. Often the delay is thoughtless or is the cumulative result of a lengthy bureaucratic process requiring many consecutive decisions by a number of persons. From the standpoint of those needing the decision, however, delay shows a lack of active will to get the decision completed and the matter finally resolved. This is borne out by the fact that frequently when gratuities are paid or influence is brought to bear a decision can be expedited once the will to act and decide has been stimulated.

Careful preparation is essential to effective decision. Obviously there are occasions when a decision must be made rapidly, without opportunity for information or thought. Many minor decisions may not call

for preliminary study, but are based upon the general knowledge and judgement of those deciding. Most industrial decisions, however, are neither that immediate nor that unimportant. They usually involve sizeable commitment of public or private resources, and they warrant full information as to options and consequences.

Those who are to make the decisions cannot necessarily be assumed to possess that information. It must be prepared for them by persons who have, or have access to, the needed specialized data, who can evaluate it with professional judgement, and who can present it in the compressed and logical form useful to busy decision-makers. In most developing countries information on which to base industrial decisions is far from adequate. Persons qualified to collect, evaluate and synthesize information are sorely lacking. Thus decisions often are made with less than optimum data, which can lead to wrong choices being made.

One of the most common types of staff work used in industrial development is the feasibility study normally required before approval of a new project or the granting of financing. Other examples are the budget justification explanation presented annually by an institution to its financing sources, and the personnel justifications it prepares to support requests for creation of new staff posts.

Adequate advance staff work can ease and speed the actual decision by making available all the data needed by the decision-makers, answering or rendering unnecessary their questions, posing the possible alternatives, and tracing the results of those various courses of action.

As will be seen in Chapter V, industry itself provides some of this preliminary information through its associations of employers or workers, or large private and public enterprises may directly supply information helpful to decision-making. This assistance is not always completely objective, but understandably is likely to support the outcome desired by industry. In most instances the decision-makers are given a single recommendation, usually with the arguments why it should be adopted.

The voices of industry's consumers and of the public are not often heard at this preliminary stage. This is partly because they may not be informed that a decision is to occur, and partly because they may lack organization through which their opinions and information can be expressed. Commercial consumers of industry's products are generally in a somewhat better position on both counts. Thus retailers sometimes express their ideas as to the effects of a standardization decree, or makers of plastic housewares give data as to the effects of expanding a petrochemical plant. It is more difficult to obtain information from the ordinary person as to need for a rubber footwear plant or the optimum size for a bicycle plant.

(ii) The Decision-Makers

Many persons may enter into the whole process of decision, but only a limited number will participate at its core point.

Many decisions are individual. Most minor ones are made by a single person, based on his own responsibility and power. Where there is a strictly hierarchical bureaucratic system, each official may have to take responsibility for his decisions through some complex system of signing them. Frequently laws or regulations specify that "The Minister shall grant..." or "The Director shall determine..." Even if done by subordinates in his name, the decision and responsibility are legally his.

Nonetheless, many industrial decisions have a large number of interested parties and it is only proper that they should participate in those decisions. This can be illustrated by the decision to establish a large fertilizer plant, using locally-mined materials and selling to local farmers. Clearly a number of ministries, including not only industry, mining, and agriculture, but also planning and finance and perhaps others, should take part in this decision. Ideally a number of non-ministry interests including miners and farmers should take part. Unfortunately, in most developing countries even those portions of the public immediately affected by such decisions rarely participate directly in them, and are not always consulted in the preliminary stages. Similarly, we find only a very limited degree of participation by industry itself, or by its industrial organizations, in meaningful decisions which affect it.

Regardless of the number of participants, the ideal of consensus means that all those who do take part in the decision should ultimately come to some agreement. Any system of collective decision-making contains the dilemma of either giving a veto to each participant or else of eventually coercing a minority by a majority vote. In most industrial and institutional decisions this is eased by the possibility of appeal to higher authority in case of severe disagreement.

If the basic decision is made by collective participation, much depends on the level or power and authority of those who take part. Sometimes these individuals do not have real authority to commit their institutions to the decision and the action to implement it. Often they become hesitant if the decision could be somewhat unfavourable to the interests of their institution or if it is likely to result in criticism, and they belatedly decide that they must consult their superiors and secure a further mandate.

This problem is aggravated by the absence in most developing countries of any substantial delegation of authority. The result, all too visible in the industrial institutions of nearly all developing countries, is to put an overwhelming burden of work and decision upon senior officers at the director, director-general, permanent secretary, and ministerial levels. Fearing to delegate power of decision, and aware that most decisions of any importance will in any event be passed on to them for review and ratification, these senior officials find themselves drawn into direct participation at the time of the basic decisions, even on matters which should be handled by their subordinates or by their technical specialists. Instead of managing and planning, these senior officials spend large parts of their time attending countless discussions. Much has been made in analyses of administrative improvement regarding the need to delegate work. More attention should be given to the delegation of decision.

(iii) Appeal, Review, Revision

Nonetheless, the tendency to pass decisions to senior levels for review is not completely undesirable. No system of decision is infallible. Some mechanism is needed in addition to preliminary consultation to ensure that those who believe that a decision is incorrect or unfair or defective can

present their case, and if convincing can have the decision changed. Many industrial functional processes, especially those of a regulatory nature, do allow opportunity for such appeals. Sometimes there is a guaranteed right of appeal to the minister; sometimes it is merely accomplished through personal or political channels. Some decisions, such as those fixing compulsory standards, usually do not become effective until ratified by the minister or cabinet or president; in the meantime appeals may be lodged.

There is good reason why superior officers should in any case be informed of decisions affecting their ministries or institutions, whether those decisions are made by senior or by subordinate personnel. There is also, as we have just seen, reason why some participation is needed for appeal to higher levels. It appears, however, from the experience of many industrial institutions in developing countries, that far too often ministers or other high officials intervene and over-turn decisions or vary them which seem arbitrary to the institutions or industrial enterprises concerned. A judicious sense of restraint on the part of those higher officials is necessary.

While many decisions lead to immediate and complete action, others have gradual results. As time goes on, these may become recognized as not being fully desirable, or changing conditions may make them less effective. A willingness and sometimes even formal machinery must exist to enable revision to improve the original decision or to modernize it.

(iv) Implementation

Implementation is a vital part of the whole decision process as it is with development plans. A decision not carried out is no decision at all, or is even worse since its existence may block all other action. Yet effective implementation of decisions depends upon certain prerequisites.

Every one concerned needs to be clear as to exactly what was decided. The statement of decision must specify clearly what is to be the result of that decision: what action is to be taken. Finally, the decisions should identify clearly who is to take the action and thus to implement the decision.

None of these requirements will be of any avail unless the person or institution charged with the task of implementation has effective ways of ensuring that it is accomplished. Any manager well knows that a decision once made does not implement itself automatically. If half of management is planning and deciding what should be done, the other half is ensuring that it is done.

An institution director needs some formal recording of action programmes and how they are progressing. One who is at all busy also needs a somewhat different "tickler" system to remind him of operating decisions which should be followed up. Many managers of industrial institutions have established more or less complex reporting systems to enable action review. Some of these appear far more detailed than are needed by the director or board or minister. Other managers have impressive progress charts on the walls of their offices. Unfortunately these are often not kept up-to-date. Few industrial institutions are large enough to have a person or section wholly charged with follow-up as is common for instance in the ministries and agencies of the Egyptian government.

The chief advantage of some type of periodic progress reporting, from bottom to top, is that it forces all concerned to consider at intervals what they should be doing and to what extent they actually have been doing it. Such reporting cannot replace constant care and supervision by the director and by his delegated subordinates. Frequent staff meetings at which progress is reviewed help to keep decisions from being forgotten, facilitate interchange and co-ordination, and enable problems to be discussed.

(v) Industry, the Public, and Workers as Interested Parties to Decisions

In most developing countries one finds that the three parties most affected by the decisions made regarding industry are the very ones who have the least degree of participation. These are industry itself, the public at large, and those who are employed by industry. Methods of some type are sorely needed to bring them more fully into the decision-making process. Participation by industry is discussed in some detail in chapter V while the special problems of consultation with the public sector are emphasized in Chapter VII.

The public normally has a dual interest in decisions involving industry: one as a direct or indirect user/consumer of industrial products; secondly in its general capacity as the body politic which finances government and the economy and which desires economic development leading to a higher standard of living. The latter capacity is supposed to be served through political channels, which unfortunately are not always free-flowing in some developing countries.

The consumer interest is particularly weak in developing countries. An economy of scarcity with low personal income and purchasing power puts the consumer, whether an urban worker buying processed foods, or a peasant buying hand tools, or an entrepreneur purchasing steel or petrol, all in a vulnerable position from which they cannot control industrial decisions by refusal to buy or by finding a competitive manufacturer. Nor do consumers in developing countries have sufficient organization to make their mass voices heard in the consultations of the decision process. Yet lacking any such voice their only recourse is through demonstrations or violence, neither of which are constructive inputs to decision-making.

Belonging to both industry and the public, and like both restricted in ability to participate in industrial decisions, are the workers in industry in developing countries. In most of those countries labour organization is rudimentary or discouraged or even prohibited. Where it does exist, it usually lacks the sophistication to contribute to decisions other than those

concerning wages or conditions of labour, while it lacks mechanisms or opportunities for expression other than the strike, which again gives little constructive input to decision-making. It is hopeful that in a few developing countries industrial institutions are assisting in worker education regarding economics, production, and management. Without this any fruitful worker participation in industrial decisions will be difficult to achieve.

An underlying principle of the New International Economic Order is that industrialization and industry should be regarded as tools of the people for the achievement of a better life, and not as weapons of exploitation by any one or any group against others. If that world order and the ideals of popular participation in economic development are to be meaningful, the understanding contribution of industrial workers in decisions involving their daily labour is needed. They have a knowledge of processes and problems which often is unusual. They have a personal stake in the success of industrial development. They are in a unique position to interpret the new needs and new possibilities of industry to their families and to all of their fellow citizens.

G. Interrelationships among Industrial Institutions

In Chapter III we emphasized the necessity of organizing industrial institutions as parts of a comprehensive industrial support system. Regardless of the organizational format, an institution once created finds itself existing and working side by side with other institutions also providing services to industry, and with which it must interrelate. Some of these other institutions may be carrying out identical or similar functions. Others are engaged in action programmes of common concern, as shown for example in the relationships involved in developing agro-industry, or financing small industry, or educating young people for eventual employment in industry. Nearly every institution also has relationships with other parts of some parent ministry, corporation, or other umbrella organization. Finally, all industrial institutions find themselves bound in a series of relationships because of their common assignment to the servicing and development of industry and as parts of the inevitably interlocked infrastructure to which industry looks in its demands for services.

We can assume that the greatest possible interrelationship of all these industry-oriented bodies is desirable. We have already seen that structured formal relationships are usually far from perfect. Nor are they sufficient, since human relationships are more important than those on charts.

In fact industrial institutions have developed a number of means of interrelating, nearly all of which depend on the good will and co-operativeness of those involved. A vast amount of informal contact, in person, by telephone, in notes, socially, through family ties, and in many other ways acts as the lubricant which facilitates joint action toward servicing.

More obvious, and also occupying a very large amount of time is consultation through fixed meetings and committees. Needless to say, some of these consultations are well worth while; others are of limited value. Many institution directors find this type of consultation taking an ever-growing part of their working time, since it is easier to create new periodic meeting groups than to abolish them.

The most focussed relationship devices, and often the most valuable, are those such as teams or task forces set up to handle a concentrated task or a specific joint action programme.

All of these mechanisms are means of bringing people together to consider and work jointly on matters of common concern. None of them can replace, but should be supported by, actions to define each institution's responsibilities so that to the greatest possible degree each can go ahead with its own part of any joint servicing, thus easing the need to consult frequently on details.

H. Assessment of Institutions

It is very difficult to assess in any objective and measurable way the real effectiveness of an industrial institution and its work. It is nearly impossible to establish any single set of assessment criteria for all institutions. Industrial institutions differ, and assessment of a training institute will be considerably different from that of an export promotion board.

Nonetheless, assessments can and should be made. An industrial institution is established to support designated national programmes; resources are invested in its operations. It is only proper to examine periodically how those resources have been used, and to what extent the institution has produced the intended support and has assisted industrial development.

To a very limited extent legal and financial accountability is the simplest and easiest form of assessment and that most commonly used. Rare is the institution which is not required to submit its annual or even quarterly accounts to some supervisory organ. The measuring norms for accountability though crude are generally clear. Have the actions of the institution and of its staff been within their legal mandate and powers? Has the money been spent in accordance with the financial regulations and only as allowed by them? No doubt these are important questions, and institutions must be held accountable. But they are far from providing any real assessment. They test whether the institution has done anything wrong, but not whether it has done anything right.

The standards of what should have been done are much less clear than those norms of what legally and financially must not be done. Initially, one can look at the mandate of goals and tasks assigned to the institution by its organic statute, charter, or regulations. However, as we have seen, these are not always sufficiently comprehensive or clear.

Nonetheless, most institutions can and do provide periodic reporting of their activities, which can be compared against their original mandates. This reporting almost always has two defects. It rarely makes that direct comparison of mandate and actions. Equally unfortunately, it is almost always quantitative but not qualitative. The report tells how many courses were presented for how many trainees, how many loans were granted and for what amounts, how many tests were run for how many enterprises. All this has a value through indicating volume of activity, showing that staff were kept busy, indicating the emphasis of programme, even possibly certifying the extent to which industry is using services. But it gives no information as to how much

those trainees learned, how necessary were the loans, or how carefully the tests were performed. More important, it gives no evidence as to whether the services performed were those really needed by industry and essential for national development.

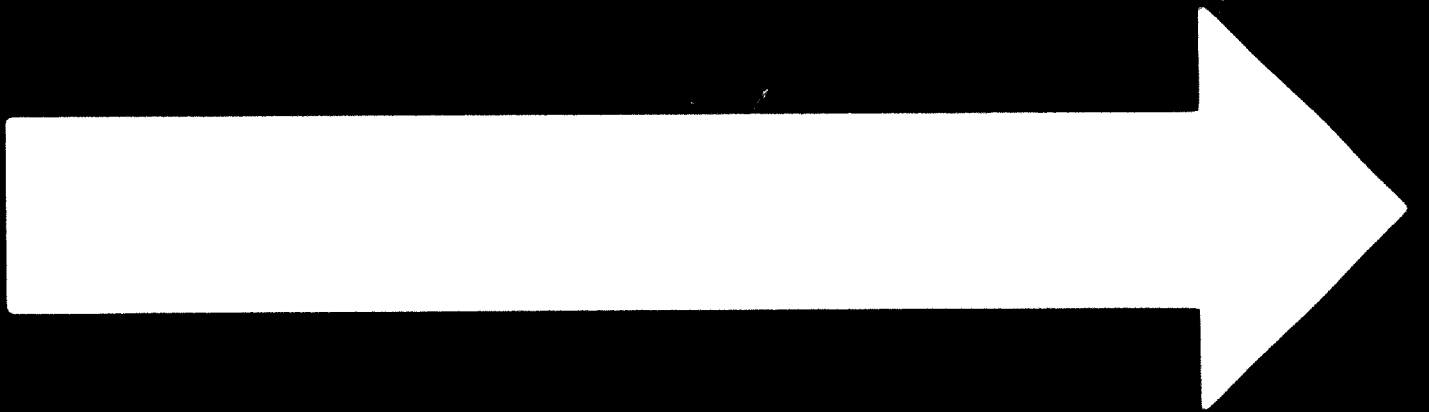
To a great extent the final assessment of industrial services can be found in the use of those services by industry. If the services are needed and satisfying, they will be used; if they are of the wrong type or poor quality, they will be ignored. Certainly in one way or other industry will and must make some kind of assessment of every industrial institution. That assessment may be rough, unsystematic, even biased, but it will inevitably be made.

Within each institution a review of activities is necessarily carried out, as we have seen, by the director for his supervision of operations. Assessment is also made by those who are responsible for the support and supervision of the institution: the ministry and minister, the board if such exists, the planning and finance authorities, even the higher political and executive organs. Again, the assessment will not be formal or systematic or complete, but it will be telling.

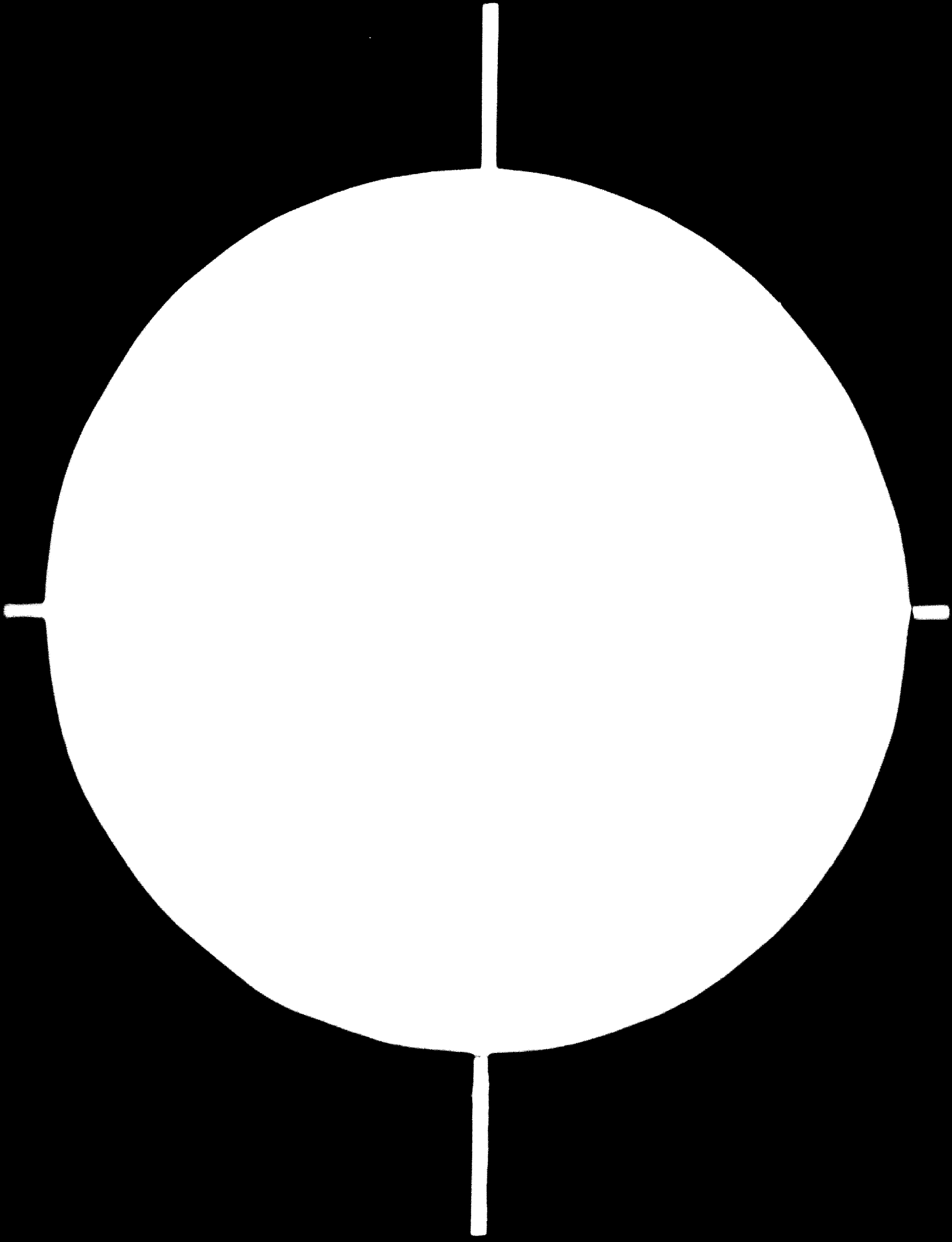
A few governments in developing countries are considering the need for some more formalized and objective periodic evaluation of institutions and programmes, but none seems yet to have established this successfully. The United Nations Development Programme is in the early stages of trying to devise a system of evaluation of the results of its technical assistance projects, and is experimenting with UNIDO in applying this to evaluation of industrial institutions created with international assistance.

Any assessment ultimately must measure the institution's performance not merely in quantity and quality of services, but in terms of the aims toward which it was supposed to be committed.

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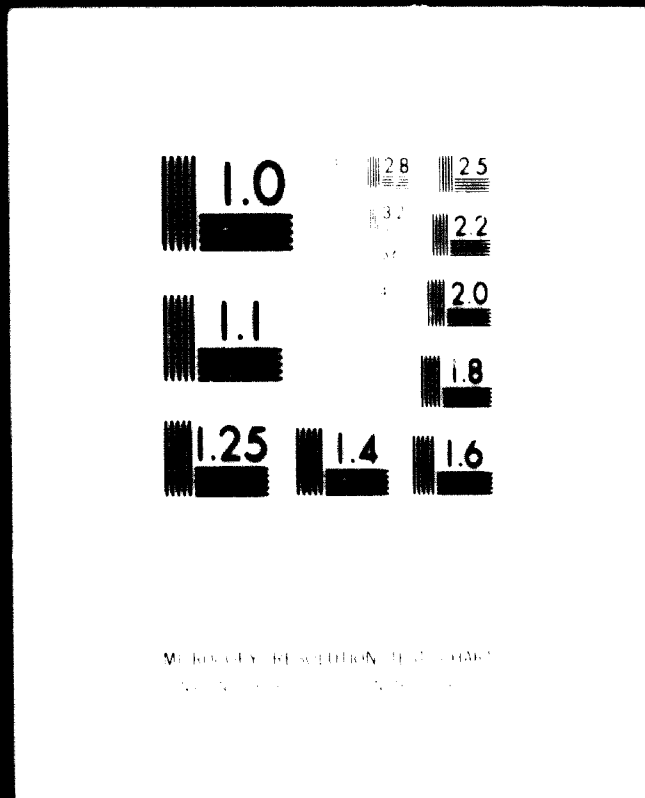


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They include the objectives and tasks set for the particular institution, originally and as later modified. They include the short-term more specific objectives stated in the institution's current operating programme. All of these furnish bases for measuring whether the institution is succeeding in accomplishing what it was set to doing.

Inevitably any such assessment will show that the institution at best, like the national development as a whole, is only part of the way along toward future achievement of goals set in the past. Yet as the planners have discovered, the dynamics of development constantly modify those goals. Hence one has a right to demand in assessing any industrial institution that it should be alert to changing needs. An immediate requirement of this is alertness to the direct needs of industry, as a feed-back from the institution's service programmes. More broadly, the institution should be expected to be planning its future services to fit the anticipated needs produced by national economic development as a whole. No industrial institution which ignores these industrial and development needs and goals can be rated as fully effective.

CHAPTER V

RELATIONSHIPS BETWEEN INDUSTRY AND INSTITUTIONS

A. Importance of these Relationships

A vital feature in the existence of any industrial institutional infrastructure must be a close relationship between each of the institutions and the industry, public and private, large and small, for which it is designed to provide services. This relationship is no abstraction; it must be a continuing series of practical contacts of many types.

If an industrial institution does not in some way have these contacts with industrial enterprises, it cannot succeed in putting its services into effect. In fact it will have no way even of making known to industry that these services are available. The institution will remain an ivory tower, bureaucratic, academic, failing to do the tasks for which it was created. Hence the basic necessity for every institution to reach out actively to every industrial plant.

Yet salesmanship by an institution cannot alone be successful. Part of the essential relationship between institutions and industry rests upon the service-product itself. That service must be "saleable". In other words, the institution must make available something which is needed and which can provide practical benefits.

But the relationships of institutions and industry are not merely in one direction. The services which are to be provided are supposedly or presumably answers to what industry needs and what the country's industrial strategy requires for its implementation. It is not sufficient for

planners or bureaucrats or foreign experts to estimate what those needs may or should be. Industry itself must have means for expressing its own needs and desires for service, not only before an institution is created but continuously as the institution moulds and carries out its programme. This expression can take place only if industry has some form of relationship with the institution through which opinions and needs can be channelled.

At the same time, no industrial institution should remain merely the passive recipient of industry's requests, nor merely the salesman of tried and true products. Industrial firms themselves pay great attention to "research and development" to create new and better products. Industrial institutions too must always be carrying on research and development regarding their own programmes, in order to translate government's policy and strategy into action. But they cannot successfully do this alone, for they cannot predict what industry is likely to need in future years. Hence institutions and industry need one another, and must have close relationship to one another, not merely for successful servicing under today's conditions, but so that they will jointly be in a position to do what is asked of them in promoting the country's industrial development in years to come.

Finally, the relationships in both directions imply a measurement of the extent to which the institution is actually providing services which answer needs and correspond to active pursuance of government industrial strategy. In effect, the amount and types of relationship serve as a

built-in evaluation. Lack of contact is an automatic indicator that for some reason the institution is not adequately fulfilling its purposes. Vigorous contact, even if sometimes discomforting, shows at least a healthy awareness of the institution's existence and potentialities.

B. Organizational Patterns Within Industry

Even in the smaller and least developed countries, industry is made up of a sizeable number of individual enterprises. This is true even where much of industry is socialized into medium or large public units; it is even more true where there is a large amount of small-scale private industry. Because of this volume of industrial clientele, industrial institutions often find it necessary to deal for many purposes with industrial groupings or organizations rather than always with each individual enterprise.

In nearly every country industry has such groupings. The most basic are the organizations of employers on the one hand, and of workers on the other hand. Almost always there are national associations such as chambers of industry or manufacturers associations, and federations of trade unions or syndicates. Often these are national groupings of similar organizations from the regional or local levels.

Alongside these sector-wide groupings, and frequently more important, are usually organizations of those concerned with one particular branch of industry, such as textile manufacturers or the metalworkers. Another important basis for grouping is that of size or scale of enterprise. This is especially notable in the formation of associations of small industry or artisans or craftsmen.

Other relationships which are important, because of the level of expertise and prestige involved, take place between industrial institutions and professional associations. Many institutions have developed special relationships with engineering, accounting, or economic associations, calling upon them for advice and working through them in matters such as training, evaluation of standards, or help in giving technical aid to industry. In Panama and Venezuela, for example, the colleges of Engineers are represented on the boards of the standards institution.

Although co-operatives may be viewed as a form of industrial organization rather than as a grouping of individual employers or employees, from the standpoint of expressing needs or receiving services they are an important device for representation and relationship. This is particularly true with respect to small industry. Some countries such as Senegal appear to be stimulating the growth of co-operatives fully as much for this purpose as for any operational benefits which each co-operative might

provide. It should also be noted that in those countries, rather few in number, where industrial co-operatives are now common, there is a tendency to develop regional or national co-operative federations which can serve even more effectively for representation and relationships to industrial service institutions.

C. Activities of Industrial Organizations

It cannot be assumed that all of these industrial organizations necessarily have any degree of similarity in functions or interests, especially as they may relate to industrial institutions. They are formed primarily for economic purposes which may or may not have some direct relationship to any particular institutional function.

A primary concern of some types of industrial organizations, whether of employers or workers, is with the setting of wages and with labour relations in general. Although in many countries these are arranged within a framework of government regulation or supervision, that is not directly within the range of the institutions with which we are presently concerned.

More directly pertinent is the second usual activity of industrial organizations: that of representing their members' interests vis à vis the government. Again, this is not merely in abstraction; the representation takes place on specific points of proposal or complaint. A large proportion of these concern rather directly the functions and institutions within the service infrastructure,

such as tax changes, problems of industrial safety, unfair competition, foreign exchanges allocation for spare parts, all of which go to specific institutions for action.

The industrial organizations also can serve as means of informational "feed-back", channelling opinions, requests and data from their members to the industrial institutions. Sometimes this is through the representation of members with specific problems or complaints, sometimes it is by consolidation of opinions and making them known to an institution. Occasionally the organization help an institution in statistical or data collection efforts.

The International Bureau of Chambers of Commerce summarized a number of these "Areas for co-operation between public authorities and Chambers of Commerce and Industry" which are equally applicable to nearly all other industry organizational representation. The areas include:

- a) Economy and finance: Economic and social development planning, financial policy, productivity, economic surveys.
- b) Foreign trade: International fairs, exporting, importing, exchange allocation.
- c) Legal matters.
- d) Social questions and labour relations.
- e) Regional improvement and town planning.
- f) Transport regulations and infrastructure; postal and telecommunication services.
- g) Education and training.^{1/}

^{1/} The role of chambers of commerce and industry is well described in The chambers of commerce and industry and the industrial development in their regions. (UNIDO, ID/WG.101/10) (1971).

The Bureau has also outlined a number of ways in which this representation and expression of opinion may be facilitated by government, through:

- a) Hearings granted by the Head of State or the Prime Minister or other members of the government to officers of the organization;
- b) Compulsory consultation of the organization by the government;
- c) Advice given to the government on the organization's own initiative;
- d) Participation by the organization's representatives on committees or councils, either consultative or with decision-making powers.

The Bureau points out that the types of bodies in which chambers are represented vary widely and include national bodies with economic or social functions, permanent or ad-hoc commissions, governing boards of public institutions and mixed-economy companies, conciliation boards, expert panels, and fund management boards.

(i) In national planning and development

One would expect that industry, especially through its organisations, should have a substantial participation in, and impact upon, national planning for the industrial sector. This participation is usually far less than might be desired, but there are in almost every country at least token efforts to secure some

industry input into plan preparation. Mention has been made earlier of the role in planning performed by the ministry of industry. Much of the value of this clearly must depend on the extent to which that ministry is able to consult industry itself.

Industry input in the planning process, to the extent that it does occur, can take place at several different levels and at several different points. In some countries there is some industry representation directly on central planning councils or committees or on a sectoral task force for industry. More commonly industry representation is through similar bodies within the ministry of industry.

Occasionally industry is in a position to submit original proposals to those who are about to formulate the plan. This of course requires substantial planning capacity within the industry organization itself. That is available only in the strongest organizations such as the Federation of Chambers (FEDECAMERAS) in Venezuela. Most initiating input from industry to development plans comes through participation, as just mentioned, in the groups which may be preparing the plan or reviewing a staff draft.

It is commonly felt that input from public sector industry is more effective than is that from private industry. Cited as evidence is the fact that most development plans programme public industry in considerable detail while remaining global and vague regarding what is expected of the private sector. We have been interested to find, however, that where there is direct participation from industry itself

in the planning process it is most often from members of the private sector, either as individuals or as organisation representatives. In contrast, the public industrial sector is almost always represented in planning decisions by officials from the ministry of industry or at most from the industrial development corporation. This is no doubt in part a reflection of the fact, emphasized in Chapter VII, that most countries still lack an adequate structures of organization, and thus of representation, of the public industrial sector.

Although in general the opportunities for industry participation in plan preparation are limited, the situation is less limited with regard to review and comment on plans after they have been drafted but before they become final. Many countries have mechanisms for plan review and some industry opinion is commonly sought. However, breadth of industry participation is not usual. Especially lacking are devices for securing the opinions of workers or their organizations, although in some countries their reactions may be obtained during plan review by the ruling political party. In several countries it appears that the planning process does not yet allow sufficient time for careful review or criticism, or for any major changes in the plan as a result of such review.

(ii) In Industrial Regulation and Control

Up to this point we have been concerned with the relationships which industry may have with the services which institutions can provide. It must not be forgotten that industrial infrastructural institutions sometimes carry on activities of regulation and control. Industry is the subject of these, and its reactions have to be considered.

Industrial organizations are sometimes utilized by government to help in this regulation. In some countries the Chamber of Industries or a similar body is the vehicle for registration of industrial enterprises. To carry on business, an enterprise must be registered, and it accomplishes this through the Chamber, obtaining membership in it as an additional feature. In this way the Chamber becomes a quasi-governmental institution. Arrangements such as this are especially common in countries which have legal systems based on French or Spanish models.

Another activity in which industrial organizations carry out a direct regulatory function for government is in policing industrial marketing practices and prices. In this the interests of many industrial enterprises in stabilizing prices and in fixing certain standards and practices tend to run in harmony with the desire of the government to have a reasonable amount of stability for the benefit of domestic consumers and foreign export possibilities. Occasionally the industrial organization receives policing powers, but more often it acts as an informing or prosecuting body, putting violations to the government to penalize.

Generally, however, industry and its organizations participate in regulation and control in an indirect fashion. Their primary concerns are with the framing of governmental regulations affecting industry, and later with the ways in which those regulations are applied.

In some cases, industry participates in the actual drafting of legislation or regulations. If it has qualified

staff, an industrial organization may prepare a draft with the provisions it desires, and pass it to the ministry of industry, a member of parliament, or some other appropriate expediter.

More commonly, where the actual draft is prepared somewhere in government, industry groups may seek or be asked to comment on that draft from the standpoint of how it would affect industry. Those comments may be made directly to government, in the form of memoranda, testimony at hearings, or conferences with senior officials. Where the conditions of journalism make it appropriate, comments may be made more publicly, through press conferences, letters to editors, or published analytical articles.

Occasionally an industrial association which has been unable to secure satisfaction in the preparation of draft legislation or regulations, or through comment or publicity, will go to the extent of preparing a substitute version which better meets its interests, and attempt to have this replace the original version.

As mentioned earlier, industrial organizations both of employers and employees commonly assist members who find that regulations and controls adversely affect them. This support may be advisory, or it may lead to political efforts to secure exemptions, variations, or legal changes. Sometimes it even extends to legal or financial support for members whose resistance leads to court cases.

(iii) Service Role of Industrial Organizations

In all these activities the industrial organizations serve as supplements, or even as protagonists, to the industrial services. However, in some cases the industry organization may itself take on institutional service responsibilities instead of, or in addition to, those provided by other public or private institutions.

One of the commonest activities of most industrial organizations, and one in which they most often collaborate, is the provision of information. Nearly every organization publishes some type of newsletter, which supplies its members with more or less useful data. A number of industrial institutions find these to be helpful channels for reaching the largest possible number of industrial clients. While frequently the information so communicated deals with new regulations, often there are announcements of training courses, new services, or marketing possibilities. In addition to spreading information, most organizations try to collect and store data which might be useful to their members and have at least small library and documentation centres. The organization secretariat usually is ready and willing to handle enquiries for appropriate information, both from members and from foreign countries. For example, the Bolivian Chamber of Industries, receiving enquiries as to Bolivian manufactured products which might be available for export, channels these requests to any members who might be interested in them.

A number of the stronger industry organizations have been able to build small but able economic research units. The Jamaica Manufacturers Association is moving into study of

capacity utilization and other economic investigations. One of the functions of the Philippine Chamber of Industries is "to undertake research and disseminate information on economic policy." The Turkish Industrialists and Businessmen's Association conducts high-level research in economic outlook and trends, fiscal and monetary development, marketing, industrial statistics and international economics. The Egyptian Federation of Industries and Industrial Chambers has a Department of Technical and Economic Studies.

Organizational research personnel collect data from members and from outside publications. They analyse trends and prepare memoranda for the organization's officials as well as articles for its journal or newsletter. They assist in framing organization policy and strategy to meet the economic situation, and provide the data and arguments to be used in the organization's interventions with government organs and institutions. In a few cases, instead of having this economic research done in-house, an organization finances it through contracts with a university or consultancy service.

Many industry organizations are active in promoting and supporting training. Often they organize or join in establishing formal courses. The Senegal Chamber of Commerce has a programme of courses for clerical and industrial employees while the Thai Management Association carries on management training. In some developing countries labour unions are beginning to sponsor worker training courses. Almost every industry-associated organization does a substantial amount of formal or informal training through its annual meetings, periodic conferences, or seminars. In a few instances organizations have promoted in-plant training.

While consultancy service and trouble-shooting are beyond the resources of most of these organizations in developing countries, a number of them claim to try to assist members in finding such help. Industry-branch organisations occasionally do provide accounting advice or technical help in their rather specialized areas. In a few instances associations have helped to finance research, especially problem-solving research which might be of common benefit to their members.

Much of this organization work is similar or parallel to that carried on by many public industrial institutions. Ideally, some arrangement needs to be made to ensure co-operation and to minimize duplication. In Hong-Kong the government has encouraged the Federation of Industries to sponsor as many services as possible, including testing, design, and standards certification, with government help in the financing. In other jurisdictions, where the major amount of industrial servicing is by public rather than private institutions, often there is joint sponsorship and/or financing of services in which industry's organizations are particularly interested. Avoidance of duplication is sometimes facilitated by establishment of a single private service institution sponsored by a number of industry organizations, sometimes with additional government participation.

D. Participation by Enterprises and Industry Organisations
in the Work of Industrial Institutions

One way in which industry needs and influence can be brought to bear on industrial institutions is through direct participation in the supervision, management and work of those institutions. This requires both opportunity and willingness.

To a very large degree there are opportunities for industry representation on the boards of autonomous industrial institutions. Almost every such board has at least token industry representation. Usually, however, this representation is too small to enable any very wide spread or coverage of all the various branches or sizes of industry which might be interested. Often the industry places on a board are allocated by law or custom to persons who in fact or nomination represent one leading industrial organization. This may leave other organizations or interests unrepresented. In some cases the private sector is represented but not the public sector; in others, some public corporations are represented but the rest are not. In very few instances are there adequate provisions for representation of industrial workers on the boards of industrial institutions in developing countries. In total, despite often laudable intentions, it does not appear that participation on institution boards is a very effective means of securing industry opinions and input.

However, ministerial institutions have often developed a substitute device of advisory committees. Although these have less power than do the boards of autonomous institutions, they have proved surprisingly successful. Institutions feel that advisory committees have several advantages. Obviously they can serve as sources of advice. They can be effective ways of drawing in a wide range of opinions and interest, since they can be rather large or can be divided into a number of sub-committees. Because they need not be restricted in size it is more possible to secure representation of both the public and private sectors. They can be used by the institution itself as a means of contacting a number of industrial enterprises and developing support from them.

The one major criticism that is made of these advisory committees is that because of their size and the efforts to include all possible interests the committees may then contain a number of persons who have insufficient time or interest to take active part in the committee work. As with any committees, this produces a spiral effect and the entire committee may become listless or dormant. This appears to be a greater danger than that the institutions may make insufficient use of the committee. In fact institution managers have complained that they wish to use advisory committees more vigorously but that they cannot secure active enough participation.

This problem is usually less acute with a somewhat similar device for advisory participation: the working group. These groups normally have smaller membership, of persons who are interested in or skilled in a rather specific subject or problem. They have a more clearly defined purpose and time schedule. For all these reasons it is easier to marshal and hold active participation. As will be seen in Chapter VI, outstanding use of groups such as this is made by most standards institutions, which form subject committees to frame individual standards or sets of standards. However, even here there is the complaint that many standards committee members are not as active as might be wished, and that too large a part of the burden of work and even of decision falls upon the institution staff which services the working group.

E. Financial Relationships

Although most of the industrial institutions in developing countries are public bodies and financed primarily from the public treasury, they often need additional financial support from industry itself. Private industrial institutions, although often receiving some public subsidies, naturally must rely much more heavily upon payments directly from industry.

Private institutions, and industry organizations providing institutional services, nearly all have some system of membership, asking industrial enterprises and other supporters to pay an annual fee. That fee is usually scaled to vary with the size of the enterprise or upon some categorizing of willingness to contribute. In return, each member receives a number of specified services, the volume of which sometimes depend on how large a membership fee it has paid. The Federation of Nepal Chambers of Commerce and Industry, for instance, charges its individual members twice that of district chambers, and its scale of fees for registration of industries and for certificates of origin is based on the firm's invested capital.

Additional income is sometimes secured, especially by private institutions, from donations. Little support can be expected for annual operating budgets from this, although in a few cases individual enterprises, industrial organizations, or charitable foundations may contribute towards costs during the beginning years, until the institution becomes well established. Occasionally an industry organization such as a manufacturers association sponsors and supports the creation of an industrial institution, later setting it on its own. This is, for instance, the way in which the Federation of Hong Kong Industries has aided in creation of a Management Association, a Productivity Council and Centre, and local councils for shipping, packaging and design. Donations are also sought by public as well as private institutions for more permanent expenditures such as buildings or equipment. Some research institutions have been notably successful in securing equipment in this way.

Although, as pointed out earlier, public industrial institutions must be ready to serve all industry, it is rarely considered unfair for them to charge fees for their services. As noted in Chapter IV these fees from industry are a substantial source of income for many institutions, public as well as private.

Because of budgeting and accounting restrictions, cash payment for services is not always completely feasible or satisfactory. Some industrial institutions have arranged to receive at least some of their payment for services on an in-kind basis. For example, the subsistence of institution staff doing in-plant training or consultancy may be provided directly by the enterprise, along with necessary transport and supplies. Enterprises may loan to an institution tools and equipment needed to carry out their research and training requests and may provide consumable materials used.

One special kind of in-kind support which is attracting interest in the possibility of loan of personnel from industry to institutions, and also of two-way exchanges of staff. Objections have been raised in the past that any such exchanges between institutions and individual private enterprises could lead to favouritism or leakage of trade secrets. These objections seem much less valid with regard to public industry, which is part of the same total governmental development structure as are the industrial institutions. Although there are practical problems of budgets, salary levels, and career movement to be solved, the advantages of such personnel interchange are great. The institutions receive an infusion of needed expertise with current practical experience in industry. The enterprises develop more contact with the institutions and greater reason to be interested in their programmes. Although we are here especially concerned with the advantages of drawing personnel from industry into the institutions, there are the same and even additional advantages in a similar temporary flow of staff in the other direction, from institutions to industry.

CHAPTER VI

INSTITUTIONAL SUPPORT FOR
SPECIFIC FUNCTIONAL NEEDS

We have noticed that industrial institutions exist to fulfil support functions and that their utility is measurable by the effectiveness with which they perform those functions. It is appropriate, then, to consider some specific examples of functional support, enquiring as to institutions which various countries have established, problems encountered, and various ways in which they have been met. The term "examples" is used intentionally. It has not been possible to deal with all functions or subjects of institutional support to industry. However, those which are presented in this chapter are chosen for their variety, and together cover an indicative range.

A. Investment Promotion and Financing

Investment promotion and financing are ordinarily carried out by different sets of industrial institutions, but the two processes are interlocked. Promotion requires financing to accomplish its ends, while financing needs promoted projects to receive its funds. Institutions are needed to carry out the tasks of identification of potential industrial projects, description and study of them, and evaluation of their feasibility. Institutions are also needed to find sources from which feasible projects can be financed, arrange for that investment, supervise its application, and seek for its eventual repayment to the lender or investor.

(i) Promotion

Promotion of industrial investment takes two forms. The first is the development within the government itself of project proposals which are promoted by their adherents for inclusion in the government's development and financial plans. To some extent there is need here for institutional stimulation of project proposals, but there is a greater need for institutions which can review and criticize proposals and fit them into a balanced development programme.

The second type of investment promotion is the stimulation of investment of private funds in private or mixed industry. This in turn looks either to domestic or to foreign capital. Each of these possible sources of investment requires different stimuli, strategies, and even sometimes different institutions.

Far too often this promotional activity is limited largely to the promulgation of legislation without adequate institutional support. Few countries have the knowledgeable and active institution or group of institutions capable of seeking out industry which would implement

the national development plans, and of supporting a private project through the total process from initial conception and study on to its eventual execution and operation.

Promotion of private investment in most developing countries is based on some type of investment code which sets up the "rules of the game" and outlines the applicable restrictions and incentives. The Ministry of Industry is usually the organ which oversees application of any restrictions such as prior licensing, review of technical feasibility, etc., while another ministry, perhaps the Ministry of Justice, may review articles of incorporation and any contracts, and the Ministry of Labour supervise proposed conditions of employment.

Incentives offered may be very favourable and varied. Approval of the granting of many of them is ordinarily within the province of the Ministry of Finance. Its task is especially complex when, as is common, incentives such as tax reductions or movement of profits are gradually reduced or depend on performance as reported by a firm. Other possible incentives such as space in industrial estates, or utility services, etc. depend on still other government ministries or institutions.

No system of investment incentives, however attractive, can be fully effective unless potential investors are made aware of them and encouraged and assisted to take advantage of them.

Domestic investors can be presumed to be well aware of the national investment code. To them matters of economics and politics may be of overriding importance. In many developing countries the chances of quick return from urban real estate or commerce seem more attractive than a slower and more difficult investment in industry. In some countries where investors have been pushed out of commerce they are hesitant to enter the unknown field of industry. Potential industrial investors in socialist countries may be unwilling to risk long-run entrepreneurial investment when the area remaining assigned to private industry is still vaguely defined or when they fear their investments in plant might later be socialized.

Of greater institutional concern is the fact that many potential domestic investors, especially small-scale ones or those new to industry, may not be aware of hopeful areas in which they might invest, lack detailed knowledge of investment regulations and procedures, and are not certain where to go for help or even what help they need.

Most of these disabilities apply to potential foreign investors. While a large multinational or an experienced uninationa1 firm or individual investor may be expected to have the sophistication and resources to secure answers and data, developing countries need and are becoming attractive to smaller foreign investors who do need this help. In our survey we had direct occasion to meet in one of the least developed countries two small foreign entrepreneurs, both desirous of establishing industry there, and both completely bewildered as to how and where to discuss their interest with government.

As we have noticed, this problem is accentuated because the potential investor needs to consult at a very early stage with a variety of government institutions which administer requirements and incentives. A few developing countries have published "Guides for Investors" summarizing the investment code, describing infrastructural matters such as transportation, utilities, and labour supply, and giving helpful listings of service institutions and their addresses. Nepal in 1974 published a document of this type incorporating guidelines and facilities for the industrial sector which included details of various provisions of its revised Industrial Enterprise Act.

A more active help is provided by several countries in the form of a "one-stop service" investment centre. The Korean Economic Planning Board's centre is staffed by representatives of several ministries, who hold the rank of Division Chief.

The importance of active industrial promotion is pointed up by a recent ECA-UNIDO study which argues that the absence of an effective policy of promotion has been a greater obstacle to the industrialization of Africa than lack of capital or lack of studied projects.

It was found that between 1960 and 1974 at least 1400 and possibly as many as 5000 market, pre-feasibility, and feasibility studies of industrial projects had been made in African countries. Yet relatively few of those projects had been carried through, primarily because of lack of effective promotion.

The same study recommended that each country establish one centre for industrial studies, to:

- a) Prepare in co-ordination with the national planning body a strategy of industrial development in line with the recommendations of the Lima Declaration and Plan of Action;
- b) Collect industrial studies already made, to avoid risk of repetition;
- c) Publicise and co-ordinate current studies, harmonising them with the country's industrial strategy and development plan;
- d) Identify new or potential projects which would be desirable within that strategy and plan;
- e) Promote new studies, publicise them, and stimulate their use in the acceptance, financing, and establishment of new industry.

(ii) Financing

Like promotion, the financing of industrial projects varies with the sponsorship of the project. Public industrial projects are almost always financed by or through government agencies.

Large foreign investors usually must rely on commercial banks, on stock issues, or on bond sales. Domestic entrepreneurs have more reason to need special government financing instead of or in addition to commercial bank funds.

"Development finance institutions play a particularly important role in the industrialization of developing countries. First, they are an effective instrument for mobilizing public, private and external financial resources, and channelling them into industry as medium-term and long-term industrial finance. Second, they provide industrial promotion services to help identify profitable industrial projects, and secure financing. Third, they provide technical assistance to industries, particularly medium-size and small enterprises."^{1/}

The pattern of institutions to supply this financial servicing differs completely from one country to the next. The one common and surprising feature seems to be that in most developing countries there is little shortage of investable funds, either from domestic savings or from foreign sources. The problem is to channel those resources through effective institutions to the projects which will best improve the country's industrial pattern.

^{1/} Industrialisation of Developing Countries: Problems and Prospects, Domestic and External Financing. UNIDO Monographs on Industrial Development, No. 16 (ID/40/16; E.69.II.B.39, Vol. 16), p.27.

The ideal situation, approached in a few developing countries, is to build up a portfolio of "bankable projects", public and private, some of which are in the process of being financed, for others of which financing is actively being sought, plus a number of worthy projects which can be put before potential investors. The development financing institution may need to take a major part in formulating many of these projects.

Once the initial institutional contacts have been made by an investor and a project proposal is being developed, the investor presumably will expect to be able to continue securing needed information and advice from all those same institutions. In a few cases, especially for small projects, he may need help in preparing a feasibility study and other papers as part of a request for financing.

In practically every case of a project seriously being considered, whether large or small, public or private, the financing institution has responsibilities to demand that someone or somebody prepares a valid feasibility study. As we have seen, developing countries are usually weak in capacity for preparing these studies, and there is little agreement as to where the task of their preparation should lie.

Power of selection and approval of proposed industrial projects for financing differs as between public and private projects. Ideally both should be contained in the national development plan, but in practice the private projects are much less likely to be listed than the public ones. Inclusion of a public industrial project in the plan is in effect a form of preliminary approval, and the arrangements for its financing are frequently already well advanced. Hence the early pre-plan selection and approval is substantially a decision of the planning institutions, with advice and help from the financial ones. For private projects the decision role of the financing institutions is much greater while that of the planners is somewhat less.

Within the financial institution there is usually a hierarchy of decision, with staff having power to approve project loans or equity participation up to a specified level, while larger financing is subject to approval of the board or higher authority. For example, in Nepal's Industrial Development Corporation the General Manager may approve loans up to Rs. 200,000. Loans from that amount to Rs. 1,000,000 are subject to approval of a Loan and Investment Committee consisting of the General Manager, the Secretary of Industry and Commerce, and a representative of the Central Bank. Loans above Rs. 1,000,000 are decided on by the Corporation's Board of Directors.

Other institutions than the development bank or similar financial agency are also concerned with project financing, especially of large projects or those involving foreign participation or foreign exchange. In addition to the Ministry of Industry and the planning agency, the Ministry of Finance, central bank and others may have reason to be consulted. Because of this some countries have established loan or investment committees with more or less strong powers over approving project financing. Afghanistan has a small Investment Committee of five ministers who meet monthly to pass on all private investment proposals involving granting of incentives. The Investment Promotion and Development Department of the Ministry of Planning acts as its secretariat. Ghana has a Capital Investment Board with similar duties. Both of these rely upon ministry personnel for staff support, in contrast to the boards of investment in Thailand and several other Asian countries which have their own staff and have greater powers in dealing with other financial and banking institutions.

Once a loan has been approved, prudent financial management calls for its supervision and control to ensure that the funds are used as intended. Most financing bodies release loans for construction and equipment gradually, upon a showing of actual work or purchase or delivery. Supervision of the use of capital for start-up and operations is more difficult. It is customary for the financial institution to insist upon being represented on the board of the industrial enterprise, whether public or private. The effectiveness of this depends on the alertness of the representative and of the board as a whole. It is sometimes found that when a development bank has a financial interest in a large number of enterprises, its qualified staff are spread too widely in this representation, in addition to their regular banking duties.

Other means of supervision are through periodic review of accounts, and through enquiries from time to time by bank personnel. Frequently the bank is understaffed for this work. As a result, in some developing countries there is too high a record of industrial loans especially those for private projects, being diverted to non-industrial uses. It also appears that few development financing institutions are equipped to carry out an adequate active role of managerial and technical assistance to the enterprises in which they have an interest.

The frequent use of equity participation is an indication that the role of the financing institution is likely to be rather long-term. Although many countries have established the policy that their development corporations and banks should divest themselves of shareholding in joint ventures as rapidly as private investors can be persuaded to take over, this occurs slowly and with difficulty, for a number of reasons. The Nepal Industrial Development Corporation, in collaboration with the national central bank, has recently found it necessary to establish a subsidiary Security Stock Exchange Company, with added board representation from the Department of Industries, to facilitate marketing of industrial shares as well as development bonds.^{1/} Nonetheless, in many cases the role of a financing agency is not merely one of finding and providing initial funds but rather of more or less permanent participation in operating control. This gradually has transformed the focus of the activities of some banking institutions into something nearer to that of development or holding corporations.

Even without this, financing institutions would have more than an initial relationship with industries, both public and private. Few industrial enterprises remain static. Those in difficulty require added transfusions or supervision. Those expanding need added capital to do so. All industries are likely to need funds from time to time for modernization and re-equipping.

Taken as a whole, several common problems can be seen for financial institutions in developing countries.

^{1/} It might be noted in passing that especially in the more advanced developing countries a stock exchange or some similar mechanism for buying and selling industrial participations is also a useful means of attracting domestic savings into industrial investment.

(a) The need for better feasibility studies and better economic and technical staff to make them has often been noted in our study. It is worth emphasis again at this point, since the quality and validity of these studies is crucial to ensure that the institutional investment is wisely placed. This is an area where most developing countries are especially weak, and where responsibility is especially vague or divided. Feasibility studies require precise, up-to-date and realistic information, but data of this quality is frequently unavailable and in any event changes rapidly in a developing country. Preparation of adequate studies requires trained personnel who cannot always be found. However, one regional analysis suggests that for many projects it is unnecessary to require the depth and complexity of study usual in the more developed countries.

(b) Not all developing countries have financing institutions specifically for industrial development. Experience in most countries seems to show that after a certain early point in industrialization is reached, a particular bank for this purpose, usually as a public institution, is needed.

(c) In the same way, a separate financing institution for small and medium industry is usually called for. Some of the special reasons for this will be presented in Chapter VII.

(d) Up to the present, industrial financing institutions in developing countries have been concerned primarily with assisting in the promotion and establishment of new industry, and with trying to ensure the safety and repayment of their industrial investments. No doubt the time has come for them to accept some responsibility, as do many financial institutions in developed countries, for monitoring the efficiency and productivity of the enterprises in which they have invested. They cannot be made completely responsible for this; many other institutions must also watch over it. But as development financing institutions begin to hope for profitable return especially from some of their equity investments, they will have ever more reason to try to encourage maximisation of that return, which will also mean improvement of national productivity and economic

strength. To the extent that the efficiency, productivity, and financial strength of industrial enterprises can be improved, the financial institutions will be better able to recoup funds for investment in other projects. In some cases, as we have seen, this means repayment of loans; in others it means sale of equity to private investors.

(e) In a number of developing countries a sizeable part of the investment by development financing institutions is directed into public sector projects. As we shall see in Chapter VII, financial supervision of public industrial enterprises is notably weak in many countries. In view of their sizeable investment, financial institutions have a responsibility to participate in all possible efforts to improve this situation.

It should be clear, as we suggested at the outset, that financing institutions are distinct from promotional institutions in many of their functions, but equally clear that in practice they tend to find it necessary to become more alike. Most financial institutions promote the creation and development of enterprises; most promotional institutions are vitally concerned with financing. Many financing bodies are increasingly concerned with industrial operations; no industrial operators can neglect financial matters. We have noted that financial institutions should be more alert to the servicing and efficiency of industrial enterprises; conversely much industrial servicing calls for initial expenditure of funds even if economies are later derived from doing so.

Many developing countries are having to determine the proper role, scope, and position of their industrial financing institutions. The basic question is akin to that long discussed regarding industrial institutions as a whole: consolidation or specialisation. The former seems difficult, yet too great a diversity can become chaotic.

In a small country, or one where industry is not yet substantial, the situation may be such that a single institution can handle identification and promotion of projects, arrange for their financing, and supervise credit. If the scope of activity warrants, a separate department of the institution can handle each of these functions. In larger countries, or those with greater industrial development, separate institutions for promotion and financing will be needed. A number of countries, including Bolivia, El Salvador, and Trinidad and Tobago, have given direct financing capacity to their development corporations or their industrial promotion bodies. In most cases it has been difficult to achieve a proper balancing of emphasis and capabilities among promotion, financing, and technical or managerial assistance.

The experience of Nepal, though simple, is illuminating. As a least developed country with little industry, Nepal initially established an Industrial Development Corporation charged with promoting, financing, servicing and even operating new industry. Eventually it was found that financing demanded contacts, procedures and staff separate from the other functions. As a result in 1974 an Industrial Services Centre was split off from the Corporation to handle the non-financial functions, leaving the Corporation in essence as an industrial development bank. To retain close continued linkage between the two institutions, both were kept under the jurisdiction of the Minister of Industry and Commerce, and the chief officer of each is present at the board meetings of the sister institution. As in most cases of institutional relationships, however, it has been found that these formal arrangements, while helpful, need to be reinforced by constant efforts to improve working contacts.

Haiti has followed a different route, by establishing subsidiaries of its general promotional and financing Agricultural and Industrial Development Agency, which operate industrial estates, assist in supplying equipment, and provide supporting follow-up for its loans.

B. Transfer of Technology

Transfer of technology is a term commonly used but rarely defined. For industry, it involves the movement of know-how, procedural as well as technical, from one country to another, especially from more industrialized to less developed countries. It brings attendant problems of selection, adaptation, ownership, and payment. All of these obviously are within the concern of many industrial institutions, but transfer of technology rarely is the focal concern of one specific institution.

An interesting exception is found in El Salvador, where with support from the Organization of American States a Service of Information and Transfer of Technology was established in 1975 with a small but varied staff of professional specialists to inform, assist and co-ordinate on matters of technological transfer.

A developing country deals with technology at three stages: selection of the type and source of technology which is to be employed in a particular industrial plant or even as a general policy; application or use of that technology in actual industrial production; and development within the country of new or improved technology.

(i) Selection of Technology

Among the criteria to be applied in selecting technology for transfer to a developing country are: its appropriateness to local conditions including level of sophistication, climate, skill of operators, potential for use of local raw materials; its employment potential; the scale of production for optimum operation as related to needed volume of output; cost compared to that of alternatives; reliability; modernity and probable up-to-date life; ease of servicing and feasibility of training for local maintenance.

Another factor often is the credit or other financing arrangements which may be offered by a seller of technology or by his government. With regard to cost it should be noted that technology can be of two types:

- a) That which is within the general domain of knowledge and available free of charge;
- b) That patented or controlled by one or more owners, and available only by purchase, rental or royalties.

One major disadvantage in many developing countries, especially with regard to new or advanced or complex technology, is a lack of the experience or knowledge needed to make the best selection. If the technology is to be used by foreign interests, presumably they can secure that information abroad. Domestic private investors may have to make more or less intelligent guesses, or employ consultants to advise them. Their selection of technology will be subject to some indirect controls by government through incentives, licenses, and exchange controls.

The government's responsibility for correct selection of technology is most direct when that technology is to be used in public industrial enterprises, whether wholly or partly public owned, or even in private enterprises which have received government investment, loans, or other financial help. Beyond this, the government of any developing country cannot escape a general responsibility that all technology introduced into the country must contribute most economically and effectively to national planned development.

Selection of technology for public use thus should satisfy the same criteria as for private use, and is subject to the same scarcities of information, experience and knowledge. It also usually involves larger projects, with attendant larger risks if the selection is incorrect.

Qualified advice on selection may sometimes be available locally, especially if the technology involved is simple or is in the public domain or is generally used. However, given the ordinarily wide range of technology from which a selection must be made, plus variables of suppliers, cost, and other criteria, it is not always possible to find proper expert technical advice within a plant, within the ministries, banks, or planning unit, or among their expatriate advisers. Commercial suppliers of technology, construction contractors, and manufacturers of equipment will be eager to provide advice on selection, but understandably they will be interested in recommending their own technology or products.

In many cases, where a project is receiving financial aid from foreign governments or foreign banks, they will participate in or have a veto on selection of technology. That selection is frequently restricted to a single national source or supplier. This is not usually the case when financing is from international sources, but the financiers may then be inhibited from giving active advice, in order to avoid any appearance of favouritism.

Many developing countries employ foreign consulting firms to advise them on selection of technology for major projects. While this advice is usually for a single project, which makes it possible to employ specialist consultants, occasionally a country fixes a long-term general arrangement for advice on many or all projects. Unfortunately the same lack of experience and knowledge which makes it difficult for developing countries to select project technology applies equally well to the difficulty of choosing an advisory consultant. An improper choice of consultant can lead in turn to bad advice and bad bargains in the eventual selection of technology.

(ii) Institutions concerned in selection of technology

Although the highest political organs of a country are not industrial institutions as such, they almost always participate in the selection of technology for the largest projects, and make or ratify the final decision. This is understandable in view of the size of responsibility and investment involved, and the probability that factors of domestic or international politics may be important in the selection. However, it is well to note that these organs do not themselves usually have much technical expertise, but must rely either on expertise already made available earlier in developing the project or an expertise new to the project.

The same lack of expertise is usually true in the planning institutions. In some countries such as Somalia, where the Directorate-General of Planning and Co-ordination has a Technical Department with sizeable international and bilateral advisory aid, the planning body has attempted to build a nucleus of technical experts, although in no developing country can they be expected to have sufficient knowledge of the more complex types of technology such as that involved in large petrochemical or mineral processing projects.

However, the planning body is always an interested institution, since it needs to know the costs and scale of operations that a given technology would involve, the probable types and amounts of inputs and outputs, and any linkages to other technology in allied plants or parts of a production chain. The most obvious aspect of this, and one where the planners' economic expertise must be integrated to that of the technologists, is the matter of desirable plant size.

Public and private financial institutions also have an interest in the selection of technology. Even if some of the project financing comes from sources outside the developing country, the selection of technology usually has to be justified to them. One of the requirements of the financing institutions is virtually always a comprehensive technical as well as economic feasibility study. If this is not provided by the project sponsors, the financiers may have to make it or have it made. Occasionally one finds that a development bank has built its own technical staff, but more commonly the making of at least the technical part of a feasibility study on a major project is contracted out.

Additionally, other financial institutions of the government need to be consulted at some stage in the selection of technology since, as we shall see, they will eventually have to approve payments for the technology, any foreign participation in an enterprise as a vehicle for such payments, expatriation of royalty payments or of share of profits, and foreign exchange for any type of payment.

National development corporations ordinarily have strong reasons to be concerned with a proper choice of technology. Often they are the initiators of an industrial project, and equally often they become the implementors and operators of a production plant. Hence they need proper technological advice from beginning to end, since they are responsible for success or failure of the enterprise.

Development corporations are more likely to have in-house engineers who can give advice on selection of technology. However, they do not always have persons qualified in every branch of technology, and rarely will they have individuals with enough experience to advise on the technology of oil refineries, for example. But more than other institutions, development corporations do tend to have the range of experience which enables them to know where to get the advice they need. They are also accustomed to hire and use outside consultants and advisers.

Advice on selection of technology can also be sought from science councils, research institutes, and universities. In some cases they themselves are initiators or modifiers of applicable technology, and their role becomes one of promoting its use. In many developing countries their research efforts are still too general or limited to be of help in selecting among complex technologies, but they may be valuable in showing how moderate-level technologies can be adapted to local materials and conditions.

(iii) Use of Technology

The criteria to be watched regarding the use or usability of technology are practically the same as for its selection and include level of sophistication, skill of operators, scale, cost, and servicing. Whereas these are anticipatory at the selection stage, they are direct practical considerations when the technology is put to use. Unfortunately it is not always possible to run a preliminary pilot operation as a test.

Among the factors especially important in use of technology is that it must fit the local materials. Other considerations are:

- (a) The ease or difficulty of training local operators and maintainers, given the available levels of education and skills;
- (b) The degree of difficulty in starting up a plant or process, and the amount of "debugging" which is likely to be required;
- (c) Complexities of maintenance, availability of spare parts, necessity of bringing in special repair technicians from abroad in case of breakdown, especially when the technology involved is unique or unusual in the country;
- (d) Flexibility of the technology to future changes or variations in the raw materials available, the scale of production needed, or the products to be manufactured;
- (e) Operating costs, including start-up costs (and time), normal operating costs, and costs when working at partial capacity.

Many of these factors are of importance not only with regard to the particular plant within which the technology is used; they also have a substantial linked effect on the sophistication needed and actions taken in supporting industries and institutional services.

It appears most desirable that any technology selected and used should to the greatest possible extent be congruent with and contribute to the development of national technology. This in itself indicates the types of institutions most concerned with the application and use of industrial technology.

Training institutions, including universities, technical schools, and vocational training institutes have a direct responsibility for adjusting their programmes and output to the new technology. At least for an initial period this may have to be supported by manpower policies enabling the temporary use of some foreign personnel.

The advisory and consultancy services to industry will need ways of developing their knowledge and expertise regarding the new technology, if they are to be able to assist in troubleshooting as problems arise in its application, and if they are to be able to advise on use of the technology in additional plants.

Research services will naturally have a professional interest in the new technology, whether or not they have directly participated in its development and introduction. They also have a major interest and responsibility regarding its future development and adaptation to the local situation.

(iv) Development of Technology

Development of technology within an industrialising country can take three main forms:

- a) Adaptation of foreign or world-wide technology to specific local circumstances;
- b) Building further new technology on what is world-wide;
- c) Local research on technology involving local materials or improvement of local methods.

This development is primarily the responsibility of a country's research institutions. They will be covered in the next section of this report. Here, however, we should note that the process of transfer of technology assumes that the technology actually is transferred to industry and used by it. Hence it is essential that any development of technology in any of these three forms should be made known to and available to industry, and that its use be encouraged and facilitated in every way.

(v) Industrial Property

As we have seen, technology received by developing countries can be that which is generally known in the world at large, or that which is the property of some one person, group, or corporation. Much of it is in the form of machines, much of it is procedural, some is in the form of managerial or technological know-how, as for instance computer software.

Virtually all countries have some arrangements for protecting and controlling this proprietary technology. Those arrangements are of two general types: the registration and patenting of the technology as exclusive property, and the oversight of licensing of patented technology for use within the country.

In a highly developed country the process of obtaining a patent is often complex, with institutions equipped to do thorough checking of whether the technology in question is in fact new and does not infringe upon that which is already covered by other patents. Few developing countries have the technical resources to make such investigations. They must rely upon the actions of more advanced countries, upon the investigations of the international bodies dealing with industrial property, and in the case of a dozen countries of francophone Africa upon a regional centre. Aside from these resources, most developing countries merely have offices of registration, which can record or grant patents, but are not equipped effectively to determine whether the technology really is patentable. There is little evidence that these offices call upon local research institutions or laboratories for help, nor that they have resources to help enforce the exclusive patents they grant, if infringement is claimed. Usually patents are handled by an office primarily concerned with more general legal registration and records, although in some countries a small unit in the Ministry of Industry or Ministry of Commerce has this responsibility. Registration of trade marks is ordinarily also done by the patent office.

Although infringement of patents is a world-wide commercial and industrial problem, developing countries are at present more concerned with the non-use of patented technology. The practice has developed whereby those who develop technology try to patent it in as many countries as possible. This protects them from having it stolen or used in those countries, but it similarly prevents any use of it in those countries unless the

holder of the patent sees fit to do so or to allow others to do so. This can become a barrier to development by preventing local production of a needed industrial item and forcing its importation from some other country where the patent holder or his assignee has a factory. Considerable discussion has gone on recently as to how developing countries can balance the rights of those who develop technology against the needs of countries to benefit from all possible new technological discoveries.

The utilization of technology clearly involves policies and institutions different from those which merely register its existence, novelty, and ownership. As seen earlier, it requires policies concerning what technology is to be sought, from what sources, and through what arrangements. Thus governments of developing countries have to set policies regarding the purchasing of technology through licensing for its use, either as government and its public projects need to secure that technology and private entrepreneurs seek licenses from foreign owners to set up production using patented technology. Although government is not directly concerned with the latter type of arrangement, it does have an interest in ensuring that its national entrepreneurs are treated fairly, that the foreign licensor secures no undue benefits, and that the terms of the license are appropriate to the country's situation and resources. Government may thus have reason to supervise and control licensing arrangements entered into by the private as well as the public sector.

A number of institutions are likely to participate in making the determinations just mentioned. These include the economic and technical staff of the planning ministry and specialists from the ministry of industry, from public corporations with appropriate experience, from research institutions, and from the ministry of finance and banks. In fact the number of institutions seemingly qualified and concerned is generally so great that governments need to ensure that clearance and approval of technology licensing is streamlined rather than being so lengthy and cumbersome as to discourage the transfer of technology.

C. Research

Industrial research is a particularly important function in developing countries for several reasons. Many of the factors of industrial production are apt to be unusual or unique. Among these are the nature of local raw materials; elements of the productive process such as skills of manpower, types of machinery, climate and water supply; and the nature of consumer preferences at home and abroad. Many of these factors differ substantially from those met in countries already industrialized. Existing technology must be adapted to meet those new circumstances, or new technology must be created.

Not only is research in adaptation needed, but industry in developing as well as developed countries is always changing, and research is needed to enable that innovation. Innovative research is especially important to developing countries which rely on a limited number of agricultural or mineral resources and which wish therefore to broaden the range of products from those resources or to extend the degree of processing of the resources before export. Similarly, research can be helpful in finding new ways of creating from locally-available materials substitute products which domestic consumers can use instead of relying on imports. Recent efforts in Sri Lanka to develop a coconut cream for cooking use instead of imported oil are of this nature.

Industrial research is, of course, carried on world-wide, and it may seem unnecessary for developing countries to make the effort to **create their own** national research capability. Experience shows, however, that this is necessary. While much of the result of past research is now part of the body of world knowledge, available for use as needed, much of the more valuable current industrial know-how is proprietary, is costly to purchase, and may not be made available for sale to a given developing country. Domestic research is a means of finding substitutes or alternatives.

Even where imported existing industrial knowledge can be secured, freely or by purchase, it may not be applicable to the local conditions. Though scientific enquiry may be an objective process, the necessary adaptation can best take place on the spot of application, and carried out by persons who have thorough understanding of local circumstances and needs, and who can easily discuss and check those needs on the spot with industry and with its suppliers and consumers.

Finally, the motivation for research, both innovative and problem-solving, is usually greater for those who can see immediately the needs and the results. They are also available for continued progress and adjustments of the research and its follow-up, and stimulated toward future enquiries growing out of current discoveries.

Although industrial research in a developing country is therefore important and necessary, it is nonetheless a costly investment of scarce resources. Especially in early stages of development, industry itself may be in no position to give research much support or even much interest, while government is often more concerned with matters of physical and social infrastructure. Research institutions have notably required substantial international or bilateral assistance in their beginnings.

To a great extent the strength of industrial research in a developing country is an indicator of that country's degree of industrial development. The least developed countries are generally weakest in research institutions, while the more highly industrialized developed countries are likely to have one or more large and strong research institutes and even specialized institutes for their more important branches of industry.

Research institutions may specialize in that way, focussing on a single industrial product or branch such as cement or textiles, or an agro-industrial product such as jute. In Egypt the public Iron and Steel Company has joined with the Academy for Scientific Research and Technology in sponsoring a Central Metallurgical Research and Development Centre, for example.

Most often research institutes are multipurpose, serving the industrial sector as a whole. In recent years there has been considerable discussion regarding the range of activities which a research institute, especially a multipurpose one, should carry on. There is general agreement that it should be concerned with seeking and developing technology which can be of value to its country's industry, that it should build consultative relationships to help meet industry's technical problems through its research, and that it should serve as an active centre for technical information.

Beyond this there are differences of opinion. A number of persons connected with research institutions in developing countries believe that those institutions should carry additional responsibilities for some or all of the following

Surveys of natural resources;

Standardization, testing, quality control;

Technical servicing, and advice on selection of equipment, production planning, and process control;

Training of industrial personnel;

Industrial economic study, in marketing and forecasting, pre-investment, productivity, and management;

Advice to government on industrial policies, including labour relations, location of industry, export promotion, and incentives.

It can be seen from our present survey that many of these activities are of concern to other institutions and that a number of them are in fact carried out by other institutions. Allocation of these functions either to a research institute or to some other agency will depend on local circumstances and decisions. As so often

emphasized, duplication of any of them is a luxury which few developing countries can afford. At the same time, one can see reasons why research institutions have a basis for interest in all these subjects, and advantage should be taken of whatever expertise they have to offer.

It is sometimes assumed that research institutions are primarily concerned with "inventing" new products. In fact most such institutions, especially in developing countries, are much more concerned with the adaptation of technology to local materials and industrial operations. Much of their work therefore is concerned with testing and evaluation, and with improving processes and materials usage. Research specialists have noted that often studies which seem most elementary, with no scientific glamour, have the greatest impact on improving industrial productivity. It appears, therefore, that most industrial research in developing countries has to be of a definitely applied (or applicable) rather than pure or theoretical nature.

Industrial research institutions can be set up under various arrangements, notably:

Within a university or associated in some way with it;

Within a government ministry or as a semi-autonomous governmental agency;

As part of an industrial firm or an industrial association;

As a private organisation, either non-profit or for profit.

Given the variety of ways in which research institutions can be and are established, it is not surprising that the more industrialized among the developing countries often have several or many separate industrial research agencies. In view of the wide range of research work possibilities, this is not necessarily undesirable. However, there is a constant need to ensure that these varied research units are in some way harmonized, to prevent wastage of effort and resources, and to ensure that their work is directed toward furthering the national development goals and plans.

As with all industrial institutions, a fundamental requirement is that research institutions should be planned as part of a total system, each having its intended necessary objectives and range of tasks within that system. Constant monitoring by some qualified agency is needed, not merely to ensure that individual institutes do not stray from their assigned role but primarily to revise those assignments as a dynamic research effort warrants.

No matter how carefully arranged may be the system of research institutions, their working inter-relationships, informal as well as formal, will be crucial. Many developing countries are already finding that one of the most important factors in facilitating those relationships is the gradual flow of personnel from one institution to another. While this can reflect antagonisms, it often is a healthy result of older institutions losing staff to build new ones, or individuals

moving to further their careers. One director of a large and successful industrial research institute recently noted that he had little difficulty in co-ordinating work with most of the other research bodies in his country, since nearly all their directors had formerly been his junior colleagues.

The interrelationships of research institutions generally take one of three forms. At the programme planning stage there can be a co-operative mapping out of the work programmes of the several institutions to interlock them, not only avoiding duplication but actively sharing or dividing out the various parts of some sizeable area of research. In many cases this is a matter of adjustment. One institution finds that another has a particular interest or a study under way, and plans its own work to fit next to it. This type of programme planning at its best will include not only industrial research institutions but similar bodies in other sectors such as agriculture where research may have a substantial relation to industrial operations. Joint programme planning can lead to establishment of joint research projects with staffing drawn from more than one institution.

In view of the cost of research facilities and equipment, joint use of laboratories or equipment has its attractions. Within an individual research institute, even one which operates as a grouping of somewhat self-contained cells, some equipment is usually regarded as being for the joint use of the entire organization. Expansion of this concept to one of inter-institution equipment presents difficulties of control, timing, maintenance, etc. However, in a number of cases where governments have recognized that certain equipment is too costly and specialized to be owned by every institution, arrangements for rental or sharing of that equipment, or contracting for work requiring its use, have been worked out. For research use of some equipment such as computers these arrangements have involved other institutions which are not primarily engaged in research.

As research work grows in a country, and as the number of research institutions increases, some formal system of monitoring and stimulating their interrelationship becomes desirable. The Philippines has grouped most of its scientific and technical research agencies under a National Science Development Board. In Ghana 12 institutions, including the Industrial Research Institute, are co-ordinated by a Council for Scientific and Industrial Research. Argentina's Institute National de Tecnologia Industria has supported, in collaboration with various universities, industrial enterprises, and government regional units, the establishment of a number of regional research centres, most of them focussing on specific fields, including leather technology, mineral industries, and textile research.

In its initial period an industrial research institute in a developing country may find it difficult to build contacts with an industrial clientele. Yet service to that clientele

in the purpose of such an institution. With little experience or prestige, the institute at first will have little to sell and little knowledge of what would be saleable. Adequate representation of industry on the institute's governing or advisory boards can be especially helpful at that point. Institute staff can profitably invest a sizeable amount of time visiting industrial plants, learning the realities of production, hearing of likely subjects for needed research, and making known the institute's availability. Contacts also need to be built up with other industrial institutions, which in their own functional work are likely to notice subjects on which research is needed.

Although in general industrial research institutes in developing countries are expected to concentrate on applied rather than pure research, each has to strike a balance in its work between problem-solving at industry's request and forward research which though needed to advance the economy may not be recognized, asked for, or financed by industry. Nearly all research directors consider that they should allocate at least a moderate proportion of time to this latter type of research, which is of long-run value and frequently is stimulating to staff.

Research requested by an industrial client can benefit from a close and steady contact with the client firm. Many research institutes promote this by asking that these projects be carried out by teams drawn from the plants as well as the institute. Depending upon its nature, the actual study work can take place either in the factory or

in the institute and its laboratories. Teams of this nature are useful since they expand the personnel resources available to the institute, provide the study projects with persons who have greater contact and direct experience with the problem under study, and facilitate the testing and implementation of the research findings.

Although smaller firms do not have resources to develop much of a research capacity of their own, larger enterprises in developing countries can and do desire to build their own research and development function. The research institute can foster this by training the enterprise research staff, as through the joint teams just mentioned, and through arrangements to supplement and support the enterprise research unit during its formative period.

Research is an activity demanding of resources. In the first place, it requires expensive facilities and equipment. Nearly all of the equipment has to be imported from developed countries, with expenditure of foreign exchange. It is always changing, with new subjects of study and with new advances in research techniques. Research institutions find themselves required to take advantage of all possible sources of equipment, not only from government budget funds, but from foreign aid and from the purchase or loan of equipment by industry.

Staffing is also a problem for research institutions. In most developing countries personnel of the quality needed are inevitably in short supply, although in the more industrialized nations this may not always be true. For example, Egypt in 1975 has 18,000 masters and doctoral degree holders engaged in various types of research. To recruit staff, the research institution

is in competition with the universities and with industry itself as well as with any other similar institutions. In many instances it is impossible to recruit any one qualified to meet the current needs of the institution, and necessary to accept some one who appears potentially valuable and then arrange for his or her training, very possibly outside the country. This is a long-term investment, with danger that at its end the trainee may not join the research staff after all. Bonding systems and other devices are usually available; if they serve as a link between trainees and the institution they are to join, this may be desirable; if they are chains to hold reluctant staff they are unfortunate, to say the least.

For those trained and employed in research work, adequate equipment and challenging work are especially important. Many researchers trained in developed countries return home to be frustrated by inability to do investigations at the advanced levels they have become accustomed, and lacking the specialized equipment they feel they need. This presents a major challenge to the institution to create assignments which will motivate staff members sufficiently to overcome those frustrations. One of the greatest worries of research directors, we have found, is the balancing of proper supervision and unity over the entire work programme against giving their staff of rather highly trained and sensitive specialists a feeling of participation in setting programme and procedures, as well as of freedom of enquiry and experimentation.

Not all staff can be recruited already trained, or sent on foreign fellowships. Especially in the junior ranks many will receive their training at home, as national technical colleges, polytechnics, and university faculties of science grow in strength. Research institutions are well advised not only to allow and encourage this training for their staff, but to take an active role in helping to plan the most useful study programmes, allow released time for study, and even subsidize tuition costs. In some cases there is value in allowing senior staff to take on moderate amounts of teaching or independent research at universities to refresh their knowledge, give a wider range of enquiry, and possibly add to their income. All of this is related to the desires of any research institution to retain the staff which represents a sizeable investment. Research institutions in developing countries are especially vulnerable to loss of their best staff because of the competition from other research institutions, the expanding national universities, and industry itself as it builds its own research and development activity. In some cases the outward movement of personnel may be a planned phenomenon, as the older or larger research institutions of a country serve as sources for staffing newer regional or branch research bodies. In this the older institutions serve a training function, and gradually a network may be built up of researchers who have shared experience and know each other's work and interests.

In the establishment of an industrial research institute, outside financial support of its operations is generally essential during the formative years. This support can come from government, from the original sponsors of the institute, from manufacturers associations and chambers of commerce in the form of grants or donations, from industrial

enterprises or individuals, or through assistance in kind and manpower from international and bilateral programmes.

As an institute becomes better established and recognized, it should be able to cover part of its operating costs through earned income. Experience has shown that attainment of 35 to 45 percent self-sufficiency in about ten years is a sign of healthy growth in such an institution in a developing country. However, income should not be considered as the only criterion for success, since there may be reasons why an institution is unable to require payment for some of its services, or from some of their users.^{1/}

Nonetheless, since industry is expected to be the direct or indirect beneficiary of the research, its willingness to pay is a desirable indicator of its recognition of the value of that service.

In considering the extent to which industry can be expected to help support research institutions, one can identify three levels of service, each of which may involve a different degree of payment. Some research is preliminary or exploratory or general. It may prove of value to a number of industrial enterprises, or it may develop new processes or products which some firm eventually will wish to utilize. This developmental research is clearly of value to the country's industry, but it may be difficult to persuade any individual industrial firm to contract for it. More likely the costs will need to be paid by government, or by an industrial organization, or possibly as a long-term investment by one of the larger public or private industrial firms. A second type of research is that dealing with rather large projects which have reasonably specific goals and content. This lends itself to contractual

^{1/} Adapted from Industrialization of Developing Countries: Problems and Prospects, Industrial Research. UNIDO Monographs on Industrial Development, No. 10 (ID/40/10; 69.II.B.39, Vol.10), p.57.

arrangements with some firm which can see a rather direct benefit and is willing to pay for it. Finally, most research institutions make their equipment and laboratories available for a sizeable amount of testing and small detailed tasks, of very immediate use to the firm requesting the service. The cost of this is properly payable by that firm, and except for new or small enterprises, is usually so charged.

In view of the heavy cost of equipment and salaries, careful financial procedures are especially important for research institutions. This often seems difficult, given the slow and uncertain nature of much research, and the difficulties of predicting its time and cost in advance. However, many of the better managed research institutes have established rather successful costing systems.

One feature of applied research is that it should be potentially of financial value to some firm. As pointed out earlier, technology resulting from research is usually either in the public domain and freely available to all, or controlled by a legal owner who may set the charges and requirements for its use. Similarly, the results of studies by a research institution may be made freely available, or become the property of an individual client, or retained under the ownership and control of the institution. At stake is not only financial control but also confidentiality and the right of use.

When a research project is forward looking and of no immediate financial value to attract an industrial client to support it, or when it will be of benefit to a number of firms, there are reasons for its being funded by government or some other general sponsor with its results made openly available, or at least available to all upon payment of a moderate royalty. At the other extreme, a firm which finances research to solve its particular problem or to develop its own desired improvement, and is willing to pay the full costs thereof, presumably can properly demand that it retains the results as its own confidential property, as would be the case if the research were done in-plant or by a hired commercial research organization.

There is a middle ground where the research is innovative, likely to be of special utility to only one or two users, and of considerable value to the user. The research institute is likely to want to patent it or in some way secure the control and advantages of its discovery. Again a balancing is involved, between the institution's need to protect its strength and solvency, and the usefulness of the discovery for national economic progress.

The very term "transfer of technology", of which the research function is an integral part, implies contact from country to country. Research as a function, a discipline, and a process, is international. Hence national industrial research institutions do not operate in isolation. They are a part of a world community of scientists, and their work and discoveries are of international interest. Allowing for what has just been noted regarding confidentiality and property rights, industrial research institutions participate remarkably fully in contacts outside their own countries. Many of the ways in which this takes place will be described in Chapter VIII. Industrial research institutions have many means of contact. Some engage in shared research, or are "twinned" with institutions in other countries. Several regional or subregional industrial research institutions have been established. Researchers engage in numerous international gatherings of professional associations, seminars sponsored by international agencies, and conferences on particular problems. The body of printed information available to researchers is almost overwhelming. The problem for research institutes is not a lack of opportunity for international contact; it is how those opportunities can be organized and refined, and how each institution can organize itself to select and utilize the information and relationships which can be most valuable to it.

D. Standards and Quality Control

Standardisation as applied to industry involves a group of activities, including the control of weights and measures, metrology, the setting and enforcing of standard specifications for industrial products, codes of practice, quality control and testing, and certification marking. All form necessary parts of a whole, and generally are handled by a single institution or at least by several institutions which must work closely together.

Standards services and regulations in developing countries have two main purposes: to improve the quality of goods available to domestic consumers, and to facilitate competitive exporting of national products. Additional advantages are protection of public health and safety, reduction of unfair competition among producers, and development of greater uniformity in quality of industrial output. Ultimately production to fixed standards can have internal benefits to industry by reducing wastage, minimising stocks, and even cutting the amount of raw materials required.

At a quick glance it might appear possible to establish world-wide standards for all industrial products, to be used by all manufacturers in all countries. Developing nations have found that this is illusory. Not only do the requirements of major importing countries vary, but domestic tastes do also, as do local abilities to meet standards.

Hence nearly all developing countries are beginning to create institutions to establish and administer national sets of standards. Although many of these institutions take cognisance of standards framed internationally or by other nations, they feel in most cases that there must be modification or even complete substitution in order to meet their own local situations. This places on these small new institutions the overwhelming task of building systems which eventually may include

hundreds of standards, many of them complex in technicality, and covering a wide range of products and technology.

To secure the various benefits of standardization industry and producers, and its several types of consumers, need various forms of guidance and assistance. There must be clear definitions of basic categories of measurement such as meters, liters, kilograms and their more complex and esoteric cousins. Detailed specifications of standard items or levels of quality must be prepared, taking into consideration the interests of buyers and the capabilities of manufacturers. Mechanisms have to be made available to test whether the produce does in fact meet those specifications. Publicity is needed to certify this achievement and to enable both manufacturer and buyer to benefit from that fact. Incentives must be provided to encourage production to standard and the purchase of certified standard goods, with occasional punitive disincentives against attempts to cheat by misusing the certification mark, or even against all efforts to sell substandard items which present dangers to health or safety.

The first national standards bodies were established in the early 20th century by professional organisations and federations of commerce and industry. Since the 1940's, the general tendency especially in newly independent and developing countries has been to establish them under government auspices.

Several years ago a UNIDO study found that:

"Three types of national standards bureaus have grown up over the years: the governmental institution, responsible to a minister and financed from the state budget; the private autonomous institution, taking the form of a foundation or association; and the jointly managed institution, also autonomous, in which both government and private interests participate.... The first type is found in countries with centrally planned economies and.... in some other countries as well. In the second category..... it is found that a government subsidy provides a significant part of the revenue in all but a very few cases. Government influence over their

operations is growing, but stops clearly short of participating in management... The third type has been adopted by a number of developing countries, and there are also instances of standards bureaux which have changed over from the first to the third type".^{1/}

The various aspects of standardization are sometimes divided among several institutions, especially as between so-called primary standards and secondary standards, while quality testing and enforcement are frequently separated from standard setting. The setting of standards may also be divided, particularly since standards may involve health, safety, agricultural production and commerce as well as industry as such. For example, in Thailand there are bodies dealing with standards for particular departments or sectors in addition to the general Thai Industrial Standards Institute.

In the Philippines the standards function is a responsibility of the Ministry of Trade, while in Egypt the Organization for Standardization is attached to the Ministry of Industry. In Central America and the Sudan standardization is assigned to general industrial research institutes. In Sri Lanka the standards bureau has developed a close working relationship with the Ceylon Institute for Scientific and Industrial Research, using the CISIR laboratories for testing, and CISIR is represented on the Standards Council.

Standards institutions require a somewhat unusual and specialized type of staff. On the one hand they are dealing with very highly and varied technical subject matter. On the other hand they must subject that specialization to the daily production needs and acceptability of manufacturers and the purchasing habits of consumers, a task which requires sensitivity to industrial production as well as public relations skills.

Industry relationships are vital to standardization, since the industrial plant is the place where standards are applied. Enterprises can be encouraged to fix their own detailed standards, additional to or more strict than national ones. In the work of a standards bureau, input from industry as to requirements which are needed and practicable is valuable, as is the supplying by industry of expertise and members for the various standards formulation committees.

^{1/} Industrialisation of Developing Countries: Problems and Prospects. Standardization. UNIDO Monographs on Industrial Development, No. 12. (ID/40/12; 69.II.B.39, Vol.12) p.27.

The technical aspects of standardization work require facilities for research and laboratory testing. Few standards institutions in developing countries have these facilities, at least in adequate range. Hence they must usually rely on universities and on the national industrial research laboratories.

More than some other industrial institutions, standards bureaux are likely to have close consultative relations with industry. This is primarily because nearly all of them use a committee mechanism in formulating standards. Individual technical committees are established to draft standards for particular product items. Each committee consists of persons who have particular knowledge of that item or have qualifications needed in setting the standard. Thus a committee may include scientists and academicians, engineers and specialized technicians, plant production men and marketing or export personnel, and civil servants. The standards institution provides staff support. Some countries have hundreds or even thousands of persons serving on these item committees or on group harmonization committees.

Ideally this draws into consultation a large number of persons who not only can help in formulating the standard but later may be valuable in supporting its use. Unfortunately in many cases it is difficult to man the committees on such a large scale or to maintain widespread and active participation. As a result the standards bureau staff may have to carry a large proportion of the work.

After the various committees have reached agreement on a proposed standard, it is usually subject to approval by the standards board, and in the case of governmental institutions, often by the minister. Frequently there is a delay to allow time for comments by any one affected. Finally it is published and becomes operative, with the force of regulation or law if the standard is compulsory.

While the committee system has been rather successful in combining the consultative participation of industry, technologists, and civil servants, there is little or no consumer input from the public at large. This is partly because consumers in developing countries are rarely organized. Even if they are organized, they have little technical expertise available. In any case, the direct buyers of products from industry are almost always domestic or foreign distributor businessmen. It has been suggested that in the absence of an effective mechanism to draw the personal consumer into the standard-setting process, consumer interests might be watched over by representatives from government, which in its purchasing for schools, hospitals, and armed forces is a large-scale buyer and user of many articles such as food, clothing, and furniture commonly purchased by the public.

Broadly considered, standards are set to several levels. Within each manufacturing plant there is always some fixing of quality levels so that each part of production is adequate to fit in with the rest, and of overall levels below which the total product will not be put out for sale. Very often trade associations establish somewhat more general gradings or standards of quality for mutual convenience or protection in selling. Then there are the official national standards with which we are here primarily concerned, and finally a growing number of voluntary international standards.

While some jurisdictions, notably Hong Kong, adopt standards already prepared internationally or by developed countries, most developing countries try either to create or adapt their own. This is partly because they must fit their standards to the requirements of their foreign buyers, but largely because they must set production standards in the light of what their manufacturers can attain and what the domestic consumer can afford to demand. Hence many standards set by developing countries are of a double nature - export and domestic - or are admittedly lower than ideal but all that can at present be asked.

Standards once established can be either compulsory or voluntary. The majority of standards in developing countries are of the latter type, although those involving health (e.g. foodstuffs) or safety (e.g. electric light bulbs, matches), or major export commodities are often compulsory. Thus most countries have at least a few compulsory standards while leaving others voluntary. The Central American Industrial Technology Institute, which has a regional standards department, fixes standards which are compulsory for use by the region's "integration industries". Latin American governments commonly support the use of voluntary standards by requiring that the goods they purchase meet applicable standards.

The promotion of use of voluntary standards requires a degree of salesmanship. This is supported by the device of certification, publicised by a standards mark. Often, as in Jamaica, a publicity campaign is mounted to encourage local consumers to search for goods carrying the national standards mark. Venezuela has established an autonomous Standardisation and Quality Certification Fund, or an organisation with the acronym of Fondonorma, as an adjunct to its Standardisation Commission in the General Directorate of Industry. Fondonorma serves to publicise standards and the mark, and at the same time solicits industry's financial support for standards work.

Certification also can speed exports by avoiding the time-consuming need to send advance samples for checking by potential buyers. Instead, a guarantee system is possible in which certification by the national standards body is accepted as guaranteeing that the exports meet national standards, which in turn are known and trusted. This requires, as in Egypt, a system of inspection of exports to ensure that they meet national, import, or international standards before guarantee. This need for international acceptability is one reason why standards institutions are especially alert to promote their international contacts and prestige.

Where standards are compulsory, there arises the problem of enforcement and who is to enforce. On this the attitudes of standards institutions vary. In many countries enforcement is left to the police or other similar bodies, rather than the standards agency. In Thailand, however, the standards bureau regards enforcement as one of its major duties, and prides itself on its enforcement record.

The effort to ensure and control quality is closely associated with the enforcement of standards. Obviously if a standard of quality is fixed there must be ways of testing whether products meet that standard. In developed countries each factory usually has its own staff and procedures for this testing. In developing countries most factories do not yet have adequate testing facilities. Hence standards institutions in those countries have an additional responsibility of assisting them to develop the necessary quality testing capability, or of providing central testing facilities. Where industry or exporting points are scattered, the standards bureau may need assistance in testing. The Egyptian Standardisation Organisation has enlisted universities and research laboratories outside Cairo to supplement its own subsidiary Quality Control Centre.

Much of this central testing by standards institutions or by research or other laboratories is at the option of industry, usually on a fee basis. Some testing, however, may be mandatory, especially when associated with the policing of compulsory standards. It may be based on periodic or spot check sampling to protect buyers by ensuring that production meets the required standards, or it may be an agreed rechecking of items which carry the mark, primarily to protect the reputation of the mark at home and abroad.

Quality control is not merely a matter of enforcement; it can also be a service of assistance. Many enterprises in developing countries, especially the smaller ones and those relying on domestic technological skills, lack adequate equipment and trained staff to maintain production at a set quality; most of them have little idea how to set up a quality control system. This is an area in which the better established standards institutions have been able to give considerable practical help. In addition to training plant quality control staff, the institution can advise on procurement of the needed equipment, assist in its proper maintenance, and where the costs of in-plant quality control are too great can even handle some of that control in the institution's laboratories on a contract basis.

Metrology is the scientific foundation upon which standards and in fact much of modern industrial production rests. Some metrologists speak of "primary standards", i.e. metrology, and "secondary standards", which are the application to production. Each country, developed or developing, needs some agency which is the guardian and point of reference for those primary standards. Even where foreign or international measures are used, such as the international standard meter, there must be a body which transmits these to local availability, or in turn checks local or plant instruments and measures against those fundamental standards. This inevitably calls for calibration of local instruments, which leads to the making of adjustments and repairs, and thus the metrology agency may become what in the Republic of Korea is designated as the "Fine Instruments Centre". That institution not only calibrates and tests instruments, but trains and examines engineers and technicians in the design, production, use and repair of precision instruments. It supplies technical consultancy and occasionally manufactures special tools and gauges at the request of industry. It has given special support to the country's electronic industry.

Standards institutions, including quality control and metrology agencies, can be costly. More than some other industrial institutions they provide quantifiable services which can be costed. Hence, although nearly all of them, public or private, have some amount of financial support from government, it is common for them to charge for many of their services. Usually copies of the standards documents are sold to industry. Charges are made for use of certification marks and for laboratory testing. Occasionally the standards institution receives some revenue from an export cess. Paraguay was one of the earliest countries to make such an arrangement. As already mentioned, the Venezuelan Bureau of Standards combines the public relations aspect of developing support for use of its certification mark with tapping an additional revenue source through fees for membership in the supporting association.

International ties are stronger for standards institutions than for many other types of industrial institutions. There appears to be a somewhat greater sense of professional fellowship among standards specialists. This leads to considerable bilateral contact with institutions not only in neighbouring countries but throughout the world. There is frequent exchange of information and a recognized exchange and borrowing of other countries' standards.

The Pan American Standards Committee sponsors informational and training seminars and has prepared and recommended a number of regional standards. An Arab Organization for Standards and Metrology was established in 1967. Mention has been made of the standards work of CAITI in Central America, while in East Africa there is an East African Standards Institution.

An unusual aspect of standards operations is the importance of an international body, the International Organization for Standardization (ISO). This was set up in 1946 and is a non-governmental body which has prepared a number of voluntary industrial standards. These are gradually being adopted for national use. For various reasons, the process of harmonizing national standards with the ISO ones appears further advanced in the developed rather than developing countries. However, it can be hoped that as the ISO standards become more numerous and varied, and as industrial exports from developing countries increase, there will be a more universal use of those international standards.

E. Advisory Extension Services and Consultancy

Nearly all industrial institutions do some advising. For many it is innate in their assigned objectives. Many have specific units or programmes for "advice", "consultation", or "extension" to industry. All varieties of institutions do this; not only the Ministry of Industry but banks, small industry agencies, development corporations, management centres, and chambers of industry.

There are no intrinsic reasons why an industrial operation in developing countries should have more problems than in developed countries. Yet it often is newer and less experienced. It has initial problems to overcome before settling down to routine. It has fewer resources of past experience and present expertise on which to draw. Because of this it is more necessary that industrial institutions should exist to provide advice and help in problem solving.

Yet at the same time those very institutions in developing countries may not be in a strong position to give that needed advice, because they are too inexperienced and lacking in expertise. Frequently industry is more than aware of this, has little confidence in an institution and the advice it might offer, and hence is reluctant to call on it. Thus a dual problem for industrial advisory institutions is to build their own capability while they are already trying to help industry.

Advisory assistance to industry can be divided into two broad types: technical and managerial. In many instances the two types of help are provided by different institutions, and almost always by different advisory specialists. Yet it is generally recognized that the two are interlocked, that technical problems often have managerial content or consequences, and that managerial actions have effects upon technical operations. In some cases this interaction has led to duplication of institutional effort, as management service institutions have felt it necessary to develop a capacity to deal with the technical aspects of industrial problems, while technical institutions find themselves giving management advice.

The areas of possible technical advisory service are numerous. They include:

- a) selection of technology and equipment;
- b) plant lay out;
- c) equipment installation, running-in, maintenance, and modification;
- d) raw material use and changes;
- e) process improvement and innovation;
- f) productivity;
- g) quality control and product testing;
- h) product design and redesign.

The range of management advice is likewise broad, covering:

- a) investment planning;
- b) organisation of firm and plant;
- c) personnel recruitment, training, supervision and disciplining; human relations and labour relations;

- d) financial funding, accounting, costing;
- e) purchasing;
- f) marketing research, distribution, exporting;
- g) public relations and advertising.

Many industrial institutions furnish both management and technical assistance. The Egyptian Institute of National Planning has also carried out studies in textiles, fertiliser, cement, steel and automotive products, and has 46 holders of scientific doctorates on its staff. Management centres often include productivity as one of their major objects. Development corporations offer management and technical help in promoting new public and private enterprises and watch over both aspects in the later operations of promoted plants. Small industry support institutions usually attempt to give both types of help, as often do rural or regional development corporations. For instance, the Malagasy Bureau de Développement et Promotion Industriels prepares feasibility studies for industrial projects, undertakes promotional assistance to small-scale industry, and advises the Ministry of Economy and Commerce regarding industry requests for approval of price adjustments; it also gives technical assistance to public enterprises which are in difficulty and is carrying out major management advisory support to two state owned factories.

While industry in developing countries may be able to look for advice to a number of institutions, each of them may be rather weak in their capacity to provide adequate help. Not only are most of them trying to carry out a number of activities, of which technical or managerial advice is only one. They are frequently themselves in an

early stage of development; their staff is limited in numbers, range of expertise, and level of experience. It cannot always be expected that the institution's staff will have greater qualification, especially in technical details, than have personnel within the industrial plant. In such circumstances a major value of institutional assistance must be in the methodology and objectivity of studying the problem, rather than in any extra technical or managerial expertise. In fact one director of industrial advisory service in a least developed country has suggested that a unique role of his institution has been to lead industrial clients to identify the real problems they are facing, rather than the surface symptoms which prompt their requests for advice. Once the real problems have been defined the enterprise and institution can work jointly toward their solution.

A number of developing countries have recognized that with a wide number of subjects on which industrial advice can be needed, and with a scarcity of advisory personnel, there is need to pool or group industrial advisory service as much as possible. This can take several forms:

a) National management development centres often give technical advice as well. This has grown through the reasoning that management improvement has as an important goal the improvement of productivity, which is a technical problem as well as a managerial one; hence the need for expertise to deal with both interlocked aspects. Ghana's Management Development and Productivity Institute, for instance, provides

both training and consultancy. The latter includes feasibility studies, aid on enterprise reorganisation, production methods improvement, and manpower programming. In the past 10 years the Institute has carried out more than 300 advisory service assignments for public and private enterprises.

b) Emphasis on the technical side is given in several industrial service centres. These sometimes have been established to give help especially to a particular branch of industry or to industry in a particular locality. They face an acknowledged difficulty in trying to give advanced technical advice to all varieties of industry or on a nationwide basis. At the same time, they discover that many technical problems brought to them have a managerial content, and that they have to suggest managerial improvements to facilitate implementation of their technical advice.

Ecuador's Development Centre is a multipurpose service centre of this type. An autonomous institution, its Board of Directors includes representatives of two chambers of industry as well as the chief officials of the Ministry of Development, the national council for planning and technical co-ordination, and two development banks. Its activities include help in industrial promotion, feasibility and marketing studies, stimulation of the physical infrastructure for industry such as industrial estates, industrial information, promotion of subcontracting, and above all advisory assistance. During a recent 20 month period it was engaged in 43 consultancy contracts in technical subjects, accounting and costing, industrial engineering, quality control, and general management.

c) Joint management and technical advice is especially common as a function of small industry centres, where both types of problem are usually rather simple, but where the clientele is numerous and has few other problem-solving resources. The Bangladesh Small and Cottage Industries Corporation initially concentrated on the importation of raw materials and equipment, hire purchase and small loans. It now also sponsors industrial estates and has a small-industry advisory service, a rural industry service, a design centre, and light engineering institutes. Advisory services to small industry will be considered again in the next chapter, in the context of all institutional service to that particular type of industry.

d) More general sources of both technical and managerial assistance are the national universities and professional associations. The universities in developing countries are only beginning to build their capability to furnish these services, since they too have been limited in staff and range of expertise and have in many instances been overwhelmed by teaching demands which leave little time for research and for advisory outreach. Both in managerial and in technical matters it appears that university personnel are now recognizing the opportunities and responsibilities of this type of industrial and public service. Many university professors in developing countries are now being used as paid consultants, hired directly by industry or through industrial institutions, while some universities are beginning to take on contracts to do applied research for industry.

Professional associations usually are limited in their resources to provide advisory services, although notable help has been given in some countries by the professional accountancy bodies. However, since the members of professional associations are in most cases employees of various commercial and industrial enterprises, the advisory service they usually feel they can properly provide has to be of a very general nature rather than answering the problems of an individual firm.

All of these various institutions confront a number of internal problems in providing advisory services. These problems are described in considerable detail throughout our present study, but a summary reminder may be helpful here. Those who furnish advisory services need experience and prestige, not only to make their advice valid, but to give the industrial client confidence that the advice is worth accepting. To achieve this capability the institution must be able to recruit and retain personnel of high qualification, in competition with industry which also needs such persons and can bid attractively for them. This in turn means that the advisory institution must be well financed, either from fees for its services or from basic government support. In allocating the use of institution service abilities, several policy decisions will have to be made. Should it rely merely on requests for advice, or should it make an active attempt to reach particular parts of the industrial sector? Should it concentrate on helping private industry or public enterprises; small industry or large? To what extent should and can its outreach extend to industry outside the capital city or other major urban centres? Finally, each advisory institution needs to look inward as well as outward, to be sure that it appreciates and solves its own managerial and technical problems as well as, or even before, those of industry.

One particular form of industrial advisory body which is somewhat different from the institutions already described, and which is of increasing importance, is the consultancy agency or firm. Unlike most of those other institutions, the consultancy body concentrates on advisory service alone. All developing countries have had frequent occasion to utilize technical

and even managerial consultancy firms, usually from foreign countries. They are employed to advise on technology, to prepare feasibility studies, to assist in plant construction and operation, and to help solve major production and management problems. It has been a matter of great concern that this is one area in which developing countries have continued to rely largely on foreign expertise. Many observers have pointed out that not only does this reflect a lack of self-dependence, but that it is a drain on foreign exchange, that outside experts do not necessarily have a proper appreciation of local problems and needs, and that they are not continuously available for the follow-up of their advice.

Developing countries face a dilemma. Their domestic consultancy capability is limited, weak, inexperienced, and lacking in prestige. Yet its strength, experience, and reputation can only be built up by giving local consultants employment on projects which they may not yet be ready to handle competently. Within the past few years considerable thought has been given to the question of how to build usable domestic consultancy in developing countries. Two routes are being followed to achieve this.

In a number of developing countries individuals are setting up private consultancy firms. Those individuals often have had experience in government, industry, or university, but find it difficult to build up an initial consultancy record in competition with prestigious foreign firms. There is the added difficulty that with consultancy assignments few and far between, these firms cannot afford to build up substantial permanent expert staff, but must rely heavily on part-time employees from universities and elsewhere.

Occasionally a government will insist that contracts be given to domestic consultants in preference to foreign ones. However, some assignments are too large or technically too specialized for even a well qualified local firm. Because of this, more and more countries are establishing a modified preference by requiring that any foreign consultants must accept local ones as associatee, in a joint contract. It is frequently found that this is an unequal partnership, in which the domestic consultants are kept in a subordinate position and gain little real experience of value. Increasingly governments, or those awarding consultancy contracts, are taking steps to ensure that the foreign-domestic partnership in consultancy be real and that the national staff have meaningful participation. The intention is that ultimately local consultants will have acquired sufficient experience to enable them to handle a sizeable part of the country's consultancy work.

The second route utilizes the advisory expertise which is gradually growing within industry itself and within industrial institutions such as development corporations. Several developing countries have established special or autonomous consultancy units within industrial institutions, concentrating the technical and managerial advisory expertise, and separating it from other servicing activities. The next step is to establish these units as contractual consultancy organisations, either as autonomous governmental bodies or as semi-public or private independent firms.

The Indian National Development Corporation has set up a consultancy unit which offers pre-investment, project planning and design, and project implementation help.

In El Salvador an Industrial Consulting Unit, with its own Board of Directors, was established in 1975 within the Ministry of Economy. Three of the nine members of the board are from industry; the others are from various governmental institutions. It has sections dealing with production, costing and financing, and marketing. Half of its staff is technical, half administrative. In addition to technical help to a number of industrial firms, the Unit has prepared industrial management manuals and has given support to formation of a Co-operative Association of Clothing Manufacturers and Exporters and an Association of Marketing Professionals. The Unit was established with international assistance, and in its early stage has been an advisory body more than a commercial consultancy organisation, although its financial arrangements can move in that direction as it establishes itself.

Tanzania has recently established an autonomous Industrial Studies and Consultancy Organization which although owned by government is expected to operate on a commercial basis. It is the successor of a studies unit in the Ministry of Industry. The Organisation's board of directors includes representatives of several public industry holding corporations, the productivity institute, the university's faculty of engineering, and the East African Industrial Research Organization. Although initially it plans to depend heavily on foreign bilateral aid personnel, it hopes rapidly to build a national staff capability so that it can serve as the government's major consultancy body, as well as monitoring the use of foreign and national consultants, raising professional standards, advising on transfer of technology, and co-ordinating industrial research and information.

Egypt is following a somewhat different route, by converting its General Organisation for Industrialization, formerly an industrial project development body, into a general and heavily technical government industrial consultancy organisation under the overall control of the Minister of Industry.

Industry in developing countries thus has a variety of sources to which it can look for advice. Gradually advisory staff and expertise are being built up. Yet as industry itself develops, its needs for help will grow, and its demands upon the scarce supply of persons qualified to give advice will also grow. As industry expands and as advisory institutions increase, an information gap can develop. Many countries are reaching a point of needing to have some central body such as the Ministry of Industry keeping an inventory of skills which may be needed for advice and consultancy, and of the persons or organizations or institutions possessing those skills. Along with this, facilitation of the use and interchange of that expertise will be needed, and ways developed to encourage or even to insist that experts be made available to meet priority industry problem-solving needs. Responsibility for contributing to this pool of advisors is not that of government alone, or of industrial institutions or universities or consultancy firms. In developing countries industry itself, particularly its larger firms and public enterprises, has a responsibility to make its expertise available to other firms, especially to smaller ones, so that their technical and managerial difficulties can be overcome and national industrial production optimised.

F. Manpower and Training

A major service required by industry in a developing country is the provision of an adequate supply of trained manpower. The need is difficult to meet. Even the beginnings of industrialization in a formerly agrarian country require many skills which have not previously been developed. As industry grows its needs for these skills increase. The qualifications needed range from rudimentary mechanical or supervisory abilities through clerical, machining, and adept machine operation, to engineering, financial, legal, executive and managerial. The individual skills needed are ever changing as equipment, processes and products change.

The Lima Declaration urged that the educational systems of developing countries be adapted to give young people an appreciation of industrial work, and that policies and programmes should be adopted to train the qualified personnel needed for new sources of employment. This would mean the establishment of permanent institutions for specialized, rapid, large-scale and high quality training of national labour at all levels. In addition, co-ordinated programmes of literacy and workers' training would be needed to ensure professional promotion and development of local expertise.

In a developing country industry itself can do relatively little of this training. Individual craftsmen impart their skills to their sons or other young workmen, but formal apprenticeship training is rare. At the other end of the scale only the few large corporations are sometimes able to establish in-plant training programmes.

Rarely is there a reservoir of unemployed trained persons, although vast numbers of completely unskilled individuals seek work in most developing countries. The school systems too often have not been designed to educate for industrial skills, and vocational schools are few, small, and underequipped. Nationalistic feelings inhibit the use of skilled foreigners except as a special and temporary expedient.

(1) Manpower requirements and planning

Data concerning the numbers and qualifications of persons needed by industry and the supply of such persons available are essential to a proper programme of industrial preparation and staffing. Few developing countries have been able to make accurate and comprehensive manpower surveys, and fewer still have the resources to keep the information up to date. Overall surveys of national manpower needs and supply are usually the responsibility of the Ministry of Labour or the planning authority or occasionally the central statistical office. In a few countries the Ministry of Industry has tried to make a limited survey of the industrial sector alone. Nearly always it has proved impossible because of lack of staff to cover the numerous smaller industrial plants or to secure adequate information regarding the number of trained and available manpower. One Ministry of Industry, knowing that qualified industrial personnel were clearly in short supply, questioned the larger

industrial firms as to their expected requirements over the coming five years. Some useful trends were discovered, but the specific needs were found to be underestimated in most cases, because the plants feared they would be committed to hire the number estimated, whether they eventually needed to or not.

It is clear, however, that in some way those responsible for planning training facilities and programmes need to keep in contact with industry if training is to produce the right skills in the right numbers, to be available at the right times and places. It is equally clear that manpower data collection and planning must be a shared activity of all institutions concerned with industrial training.

(ii) Training Institutions and Programmes

In all developing countries government is under pressure to provide a system of training to meet industry's needs. It faces several problems in developing programmes to do this:

a) The scarcity or unreliability of statistics, as just noted, regarding needs and regarding availability of qualified persons. Lacking accurate data, training could be directed toward producing unneeded skills, or could provide too few or even too many qualified applicants for the available jobs.

b) The inevitable lag between the initiation of training and the final availability of qualified graduates. The more complex the skills involved, the greater is that lag, with complete engineering or business management training requiring several years after university entrance.

c) The difficulty of ensuring that training is practical enough to equip the trainee to move productively into industrial employment when he completes his studies.

One of the country studies for the present project noted the importance of clarity in training objectives, clarity in relating those objectives to specific institutional and plant training action, and integration between training programmes and the actual work environment.

In many ways it is an over-simplification to speak of "training for industry" as if it were a unity. Industry itself is varied, and the skills required in a beverage plant are different from those in a steel mill, which in turn are different from those in an electronic assembly plant. Within individual branches or plants the type of work done by personnel is varied. Skill required range from rudimentary to very high; levels of education needed range from illiterate labour to engineers or managers with advanced university degrees. This means that the types, levels, and length of training required are equally varied.

In no country is a single institution responsible for all aspects of training for industry. Ordinarily at least three ministries - industry, education, and labour - are concerned, and there are frequently several autonomous agencies and private institutions involved in training. This multiplicity is largely due to the variety of training involved. Its result is to increase the need for co-operation and co-ordination.

A distinction is properly made between "education" and "training". The former is more general and

preliminary, and is usually the responsibility of the Ministry of Education and its schools. The latter focusses on the imparting of specific skills for a determined line of work, frequently to those already in employment, and can be provided by a variety of institutions, many of them specialized. However, in the preparation of manpower for industry in developing countries this line is not always distinct. In the first place, almost any training for modern industrial work requires a basic foundation of literacy and ability to handle simple arithmetic. This is not universally available in many developing countries, and many training institutions find themselves having to provide that basic education. Secondly, the education systems of developing countries are becoming aware of the desirability of including vocational subjects in their post-primary curricula. This is, of course, a laudable change. It means, however, that students who have been exposed to those vocational subjects are coming into the job market in substitution for, or competition with, young people who have studied the same subjects in more practical form in vocational training centres. At the same time those centres, often receiving trainees who have not had post-primary education, are including academic subjects in their curricula alongside the regular vocational training. Finally, the universities of developing countries are now graduating substantial numbers of engineering and management majors who are going directly into industrial jobs without added practical training.

(iii) Vocational training

Most developing countries have no difficulty in finding an adequate supply of unskilled labour for industrial development. A few very small countries may have a shortage in this category, as do some of the smaller oil-producing countries now going through a period of very rapid and large industrial growth. But on the whole, developing countries are concerned with a surplus of unemployed unskilled labour. At the same time, almost by definition, there is little or no training problem involved. Either no training is required beyond simple instructions, or the minimal training needed can be provided rapidly on the job.

The needs and problems are greater, but not overwhelming, with regard to semi-skilled labour. Most developing countries seem to be building up sizeable pools of persons who have at least some knowledge of tools and of industrial operations, acquired either in-plant or at vocational schools. The chief difficulties seem to arise from the limited range of their knowledge, their insufficiency of practical experience, and the fact that industrial expansion often outruns the growth of the supply of semi-skilled labour. While many countries have given substantial emphasis to education at this level, it has tended to be lacking in practical orientation and contact with industry, poorly equipped, insufficient in volume, and lacking in instructors with proper industrial background. However, industry itself has been able in many cases to supplement the preliminary education and to upgrade skills on the job. In this, they have been supported by a number of programmes in many countries for part-time vocational training given by institutions but in close association with industry

itself. These appear to have been rather generally successful, since they rely on the co-operation of industry to provide personnel to be trained, and have the built-in appraisal by industry which is to receive and use those trained.

One result of the vocational education/training overlap is that young people are coming into the industrial market for semi-skilled and artisan jobs such as those for carpenters and simple mechanical workers via three different routes. One is the vocational education portion of the general school system; one is the vocational training centre; one is the apprenticeship system. Almost never are these under the same auspices; rarely are they co-ordinated; frequently they are competitive. Tanzania has attempted to meet this by establishing a National Vocational Training Council.

In-plant training has rarely been developed to any large extent. Understandably, small enterprises might provide apprenticeship training but do not have the scale or resources either to organize in-plant training programmes or to furnish the number of trainees to make them feasible. However, not enough has been done by most training institutions to move their courses out to the larger industrial plants and to place responsibility for them on the plant management itself. The Ministry of Labour's Vocational Training Department in Somalia has been able to concentrate on this.

The Vocational Training Centre in Tanzania has developed a system of sponsorship of many of its trainees by industries. Industrial firms pay the tuition costs for specific trainees, and have first call on employing them when training is completed.

This helps to finance the Centre, enlists industry's interest, and aids in employing the graduates.

The Egyptian Department of Industrial Efficiency and Vocational Training has attempted to develop a regular relationship between the Department and its industrial clients. Public sector companies send their annual training plans to the Department, which studies them in the light of its resources. It also holds monthly meetings with the training directors of industrial companies and designs training programmes in consultation with them. Furthermore, the companies contribute toward the cost of training programmes.

One means of making training more practical and of supplementing the limited facilities of vocational training institutions is through programmes of apprenticeship. Relatively few developing countries have built such programmes, partly because of inter-ministerial co-ordination difficulties, partly because effective apprenticeship requires considerable supervisory machinery.

In Egypt the apprentice trainees spend an initial year in a vocational training centre, and then move to their assigned plants for two years of practical training which is supervised by the Department of Vocational Training. During these two years they spend one day each week at a vocational training centre. There are 56 such centres in 12 different provinces and each emphasizes a particular vocation or group of vocations, such as metallurgy, leather work, carpentry, printing, spinning and weaving, and electricity.

Sri Lanka is linking its apprenticeship with its junior technical schools, sandwiching 6 months of schooling between periods of in-shop training, but continuing schooling part-time during the final apprenticeship period.

Trinidad and Tobago has initiated a special programme combining technical school and in-plant training for a large number of unemployed young people who have completed most of the academic secondary schooling. It is hoped that this will lead to a substantial employment of these youths in the plants where they are trained.

Training institutions in now and more developing countries are endeavouring to set up systems of certification to denote levels of skills achieved through vocational training and experience. Several problems have appeared. Reasonable levels of qualification have to be set, commensurate with skills appropriate to the particular country, achievable yet not unnecessarily low. A fair, honest, and convenient examination system has to be established. Arrangements are needed to give proper credit in examination and certification for job experience as well as formal training, without giving credit for mere tenure on the job when there has been no learning and improvement. The certification has to be associated with training availability and with salary levels, so that workers will be able and motivated to upgrade their skills and achieve higher certification.

Special programmes are called for in most developing countries to train those entering handicrafts and cottage industries. If quality of product is to be standardized and raised, innovativeness of design to be encouraged, and better equipment is to be introduced, then training is required.

(iv) Training of technicians

The major current industrial manpower problem, which in turn is a major training responsibility, is at the middle level of technicians and supervisors as well as the more highly skilled machinists and mechanics. This level requires longer and more detailed training than most developing countries have yet been able to provide in any volume. Yet work of this nature does not carry sufficient prestige in developing countries to attract young people from the competition of professional or white collar jobs.

In country after country we have found that shortage here regarded as the bottleneck of industrial production; at the same time training to relieve it is the least adequate part of the industrial training system. Facilities have lagged behind. Those persons qualified to be trainers are in especially short supply and are themselves intensively sought for employment by industry itself. Language barriers inhibit the use of foreign trainers. Although the resources to equip and support this level of preparation are costly and scarce, many countries are attempting to build technical high schools and at the same time technical training centres. In this possible overlapping they are often encouraged by the availability of international and bilateral aid for instructors, equipment, and even buildings. In almost no case are there arrangements for joint use of these expensive resources.

In Tanzania, however, the vocational training centre and the technical college have a joint committee which facilitates exchange of syllabi and a certain amount of sharing of staff and workshops, with some additional collaboration from the university's

faculty of engineering. There are hopes to expand that collaboration so that the design projects of university students can be used as production projects by the vocational centre, with benefits to all participants.

Efforts to improve the supply of technicians by upgrading semi-skilled industrial employees face difficulty in creating entirely new attitudes needed by industrial supervisors as well as the innovativeness desirable in technicians. Often basic literacy and arithmetical training is necessary for this upgrading. Meanwhile some of the more rapidly developing countries are staffing industry at the technician-supervisory level with temporary foreign workers, as in several of the oil-producing Middle Eastern countries. Venezuela has actively recruited workers from Mediterranean countries, both as upper middle-level industrial employees and as trainers.

(v) Training of engineers and managers

At the top levels of industrial employment, managers, engineers, accountants and other professional staff are in nowhere near the short supply that is sometimes thought. It appears that most developing countries have now been able to train a sizeable number of persons to be at least ostensibly qualified in those disciplines. Much of this has been through use of the numerous overseas fellowships supplied during the past quarter century by international and bilateral assistance, while the output of new national universities in developing countries is now becoming substantial, even at postgraduate levels. Insufficiencies of supply are still noticeable in several respects: the ever-increasing demands

of industry as it grows; the constant need for new and greater specialization as a country's industry becomes more sophisticated; the poor quality of some of the professional education received; the brain drain of qualified professionals, some of whom do not return home from training abroad; and the lack of practical experience of the new graduates.

Preparation of engineers is almost always the responsibility of universities, either the national universities or foreign ones through fellowships. In most developing countries the faculty of engineering has been one of the later creations, but engineers are now beginning to graduate from even the newer national universities. However, the term "engineer" covers a number of specializations, and industry alone uses a variety of engineers. Some, such as petroleum engineers, are somewhat unusual, and a small national university in a developing country cannot always provide such specialized instruction. At the same time, the job market for many of these engineering specialities is small, so that countries need to "fine-tune" the number trained to match as closely as possible the likely vacancies. This is difficult, given the lengthy time of education involved and the uncertain number of drop-outs. The situation is further complicated by the tendency of those successfully educated or trained to these advanced levels to seek more attractive employment in developed countries, thus upsetting any calculated balancing of training and jobs at home.

Although it seems to be assumed that engineers will successfully obtain their post-university practical orientation entirely on the job, this assumption is not as universal for industrial managers. In most countries there are institutions offering training for those engaged in industrial management, regardless of the education they have previously received. This management training varies widely in subject matter,

duration, and clientele. There are long part-time courses, week-end seminars, courses on general management, purchasing, finance, personnel relations, and other specializations, courses for managers of large enterprises and for small entrepreneurs. A recent addition has been management training for workers, as they begin to be drawn into management of industry in some developing countries. The Sri Lanka National Institute of Management has operated a number of management courses for members of worker councils in public industrial enterprises, linking these with joint sessions of workers and senior plant officials to discuss management and productivity problems.

The Trinidad and Tobago Management Development

Centre carries on major training activity in addition to an increasing amount of consultancy. A government grant guarantees its basic expenses, but is reduced to the extent of income from training and consultancy fees. The Centre's board includes representatives of labour, industry, university, and the Caribbean Industrial Research Institute. The training programme now emphasizes special areas such as personnel and supervision, marketing, production management, and small business management. Residential seminars and programmes in collaboration with employer and labour organizations have been produced, and the Centre has assisted in Caribbean regional training activities. A number of in-plant training courses are given, both for public and for private industry.

The Egyptian National Institute of Management Development combines the former Institutes of Top Management, Public Administration, and Local Administration. Since 1961 it has trained about 3000 persons. 60 per cent were from industry and nearly half of those were in senior management.

These institutions are public bodies, under ministry sponsorship. However, management training is often provided by private organizations, such as the Thailand Management Association, the Jamaica Institute of Management, the Association pour la Formation au Sénégal, or the Arab Business Administration Society.

Not all management training is of a general nature. Mention has been made of some of the specialized courses often offered, and this specialization is part of the programme of nearly every management training institution. Understandably, officers who work in these specialities for industrial enterprises are usually the clientele for those courses. Thus management training is imparted to a wider group of higher industrial personnel.

A unique form of management training, is that designed for persons in charge of small industrial enterprises, who usually have little preparation for industrial management yet are forced to become generalists dealing with finance, personnel, purchasing and marketing, and production supervision, without being able to call on any great amount of specialized staff assistance.

Emphasis in developing countries has up to now been on the need of training a sufficient quantity of manpower for industry. As industrialisation moves forward, however, many countries are beginning to realize that the quality of manpower is also important; that industrial techniques are always changing and that skills must be renovated, refreshed, and upgraded. New institutional training programmes hence are required for improvement of those already trained. This is true at all levels, as new machinery and technology, new administrative relationships, new laws and new economic conditions change industrial operations. At the same time, this renewed training is essential if staff are to become qualified for promotion to higher posts which call for more advanced skills.

Although most developing countries have been in a condition of scarcity of qualified industrial manpower, nonetheless there are sometimes dislocations, with trained persons seeking work while plants have vacancies.

Few developing countries have yet established adequate employment search facilities, especially for the more highly skilled industrial personnel and positions. This is an area where industry itself, industry's organizations, and the various ministries which deal with training and manpower all have a joint responsibility. In particular this is another point where closer relationships between trainers and industry will be profitable. When training is in-service, in-plant, or on-the-job this problem does not arise.

The **overall problem** revealed is that of securing a co-ordinated training package or system. Various efforts have been made in developing countries to achieve this. Venezuela has recently established a National Council on Human Resources, with duties of studying, planning, and co-ordinating. Its board represents not only several concerned ministries and public agencies, but also the national federation of private sector chambers and the national confederation of labour.

Training of manpower for industry is not merely a functional activity of several industrial service institutions, however well co-ordinated. It involves many ministries, even the economic, social and administrative policies of government as a whole. In developing countries the preparation of numbers of people for industrial employment is a process of revolutionary change. As a recent UNIDO report summarized it:

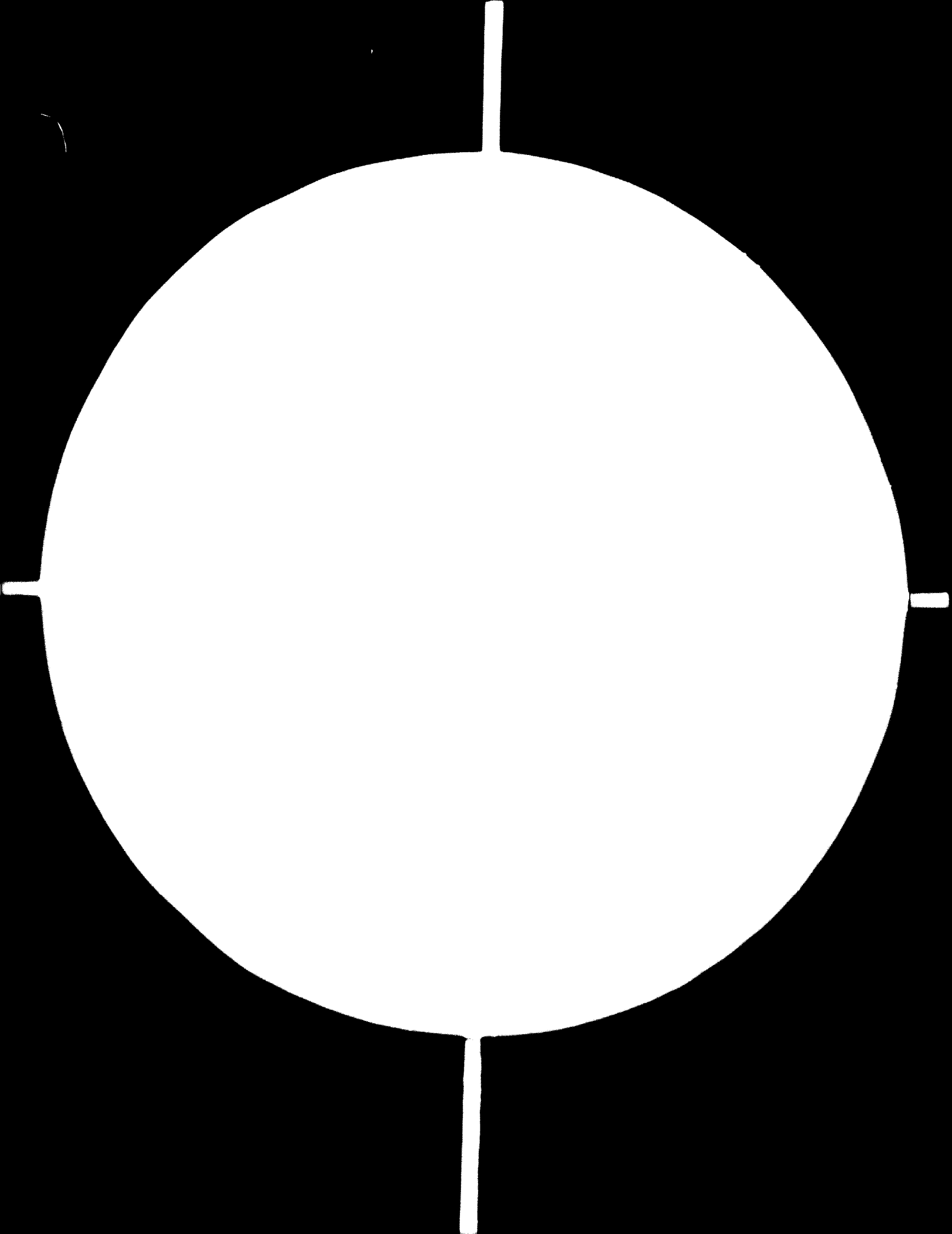
"The major potential resource for industrialization in the less developed countries is manpower, but manpower in these countries at present consists largely of untrained, illiterate peasants tied to custom-bound inefficient ways of living and producing. Their adaptation to new productive methods, new institutional forms, new values and new jobs must necessarily involve a slow process of acculturation. Workers will have to acquire new skills and become accustomed to new techniques, tools, products, markets and ways of organizing work. They will need to adapt to regular work hours and to job discipline, to accept closer supervision and direction of an impersonal rather than a paternalistic kind, and to become output and quality conscious. And they must make the shift from independent productive activities to division of labour, job specifications and interdependence of industrial roles. Finally, they must learn to live in an aspiring rather than a fatalistic society".^{1/}

^{1/} Industrial Co-operatives in Developing Countries.
(UNIDO, ID/WG.210/2), page 19.

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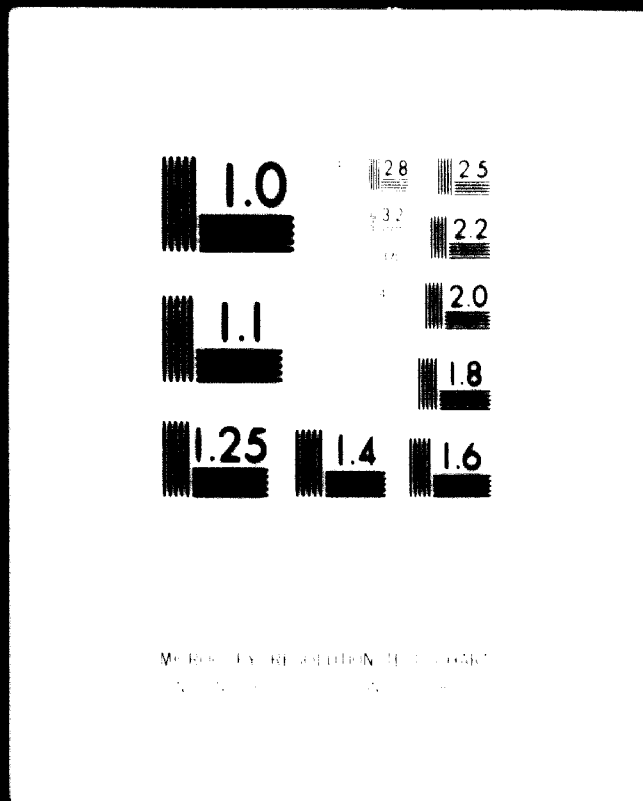


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G. Export Promotion

The Lima Plan of Action urged developing countries to formulate appropriate incentive measures to encourage the export of manufactured and semi-manufactured products with the highest possible local content and value-added potential, and to increase and diversify sources of foreign exchange earnings, by exerting appropriate control over the marketing of their products. This is echoed in the current development plans of many countries and in their investment incentive policies.

Although in some quarters there is a growing disenchantment with manufacturing-for-export (and certainly with reliance on the exporting of unprocessed raw materials), every country needs large amounts of foreign exchange to further its development efforts, and a major way to secure this is through export sales. Hence, reluctantly or eagerly, most developing countries have adopted a policy of industrial export promotion. That policy and the Lima recommendations give added importance to those institutions which are concerned with such promotion, and place greater responsibilities on them.

A policy of export promotion can be facilitated in two ways. One is through encouraging the establishment of manufacturing plants which intend to produce for export. The second is by direct support of manufacturers in their efforts to find foreign purchasers for their products. The techniques of these differ, as do the institutions which apply them.

Although nearly all developing countries give industrial priority to import substitution, most of them are alert to the possibilities of marrying this to export development. In many instances a large plant produces for both domestic and foreign markets. Sometimes the domestic market is too small or too low in purchasing power to absorb the production which economies of size have fixed for the plant. An export ratio may be set to secure foreign exchange and to stimulate penetration of foreign markets. Joint enterprise arrangements with foreign partners may call for a sharing of sales between local and foreign buyers. All these considerations can apply to public industrial enterprises as well as to private ones.

Public industries are usually under more compulsion to give priority to domestic needs. Nonetheless one finds a public corporation such as the Sri Lanka Gem Corporation exporting virtually all of its output, while certain of the wood sold by the Tanzania Timber Export Corporation is not used by local woodworkers but is demanded only in export.

A number of devices are used to encourage establishment of private or joint-venture enterprises which intend to produce for export. In countries where a license is required either for establishment of any industry or at least for foreign investment, priority may be given to an export enterprise. Usually the ministry of industry is the authority for this licensing and ministry policy often states such priority. The same preference is likely to be true in the granting of loans, by development banks. In such cases it will be easier for a new enterprise to get allocations of foreign exchange for machinery and equipment if there is some likelihood or commitment that it will eventually earn new exchange through its exports.

Once the plant is established, its import of replacement equipment or even of raw materials is often tied in some kind of relationship to its export exchange earnings. Both carrot and stick devices are available to show exports in order to receive exchange allocations. Or it may benefit from an agios system in which it is allowed to retain a proportion of its exchange earnings to use for future foreign purchases.

The most common benefit available to firms producing for export is an exemption from customs duties for materials imported for processing and later re-export. That exemption may be complete, or it may be applied through a draw-back system in which duty is paid at the time the raw materials are imported and then is reimbursed when the processed goods are exported. Despite the obvious fairness of any such exemption system and its effectiveness in stimulating export-processing, in application it can produce difficulties for manufacturers and for government. If duty is paid pending eventual reimbursement, working capital is tied up and subject to bureaucratic delays. Governments complain that exempted materials sometimes are illegally diverted to production for domestic sale. Both industry and government agree that accounting and control is most difficult if a plant is producing for both domestic and export markets at the same time.

A common situation in a number of countries that many industrial plants are merely assembling or processing way-stations for materials which merely passes into the country and out again. While some countries encourage this type of industry since it does provide employment, others regard it with distrust, as contributing little more than that employment, as being generally foreign-owned and parasitical, and as being dangerously subject to fluctuations in external demand. Countering this is the possibility that skills developed in an assembling or processing plant can later be used in expanding manufacture to the use of local materials and/or

production for local consumption. An outstanding example is that of the automobile industry in Brazil and other countries, which began with assembling and now in many cases has reached close to 100% local manufacture, with exporting to neighbouring countries.

A number of developing countries are now establishing free zone industrial areas, often with industrial estate facilities. These are designed to attract processing industries which will benefit from easing of customs charges and formalities and presumably will lead to increased employment and added foreign exchange. The firms in these free zones usually have their own export contacts and do not depend to any great degree on the government's other export support services.

Small industries and handicrafts have special disabilities in exporting, and it is often difficult for an export promotion institution to deal adequately with their needs. As we shall see in Chapter VII, some countries have established special institutions to promote small industry export marketing.

Egypt experimented with use of a marketing co-operative to promote export of the products of small industries, but it faced substantial difficulties due to the small size of industrial producer co-operatives and the limited scope of possible activity.

Many manufacturers, especially those producing on only a medium scale, do not have the foreign contacts needed for finding export markets, nor even the knowledge of foreign outlets or the products which might be exportable. In the larger and more industrialized countries, especially those with sizeable organized private commercial and industrial sectors, assistance in this is provided by a Chamber of Commerce and Industry or by an export subsidiary thereof. But in a less industrialized economy any such body may not be well enough staffed or informed to be of much help.

One finds that in any less developed country, and even in the more completely industrialized countries, a major responsibility for providing export promotion services falls upon the government. Unfortunately the institutions charged with this function are in nearly every case too small and lacking in resources to do a fully effective job.

One of the problems is a lack of clarity as to which part of a government really is responsible for industrial export promotion. In some countries such as Trinidad and Tobago, the Ministry of Industry is charged with it. In others it is a task of the Ministry of Commerce. A few countries have a Ministry of Foreign Trade. Occasionally there is an autonomous foreign trading corporation, especially where a major part of industrial production is from the public sector. In a few cases export promotion is an activity of the Ministry of Finance, while some countries recognise its multiministerial nature by placing it under a joint interministerial board. In one country which we visited, the head of the export promotion division was agitating to have it created an autonomous agency, since he believed it would then become stronger and gain greater freedom of action.

In general, export promotion agencies in developing countries have small staffs, although in most cases they appear to be remarkably able and enthusiastic. Budgets are usually extremely limited. This restricts activity abroad, especially the participation in trade fairs, sending of sales exploration missions, and employment of permanent trade promotion officers. All of these are matters which seem most frustrating to export promotion offices, and in which a moderate investment would appear likely to produce good returns.

Several export directors complained that they were unable to make effective use of their countries' embassies, since there either was no trade attaché or the holder of that post had little knowledge of his nation's industrial products. One or two are trying to develop arrangements to put officers from the export agency into a few key embassies, rather than having to rely on foreign ministry staff whose training experience and interests are diplomatic rather than commercial or industrial. The Venezuelan export director plans to hold regional briefing sessions to orient and develop contact with embassy personnel, as does the Jamaica National Export Corporation.

A number of developing countries have sent export promotion missions to developed countries. In some cases costs have been met or at least shared by industry itself. Many developing countries have one or more export offices in major cities abroad. It appears, however, that sometimes these offices are not located optimally, or are not really profitable. Funds could perhaps be better used through strengthening trade staff of embassies.

International fairs provide periodic chances to promote exports, and many developing countries take advantage of displaying at them. Individual enterprises, and industrial organizations such as chambers of commerce and industry often participate. Since budgets are small, a country cannot hope to take part in all international fairs, and many developing countries are now becoming more careful in choosing those which can be most helpful to their particular export needs.

One factor which is increasingly affecting export promotion is that of general bilateral commercial and financial relations. Much export trade has become based on credit or barter arrangements. At the same time, regional economic pacts, commodity agreements, and other supra-national arrangements have tended to canalize exports. Export promotion offices are beginning to recognize these "rules of the game" and concentrate their efforts in directions which are politically allowable and potentially most profitable.

CHAPTER VII

INSTITUTIONAL SUPPORT FOR SPECIFIC
INDUSTRIAL DEVELOPMENT PROGRAMMES

Not all of the activity of institutional support to industry is concentrated on single functions. In many instances industrial development policy calls for multifunctional support to some specific but broad area of industry. In effect a government selects some part or parts of the industrial sector to receive special support. Occasionally a special multifunctional institution is created to carry out this special programme. More often, as will be seen, a number of institutions are expected to direct particular attention to it, each in its own range of activity, and in some way to act in coordination. It is not surprising that this produces important problems of institutional programming and action which are visible in each of the examples shown in this chapter. Although it has not been possible to consider here all the different multifunctional support programmes which are being carried out by various countries, those which follow are among the most important, more common, or most productive.

A. Aid to Small-Scale Industry

The Lima Declaration urges developing countries to give special attention to basic, rural, small and medium-scale, labour-intensive industry. For the least developed countries it proposes that there should be emphasis on cottage industries, particularly those tied to agrarian development. A similar emphasis on small-scale and traditional industry is found in the periodic economic plans of most developing countries.

An initial difficulty arises in defining "small industry". As a category, it requires boundary lines on two sides: between industry which is small and that which is medium or large; and in the other direction between small industrial establishments which use a few machines, and handicrafts, artisanal, and cottage industries.

Neither line is drawn in generally accepted fashion. There is no international agreement as to when an industry ceases to be small and becomes medium-sized. Each country has developed its own limits as to how small an enterprise must be in order to benefit from small-industry programmes. Sometimes these vary from programme to programme within a single country. Among the criteria usually applied are the amount of capital invested in a small enterprise and/or the number of persons it employs.

The distinction between small industry and traditional industry is equally confused. UNIDO has noted that there are two broad categories of small-scale industry. The first is the industry carried on by traditional craftsmen and artisans, some of whom may need assistance to modernise their skills, tools, and techniques of production. The second is the industry carried on by the group of small manufacturing enterprises which produce a variety of consumer and simple production goods as well as components and parts required by large industry.

In many of the less industrialized countries the industrial pattern is one of a few very large enterprises, much of it in the public sector, and this huge mass of small industry, almost completely private. Thus there are grounds for polarization, an absence of a healthy medium industry adapted to the local market size and local stage of development, and two sets of differing needs for industrial institutions to try to meet.

2. Yet very few developing countries make an institutional or working differentiation between small manufacturing plants per se and artisan-handicraft-cottage industries. Either a "cottage industry" or "artisanat" institution services both, or the "small industries" institution does so.

Because so many institutions in all functions serve both types of industry, and because so few programmes differentiate between them, we have found it necessary to be pragmatic; much of our comment on "aid to small-scale industry" will therefore refer to servicing given to either type or to both.

The difficulty of distinction is all the greater because part of the usual strategy of encouraging traditional industry is to supply it with better facilities and more mechanical tools; i.e. to move it toward the small industry category. Also, if efforts to develop crafts and traditional industry are successful, they can enlarge the size and operations of an enterprise, sometimes to the point where it becomes a "medium-scale industry" and moves out of the range of special small-scale services and support.

The needs of small industry in adjusting to modern conditions, in competing with larger and often foreign-supported firms, and in participating in national economic development are numerous and great. Many of these needs call for special help from industrial institutions.

Yet in some countries which have introduced programmes for the development of small factories, the latter have been grouped with traditional crafts on the strength of one common factor, namely a relatively small scale of operation. But the two are entirely different types of industry: one uses highly productive and specialized labour, the other a less productive artisan-apprentice type of labour. The two types therefore need different programmes and agencies for their promotion.^{1/}

Despite all the confusion, two facts seem clear:

1. In most developing countries small industrial units, including those in the traditional sector, represent a very large part of the number of industrial establishments, but also account for an amazingly large proportion of industrial employment and even of product value. In El Salvador only one-third of the industrial employees are in firms with 4 or fewer employees, but those firms produce 54 % of total industrial value. 80 to 85 % of the establishments on the Sri Lanka Ministry of Industry register are classified as small, while in Nepal 80% of manufacturing establishments, and in Somalia 70%, have fewer than 10 workers. 92 % of registered industrial enterprises in India are classified as small scale, and they provide 46 % of total industrial employment and 30 % of production. In the Philippines 51% of industrial employment is in cottage industry. 400,000 cottage industries in Nepal employ a million persons, as compared to 50,000 in factories. Mali and the Cameroons are each estimated to have at least 400,000 craft workers, and Morocco a million or more. In Senegal there are over 5,000 artisanal units, while Tanzania has more than 5,000 industrial enterprises employing less than 10 persons each.

^{1/} Industrialization of Developing Countries: Problems and Prospects. Small-Scale Industry. UNIDO Monographs on Industrial Development, No. 11 (ID/40/11, 69.II.B.39, Vol. 11) pp. 5, 14.

(a) At the outset, the would-be small-scale entrepreneur usually requires a greater degree of information, advice and encouragement than does a more experienced and sophisticated larger investor. Special services, often in outlying provincial and rural locations, are needed.

(b) The knowledge of the small entrepreneur concerning possible additional sources of investment and credit are limited. He is not always accustomed to dealing with banks, especially development banks, and usually has not built up a credit worthiness with them. In turn, banking institutions find the necessary credit investigations and feasibility studies uneconomical to carry out. Special credit institutions and procedures are needed.

(c) Even if financing can be arranged, the small entrepreneur often needs special information and help in securing necessary factory facilities and machinery and even in arranging a secure supply of raw materials.

(d) As noted in one of our country studies, the domestic entrepreneur in the majority of developing countries generally has been previously in agriculture or commerce. Only recently has he moved into industrial activity, where a different mentality and qualities are fundamental for success. Thus he has not acquired industrial know-how for planning, organization, efficiency, productivity, quality and responsibility. Very often it becomes apparent that his skills in management and in allied requirements such as accounting and production techniques are inadequate, that he finds it difficult to recruit these skills, and that he and his employees need training. Both the recruitment and the training are harder to arrange for a small plant than for a large one. At the same time the access of a small firm to new technological and economic information is difficult.

(e) This is reflected in marketing problems. The small firm, especially a new one, may know little of markets outside its immediate neighbourhood. It finds difficulties in learning of changes in market conditions and in projecting market and price trends. All this makes export marketing by small firms close to impossible unless they receive help from trade associations or industrial institutions.

(f) Small firms and traditional industry units find special difficulty in producing to fixed standards. Knowledge of desirable standards for competitive and world markets is slight, and both the skills and the testing facilities to produce to standards are lacking. Thus quality of products may be low or inconsistent.

This listing of needs suggests the types of helping institutions and programmes which governments should assign to support small industry and its development. Many general industrial support services are of course helpful to small enterprises as well as to all other types of industry. In addition, governments have moved to establish special programmes particularly designed to help small industry, traditional industry, or both together.

Most developing countries have tried to provide special promotional assistance, either through some general ministry or department or by setting up a semi-independent promotion board or agency. In Sri Lanka the Industrial Development Board of the Ministry of Industry is a development agency for small industry. It identifies areas for investment, preferring those which will be pilot projects, or will have a multiplier effect. It expedites and supports loans, carries out extension work, and operates industrial estates and a marketing centre for small industry.

The financing of small industry remains a rather generally unsolved problem. Although many governments have allocated funds for credit to small industry, the machinery for placing that credit is still weak and often unsatisfactory. This is especially so where credit to small industry is handled through commercial banks or by a department of a general development bank which may be more concerned with large industrial loans. Some countries have made financing one of the responsibilities of a multifunctional small industry agency or corporation, but this joining of promotional, financial and advisory services has not always proved happy. A few governments have established special banks to finance small-scale industry. Jamaica's Small Businessman's Loan Board concentrates on loans for equipment and raw materials, with most of its help going to small industry. About half of the loans of El Salvador's Fund for Financing and Guarantee for Small Enterprises are channelled to small industry. Korea has a special Bank for Medium and Small Industry.

A growing number of developing countries are now providing accommodation for small and traditional industry in special industrial estates. The Jamaica Industrial Development Corporation has been active in this, as have been India's Small Industries Development Organization and Turkey's National Small Industries Development Center. Some of the features and problems of these and other special industrial estates will be considered later in this chapter.

Mention has already been made of programmes for hire purchase of machinery. An example of this is found in the scheme operated by Nepal's Regional Industries Administration.

Special training programmes for small industry are now found in many countries. Kenya, for example, has an Industrial Training Institute for Entrepreneurial Development.

As pointed out, technical advice to small industries is difficult because of their number, dispersion, and variety of production. However, most countries try to provide at least some field assistance on matters of management and production. For example, in the Philippines the Ministry of Industry has a Small Business Advisory Centre while Nepal provides aid in product design as well as general technical services and pilot projects.

Small industries often have difficulty in obtaining raw materials, not only because they may not know of sources of supply or of prices or availability, but also because their buying ability, bargaining power, and volume of purchase are all small. Governments not only try to provide information and advisory support, but in some cases actually purchase raw materials and resell them to small industry at favourable prices.

Marketing help runs the gamut from spreading information about market conditions and prices, on through technical assistance in adapting products and seeking buyers, to establishment of government supported marketing machinery. The last of these is especially common for the marketing of handicraft products. Sri Lanka's Industrial Development Board has recently opened a Marketing Centre for Small-Scale Industry, with an exhibition centre, advisory service on marketing problems, assistance in finding wholesale markets, and on-spot facilities for retail selling. The Organizacion Comercial Ecuatoriana de Productos Artesanales acts as a collecting, marketing, and exporting agency. Export marketing of small industry's output and handicrafts is especially difficult because of the need to assemble sizeable volume and to sustain quality. Some governments try to help small industry by giving preference to its products in public purchasing. In the Philippines the Cottage Industry Development Enterprises purchases products and sells them to forty government bodies.

Industrial institutions find it difficult to provide many of these services to small industry, including the traditional sector, because of the large number of enterprises to be served, scattered throughout the national territory, and making a wide variety of products. To reach and meet the needs of all would require a vast network of service officials, beyond the staffing, financial and administrative capacity of industrial institutions in developing countries. As an alternative to building up such a large bureaucracy, institutions are decentralizing their operations and joining in use of field staff. The Nepal Department of Cottage and Village Industries has four regional offices and 23 branch offices, responsible for feasibility studies, loan disbursement, technical services,

and training. Recently the regional offices have sent mobile teams to villages to arouse the interest of entrepreneurs. Tanzania's small industries regional officers draw upon the government's general regional and district development officers for help. Senegal is planning to encourage regional and local small-scale industry co-operatives, through which technical and managerial assistance could be channelled to individual enterprises.

It is clear, however, that as developing countries try to build the necessary range of services for small industry there is a large possibility of confusion, duplication and competition among institutions. Not only is there the usual danger, frequently mentioned in this study, of overlapping between functions and between institutional services. Here one is dealing with entrepreneurs and workers who have little sophistication in bureaucratic matters and can become greatly confused by a variety of programmes offered by a number of different institutions.

A UNIDO study has emphasized:

"..... the usefulness of these services lies in their being provided in an integrated manner. Isolated measures of assistance may remain ineffective unless they are supported by complementary action in other areas. For example, it will be of little value to provide financial assistance unless the entrepreneur is also given advice as to the efficient use of capital. Similarly, provision of good factory accommodation will not be useful unless the industry has also the requisite machinery and equipment for efficient production. Trained workers will not of themselves improve productivity unless the management is also adequately trained. The approach in small-scale industry development should be therefore to provide a "package" of all the essential services and facilities". ^{1/}

One rather successful example of such integrated institutional service to small industry is Senegal's Société Nationale d'Etudes et de Promotion Industrielles. This was created in 1968 as a corporation with participation by the State, banks, and industry to promote medium and small industry. Handicraft and artisanal industry was later added to its responsibilities. Its major functions are study of projects, aid in financing, advisory assistance,

^{1/} Small-scale Industry, op. cit., pp. 14-15.

training and information for entrepreneurs. Financial help is given through guarantees to banks or, more commonly, through participation in equity capital which may later be reimbursed or purchased. SONEPI is also establishing industrial estates for particular branches of small industry in regional centres.

Tanzania has a somewhat similar agency in its Small Industries Development Organization, which is an autonomous corporation under the Ministry of Industries. It develops plans for small-scale industry development for the national planning commission, has produced guides on entrepreneurship in various types of rural industry, and through a network of regional centres and extension officers gives technical assistance on managerial and production problems as well as training. SIDO is establishing a number of industrial estates and has associated these with industrial workshops, planning eventually to turn the estates and workshops over to regional governmental agencies. Machines on hire purchase, wholesaling of raw materials, and marketing services and information are other activities. The last of these is supplemented by a subsidiary which markets handicrafts within the country and overseas. Arrangements have been made by which the government in its purchasing gives preference to the products of small industry.

It is perhaps worthy of note that both of these institutions are autonomous agencies in the form of government corporations. Another form of packaging exists in Nepal, where services to cottage and village industries (and thus to the country's small industries) are provided through several different institutions which are nonetheless interlocked in a number of ways. In Egypt a General Organization for Promotion of Craft Industries, also responsible for small-scale industry, has been abolished and its functions transferred to local administrative bodies. The Philippine Commission on Small and Medium Scale Industries co-ordinates the work of twelve agencies which have reason to be interested in promoting, assisting and developing small industries especially in rural areas.

Governments still need to clarify and rationalize these services, particularly in two respects. One, noted at the outset of this section, is with regard to small industry as compared to handicrafts. With limited service resources, co-operation in servicing both these types of industry is essential.

The other problem point, insufficiently recognized, is the relationship of small industry development and service programmes to overall government efforts to promote regional, rural, village, and community development. Small and traditional industry are accepted as essential elements of those broader programmes, but their particular role in them is not always made clear. Their priorities and allocation of resources are often vague. There is rarely a specific determination of the position of industrial institutions in supporting small industry within the context of those broader programmes, nor of the relationships which industrial institutions should have to all others engaged in those programmes.

Aid to Industrial Co-operatives

Industrial co-operatives are not notably numerous or strong in most developing countries. Nearly all of those which exist either are groupings of small-scale craftsmen or are engaged in some form of agro-industrial processing. As a result, institutional services for industrial co-operatives have tended to be supplied either as an ancillary aspect of general services to small-scale industry or become lost in the shadow zone between the agricultural and industrial sectors and ministries. Because of this, it is extremely difficult to secure any statistical data regarding industrial co-operatives in a developing country or to determine the exact nature or degree of services being provided to them. However, the International Co-operative Alliance has records of the existence of industrial co-operatives in at least 62 developing countries. Their production includes:

- Food processing
- Processing of raw materials
- Handicrafts
- and light industry

A survey for UNIDO has pointed out that although industrial co-operation in developing countries is at present taking place mainly in rural areas and on a small-scale, the structure and principles of co-operation do not preclude large-scale industrial operations. ^{1/}

However, most industrial co-operatives are small and have great need for institutional service support. They need legal and financial assistance, tax concessions, help in securing raw materials and equipment, training of members in co-operation, in management and in production skills, and assistance

^{1/} Role of Co-operatives in the Industrial Development of Individual Countries. Study for UNIDO Industrial Development Board. (ID/B/88) 1971, para. c.

in marketing, including government orders for their products. The UNIDO report states ^{1/} that the number of developing countries that have adopted measures to provide these helps, however, are few and rarely have developing countries gone beyond establishment of a legal framework for co-operative activities.

This is reflected in the minimal attention given to industrial co-operatives in the usual national development plan, and in the inavailability of institutional services particularly intended for them. Few countries have an individual ministry or autonomous agency for co-operatives alone. In fact hardly any ministry of industry even has a special division or section for industrial co-operatives. In Egypt, for instance, industrial cooperatives are now the responsibility of the Minister of State for Local Government.

"However, where industrial co-operatives have made unusual progress, there usually exist government institutions which extend more specialized technical assistance and advice. For example, in Chile such services are available from the Co-operative Development Department of the Service for Technical Co-operation, the Department of Industrial Promotion, the Co-operative Unit of the Supply and Machinery Department, and the Chilean Institute for Promotion of Work, a private institution in receipt of government subsidies. In India a wide variety of government institutions plan, organize and implement development programmes relating to industrial co-operatives. These include the Khadi and Village Industries Commission, the All-India Handicrafts Board, the All-India Handloom Board, and numerous technical institutes at the provincial level". ^{2/}

Usually responsibility for development and support of industrial co-operatives is submerged in the duties of some broader institution which is not able to give it priority. Often co-operatives of all types are dealt with as single group. Since in the average developing country most co-operatives are agricultural, that inevitably means less emphasis on the needs of industrial co-operatives. This becomes especially true when responsibility for all co-operatives is assigned to the Ministry of Agriculture, which at best may be interested in industrial co-operatives which are engaged

^{1/} Role of Co-operatives in the Industrial Development of Individual Countries, op. cit. para. 22.

^{2/} Industrial Co-operatives in Developing Countries (UNIDO ID/WG.210/2) p. 33.

in agro-industry. Somewhat the same problem occurs when industrial co-operatives are a responsibility of a small-industries institution which may regard them merely as an available but often too difficult device for promoting small industry development.

In the absence of any institution particularly concerned with the promotion of industrial co-operatives, there is inevitably a fragmentation of what few services are provided to them. In such cases a number of functional institutions may try more or less successfully to incorporate aid to industrial co-operatives into their specific programmes. Alternatively, where no single institution for industrial co-operatives exists, some appropriate body or joint programme agency might take over the duty of promoting and co-ordinating a total multi-service programme for at least some types of co-operatives such as those engaged in handicrafts or light industry.

There has recently been international assistance for the establishment of national co-operative enterprise development centres, the first being in Botswana, Cameroon, Ivory Coast and Tunisia. These are intended as legally and financially semi-autonomous "technical institutes to promote practical activities and give technical, administrative, financial and accounting advice and training to co-operative staff and members and to do basic research..... The stress is on concerted action over a sustained period of time in several sectors of co-operative activity including the promotional, supervisory, advisory and training services previously carried out by governments".^{1/} They are designed to service all types of co-operatives, rather than industrial ones alone, and after a period of development are to be taken over by national co-operative federations or unions.

In some countries industrial co-operatives have become entangled with nationwide efforts to promote local self-help through community development or village development. There is no necessary conflict, and industrial co-operatives can be logical parts of those broader programmes. However, the result in at least two or three countries has been a duplication or even multiplication of institutional effort, with overlapping and conflict as field agents of two or more institutions try to promote small industrial co-operatives and capture the scarce available resources for them.

^{1/} Industrial Co-operatives in Developing Countries, p. 34.

B. Aid to Agro-Industry

The process of industrialization must be gradual. In most developing countries efforts to increase output and incomes must initially concentrate on "agro-industry", that is on industries based on agriculture, fishery and forest products. This in turn implies an increase in light industry to serve agricultural development needs. At each step the growth of industry must support and be derived from the growth of agriculture and the rural sector.

The Lima Declaration points out that effective control over natural resources and the harmonization of policies for their exploitation, conservation, transformation and marketing constitute for developing countries an indispensable condition for economic and social progress, and that in view of the basic complementarity between industry and agriculture, every effort should be made to promote agro-based or agro-related industries, which besides arresting rural exodus and stimulating food production activities, provide an incentive for the establishment of further natural resource-based industries.

The industrial services required by agro-industries are not unique. Those industries have the same problems as all others, but they also need concentrated and advisory help due to the nature of the materials they use. For instance, the industries processing fibres into textiles need special textile research support, and those preparing a commodity such as tea or coffee need extra help in developing better processes, new products, and special packaging. Although few developing countries have specific institutions for the over-all promotion of agro-industry, many have these special commodity institutions such as the Textile Industry Division in Thailand, the Jute Research Institute in Bangladesh, or the government's Caroni Sugar Corporation in Trinidad and Tobago.

Many problems of agro-based industry are inherent in the nature of the linkage between the supplying of raw materials and their processing in the plant. Others, more commercial than industrial, result from the varying currents of world-wide use and pricing for agro-industrial products.

The planning of agro-industry is in many ways more complicated than planning for other types of industry, primarily because of the importance and the difficulties of planning for an assured supply of raw materials, preferably one which can be adjusted to the growth or contraction of plant production. If this planning of supply is not taken into account at a very early stage by the development and planning institutions, shortages of raw materials can arise as production begins. A number of developing countries have instances of well-designed industrial plants sitting idle or operating far under capacity because insufficient attention was given to planning their supply of sugar cane or cashew nuts or rice paddy or some other agricultural raw material.

Planning of the supply of agricultural material for an industrial plant requires organization of a supply system, either from individual farmers who will sell their produce to the plant, or by establishing growing plantations directly under the control of the factory. Choice between the two methods is a social decision as well as economic, and involves not only the Ministry of Industry but the Ministry of Agriculture and agriculture sector institutions and also the planning and political organs of government.

Since the nature of the materials being supplied and the way they are being processed are interlocked, this need for co-operation extends into the factory itself. The plant cannot passively assume it will receive the quantity and quality of materials it needs. With the best of anticipation and research and agricultural extension help, it often finds production must be adjusted to the amount and type of material which can be supplied. In a few cases the importance of the agricultural factor has been accepted to the extent that factories processing agricultural materials are being operated under responsibility and control of the Ministry of Agriculture.

An interesting experiment in the promotion of agro-based industry is the development of joint ventures in Jamaica between the Industrial Development Corporation and the Agricultural Society. The Development Corporation supplies the factory building, and the plant's workers and the farmers supplying raw materials will gradually also acquire equity in the enterprise.

Industrial institutions providing management advisory and consultancy service can be of help to agro-industry on problems of raw material supply. They can give advice on fixing attractive purchase price policies and incentives, and on setting up efficient systems for collection of the agricultural materials. The institutions supporting co-operatives can be helpful in advising on the use of some type of co-operative as an intermediary between growers and purchasing factory. If the factory has its own growing plantations, it may need advice on their organization and management. In some cases where the factory operations are part-time due to growing seasons, it may use large numbers of local labour with little industrial skill, and special training assistance may be needed.

Agro-industry needs technical advice especially because the exact quality of its materials can vary with climate and with the soil, fertilizer and other resource-inputs of each farmer supplier. As a result, the material put-through for production can vary from day to day or even from hour to hour, and processes and equipment may need constant adjustment. Constant testing becomes extremely important to ensure control of quality. Technical advice to make the necessary process and equipment adjustments, cope with the frequent new problems, and develop the in-plant skills and facilities to overcome them, are areas where industrial advisory service institutions can be of special help.

The line between technical advisory assistance and research is often hard to specify, especially for agro-industry. Similarly, the line between industrial

research and agricultural research is equally uncertain here. One phase of research important to any agro-industry is that of improvement of raw materials, to standardize them, to make them more suitable for the industrial processes, and to improve the quality of processed output. To the extent that this is considered as research in the effort to grow better agricultural products, it is agricultural research; to the extent that it is a matter of improving industrial materials, it can be considered industrial research. Obviously it is both; presumably agricultural research institutions have better experience and abilities to take a major part in such study, but they need to keep close contact with industrial institutions and with industry itself. This is an area where joint research teams, including participation of growers and agro-industrial enterprises, are of obvious utility. There is also a possibility of adding an industrial research component to existing agricultural research stations, especially those which are specializing on crops which are of agro-industrial importance. In those later cases, some developing country might well try the innovation of an agro-industrial research institution jointly sponsored by the ministries of agriculture and industry.

A second area of research importance is more clearly an industrial concern: the effort to achieve fullest use of the agricultural raw material input. After the technical experts have ensured that the existing productive processes are operating to their best efficiency, there are still opportunities to discover new or improved processes. Along with this comes research in use of by-products or currently unused refuse.

Research of this type leads to consideration of possible new or alternative products from given resources. A number of agricultural and industrial research institutions have been carrying on such research, as for example on instant tea or coffee, or banana powder, or new types of building materials. The importance of this research is especially visible where a country has a frequent excess of one major crop such as groundnuts or coconuts.

Another major area where industrial institutions can be of service to agro-industry is in marketing. Agro-industries tend to have two main marketing concerns. In many cases they produce essential commodities for the domestic market. Sometimes their production is rationed, sometimes prices are controlled by government, sometimes they have a protected monopoly or protected price position. Frequently they have problems of distribution which call for management advice. Economic and accounting assistance is useful in costing and pricing. Quality control and standardization to fit the preferences of the export market or even of local markets is needed. For many products and in many developing countries technical help is necessary to overcome problems of perishability and ensure storage protection.

Government usually has to set a policy with regard to allocation of agro-industrial production between domestic and export markets. For some products such as food and clothing, that policy may give priority to essential domestic consumption needs. On the other hand, some agro-industries such as the processing of silk are directed toward export markets, while a number of developing countries with one major agricultural resource such as jute or groundnuts or tea inevitably must export a major proportion of that crop, even after it has been wholly or partly processed.

In these latter countries, the general export promotion institution is likely to concentrate its efforts largely upon exports of those agro-industrial products. However, frequently a developing country establishes a special export organization to promote or even to act as sales agent for a major commodity and the products from it. In other cases, government has helped to stimulate and support private or semi-official trade associations which concentrate on export marketing of some particular commodity and its products.

The efforts of governments of developing countries to promote and assist agro-industry must in some cases take into consideration the place of foreign or multinational firms in their agro-industrial sector. In past years a number of firms from developed countries secured major positions as processors and exporters of natural raw materials in developing countries. Although more recently public industrial enterprises have begun to replace them, in a number of countries there are still strong and large agro-industrial enterprises with foreign ownership, control, or participation. These usually do not need industrial institutional services to anywhere near the same degree as domestic plants; but in contrast, their existence raises questions of policy, and of regulation which may be the task of industrial institutions.

The concern of the Lima Declaration, and of most developing countries, is not only with effective industrial use of agricultural products, but with such use of all types of natural resources. Most of the problems, relationships, and services which have been outlined regarding agro-industry apply in similarity to the processing of other natural resources such as livestock, fish, and minerals. One needs primarily to substitute the names of other appropriate ministries for the Ministry of Agriculture. This very necessity of taking into consideration these other ministries and any institutions associated with them for research, extension advice, marketing, etc., indicates that industrial processing of a nation's natural resources, whether agricultural or otherwise, is not merely a concern of industrial institutions alone. In every case, it is a concern of several sectors, even of economic development as a whole. Even as the servicing of industry as such is a matter not merely of individual institutions but of an integrated service system, the industrial processing of agricultural commodities and of all other national natural resources requires inter-sectoral action, with machinery by which the institutions in each sector are able to apply their particular expertise to the joint development.

C. Public Sector Industry Co-ordination and Support

Public manufacturing enterprises play an important part in the industrialization process in many developing countries, as an instrument of industrial development policy. The Lima Plan of Action refers to this in recommending that the industrialization policies of developing countries should include emphasis on "ensuring an adequate role for the State in the direction of industrial development and the public sector in the expansion of industries."

Apart from any ideological predisposition, a number of countries have found pragmatic reasons for government initiative and direct intervention in manufacturing. Many have adopted policies reserving sizeable parts of the total industrial sector for development and operation under public control. Others have decided that large or key industries need to be in the hands of government. Some have found, as has Venezuela, that domestic private investment cannot marshal all the large amounts of capital required for enterprises such as oil refineries, steel mills, or fertilizer plants. If these are deemed necessary, the government must sponsor them in whole or in part. However, not all public sector industry is necessarily large nor the result of ideological planning. Market economy countries such as Bolivia or Trinidad and Tobago find themselves owning and operating a number of small once-private enterprises which fell into financial or managerial trouble and were taken over by government to protect loans, save jobs, or ensure continued production.

Public enterprises may be considered not only as economic operating plants but also as a form of industrial institution. They play an important role in the implementation of government policies relative to industrial investment and ownership, deconcentration of industry, and rural development. They can also affect private sector industry through their subcontracting and purchasing, and through setting competitive wage levels.

In some ways it is misleading to refer to "the public industrial sector" as if it were a unity. The fact is that in most countries there is no unified public industrial sector. Instead there is a conglomeration of many individual public owned or controlled industrial enterprises. These are scattered among a number of supervising ministries. Their legal organization, the extent and form of government financial participation, and their degree of autonomy all vary; some are virtually ministerial departments while others operate practically as do private enterprises. Hence industrial institutions find themselves dealing with the needs of individual public enterprises rather than with any monolithic public sector as such.

"Public" industry can be defined in various ways and can take various forms. Clearest of all is the manufacturing enterprise which is 100% owned by the government, and thus operates completely under government control. There are instances where such an enterprise forms part of the normal structure of a ministry. However, although this is often the case with military arsenals and similar factories, they are rare in the civilian ministries. An unusual case is found in Bolivia where the Ministry of Defense operates a number of so-called "military factories" which produce for civilian as well as military consumption.

The common organizational arrangements for wholly-owned public industrial enterprises is to establish them as legal and financial corporations with a degree of autonomy but attached to some ministry either directly or through a holding corporation. Sometimes this is done by enactment of a special organic statute or by issuance of a corporate charter. In some countries public enterprises are frequently set up through the general companies act originally intended for the private sector. The difference between those public industries and private ones then rests entirely on the location of ownership and supervising control.

Not all industries in which government has an ownership interest are completely public-financed. Many are what might be classified as "semi-public" or joint enterprises. Many of the largest industrial projects in developing countries are financed through international or foreign loans or equity, either governmental or private, along with participation of the developing country's own government. Ownership and

control over operations thus may be shared. Hence they are less than 100% public enterprises from the strict point of view of the national government, and its responsibilities and powers are usually somewhat different than for those which it wholly owns.

Still different are the large number of completely domestic enterprises for which the government of a developing country has provided part of the financing. In theory (and almost in practice) this could range anywhere from 1% to 99%. Sometimes the government assists in the launching of the enterprise, providing some initial capital which private investors cannot secure. Occasionally government is the initiator of the project but seeks some private participation. Rather often there is an intention that eventually government will be able to sell its interest to private investors after the enterprise shows it can be viable. Governments sometimes acquire a partial interest in a previously all-private enterprise by assisting when additional capital is needed for expansion or to overcome financial troubles. In other cases, government takes part in joint ventures to secure and control know-how contributed by foreign participants; or the joint venture may have been undertaken as a partial or early step towards nationalization of a previously private or foreign industry.

Partial participation by government need not necessarily be through equity ownership, although this is the form generally considered as characterizing an enterprise as semi-public. Government also may acquire a stake in a private enterprise by granting it sizeable loans. Increasingly the working demarcation between the two types of financial interest has become blurred, as loans are renewed and become virtually permanent forms of capital, and as governmental lending institutions demand seats on the corporate board and exert a growing amount of supervision over corporate operations.

Taking all forms together, the amount of public participation in the industry of most developing countries is very substantial, although no world-wide statistics seem available. Understandably, the proportion of public industry usually is greatest in countries which have adopted an economic policy of socialism. Thus in Somalia all but a dozen of the plants employing more than 10 workers are in the public sector. Even in countries more supportive of private investment, public industry is important. It is indicative that in Bolivia 70% of industrial production is estimated to come from the public sector, while in Turkey the figure is 41%.

(i) Delimitation of public and private sectors

As would appear from the foregoing, public industry has grown by chance as well as intention. Not all countries have established a policy as to how greatly public industry is to be stimulated as contrasted to the private sector. Fewer countries have fixed clearly the areas which should be open to public industrial development and those in which private initiative is to be encouraged.

Ecuador's General Economic and Social Development Plan states that industrial development is to take place chiefly through private initiative and investment, which the State will aid and stimulate. The State will invest in industry only in exceptional cases, involving projects basic to economic development, especially in the less developed regions.

Nepal in its Industrial Policy Statement reserves manufacture of defence goods to the public sector, assigns basic industries and the production of consumer necessities to a "joint venture sector" in which the government is to hold majority equity, and leaves all other industry to the private sector.

Jamaica's recent Green Paper on the Industrial Development Programme lists eleven basic industries in which state intervention is expected during the coming 5-year plan period, but does not specifically reserve the remaining areas to private action alone.

Even where some statement of industrial policy does draw such lines, they are often unnecessarily vague. In such cases private investors do not feel any certainty that the area seemingly set aside for private development will not at some time be invaded by public industry. This uncertainty is a major disincentive to private investment in a number of developing countries.

(ii) Major problems of public industry

In few developing countries is there a concrete programme of how public industry is to be expanded over any time-span longer than that of the current national development plan. A preeminent need, if public industry is to fulfil the hopes of any developing country, is such a comprehensive plan, outlining the objectives for the public sector, the major lines of development for it, and the way in which it is to be organized and operated.

Absence of this has produced the second major difficulty, the lack of systematic organization of public industry as a totality. Where the public sector is predominant, this means a fragmentation of most of the country's industry. Where public industry is more minor, the disorganization contributes to inefficiencies and ineffectiveness within the individual plants. Yet hardly a single developing country has found a satisfactory way of organizing its public sector, although several have tried to do so.

In almost all developing countries public industry is assigned to several parts of the governmental structure. While usually the Ministry of Industry is responsible for a major share of the public enterprises, usually many are under the supervision of other ministries, development agencies or holding corporations.

In a recent re-organization of the Ministry of Industry in one developing country it was found that the Ministry could not effectively plan and control the industrial sector because the laws relating to the public enterprises under the Ministry did not permit their effective supervision, while a number of industrial public enterprises were attached to other ministries and institutions and directly supervised by them.

In Trinidad and Tobago the Minister of Finance supervises the State's whole or partial interest in 15 industrial enterprises. In Somalia seven different ministries or agencies control public industrial plants. In Bangladesh five sector corporations have been set up, holding more than 250 different enterprises with 90 % of public industrial investment; these corporations report to a Nationalized Industries Division in the Ministry of Industry.

No doubt there are often reasons why all public enterprises should not always be concentrated under a single wing. However, if they are to be scattered it becomes all the more important to establish machinery for co-ordination. This is needed to produce a joint industrial development plan embracing all public industries. It is needed to ensure standards of performance and accountability. It is needed to minimize competitive use of resources, duplication of production, and multiplication of internal services such as purchasing, accounting and marketing. Central control or common work can be especially valuable in investment planning and feasibility studies, research and development, domestic and export marketing, management training, and consultancy. Yet co-ordination among public industrial enterprises is almost as lacking as is systematic organization.

One difficulty which partially results from this is that in most developing countries public industry as a whole is subject to little or no effective overall supervision from such organs as the planning or finance ministries, cabinet, or offices of the chief executive, while frequently even the individual enterprises go unsupervised to a very large extent. In many countries there is an admitted extreme amount of "supervision by exception" over public industries, which means that attention is paid and control exerted only when something goes visibly wrong. Boards of directors of the individual enterprises cannot always be relied upon as oversight bodies. Their private members have little power, while their public members are usually over-extended senior civil servants.

Efforts have been made here and there to overcome these difficulties of co-ordination and control. Ghana has grouped 16 public industries as divisions of a Ghana Industrial Holding Corporation. It exercises overall control of the finances and operations of each division, although as profitability has grown the division management has been given greater autonomy. Emphasis is not only on profitability but also on co-ordination and balance. One means of co-ordination has been to rotate managers from one division to another. Since not all of Ghana's public enterprises are within the Holding Corporation, in 1976 a State Enterprises Commission was established. This acts as an advisory and staff agency to the Head of State and the Supreme Military Council, reviewing all state corporations with a view to appraising and improving corporate performance.

In Egypt nearly 30 General Organizations were created in the 1960's as holding corporations for 75 % of the industrial sector. These have since been consolidated into a dozen General Secretariats, each with a large degree of autonomy although reporting to one of several different ministers.

Tanzania has assigned most of its numerous public companies to eight holding corporations, each of which achieves a degree of co-ordination among its subordinate companies, but then faces a higher problem of co-ordination with other corporations. Nepal has set up a Corporation Co-ordination Council, which is a review and recommending body but lacks power of any direct control over public industries.

(iii) Institutional Service to the Public Sector

Public industries as manufacturing and processing enterprises need much the same services from industrial institutions as do private enterprises. Rarely do the objectives and guidelines for the average industrial institution make any distinction between service to public industry and service to the private sector. We have found throughout our survey of industrial institutions that it is difficult if not impossible for them to differentiate within their activities between clients who happen to be private and those who happen to be publicly owned. Nonetheless, the size and resources of most public industries, and their direct government initiation, financing and control, all put them in a somewhat special position with respect to some particular institutional services.

There are a number of ways in which institutions may feel it necessary to treat public industry's needs and demands in a special way. Many institutional relationships with the public sector are interministerial, with all the constraints which politics and red tape produce. In most countries public industry is established and operated as a result of development policies which may include regional, social and other purposes. These can severely influence an enterprise's productivity or financial viability, and thus the institutional servicing it needs in those matters. Finally, public industry by its very nature is supposed to be part of the same overall decision-making system as are

industrial institutions. In theory this should enhance opportunities for more unified planning, for closer working relationships, and for more effective mutual evaluation. Especially in a developing country short of experience and skills it is unfortunate that these special opportunities for matching institutional services to the needs of public industry so often remain underutilized.

The effectiveness of any such service relationship depends upon willingness by both parties and upon useful contact between them. The institutions must be willing to tailor some, though perhaps not all, of their programmes and services to the particular needs of the public sector, as has been done notably in the consultancy service of the National Institute of Management in Sri Lanka. In turn, public industry must show a desire to take advantage of using the services which industrial institutions can supply.

These requirements are not always easy to meet. As we have emphasized, industrial institutions are scattered throughout the entire government, while public industry is also rather widely dispersed. As a result, it can prove difficult to cross ministry boundaries so that an institution in one ministry can develop close service relationships with an enterprise attached to another. Institutions which rely on fee payments sometimes find that public industry is unwilling or unable to clear payments through treasury red tape; however, some institutions have found public enterprises to be much readier to pay for services than are private firms. In some instances the difficulties of arranging programmes to help both types of industry have led to establishment of dual institutions, separately serving each type.

The greatest disincentives to institution service to public industry probably stem from the relatively large size of most public enterprises. Their problems are large, and many institutions either are not equipped to handle them or may be unwilling to commit the necessary large

proportion of their resources to them. Some institutions have resolved this difficulty by forming joint project teams drawing heavily on personnel and other resources from the requesting public industry.

Because of their size, public industrial corporations often have reason and resources to develop their own services within the enterprise or group. Thus they are able to establish in-house training or research programmes, set up and equip testing laboratories, promote their own exports. The Turkish Sümerbank holding corporation, for example, operates a Textile Training and Research Centre. Industrial institutions would be well advised to encourage this type of enterprise activity, looking upon it not as competition but as an expansion of total service resources, and to develop relationships of co-operation and mutual support with these enterprise services.

a) Planning and Promotion

The initiation of most public industrial projects almost always comes from some governmental organ, agency, or institution. This may be a development corporation, the ministry of industry, the planning body, an existing public industrial enterprise wishing to expand, or some political body. Once suggested, the proposal goes through the planning and development processes and agencies described in Chapter II. In general, these processes are designed primarily for promotion of public projects, where government makes all the successive decisions. Planning of public projects is usually considered "definitive" by the planners, while planning for private projects is merely "indicative". Or as one of the country studies put it: planning is direct and compulsory in the case of the public sector, while it is a matter of supervision and control in respect to the private sector.

While development agencies or corporations usually have at least some interest in promoting private industry, frequently one finds that in practice most of their efforts and resources are allocated to launching public projects, many of them industrial. This means that even after planning has been accomplished the actual implementation of a public industrial project is still within the range of numerous governmental institutional decisions.

b) Financing

In the same way the financing of public industry, not only initially but throughout its operations, is within the sector of governmental public finance and of the institutions dealing with that. While a private enterprise may receive some government equity or loan in its original financing, the capital of the public industrial enterprise is almost always obtained completely from government sources. Even if some of that capital is from foreign loans or other assistance, it is channelled through the government central bank, treasury, ministry of finance or public development bank and thus is subject to the policies and decisions of that institution. This is not necessarily a disadvantage, since many governments have set up institutions or processes especially to facilitate the financing of public enterprises.

Similarly, although in many countries private industrial corporations must submit annual financial summaries to government, the financial supervision of public industry is more intensive, even though not always effective. At the very least, public corporations must submit somewhat detailed accounts quarterly and sometimes monthly. Their borrowings for working capital are usually from government banking institutions rather than from private commercial banks. Their spending policies and their accounting, if not subject to the same rules which apply to ministries, often are governed by special regulations for all government corporations. If losses are sometimes replaced by new government grants, profits frequently are captured by the treasury rather than remaining at the disposal of the enterprise.

c) Research, Training, Consultancy

Public industrial enterprises are sometimes able to build their own research and development capacities, or have the resources to purchase that expertise abroad or locally. As noted in Chapter VI, one finds the two extremes in the use of government research institutions by public industry. In some countries public industrial enterprises are among the major clients of those institutions. In some other countries their use of those facilities is minimal. The same holds true of use of other institutional services such as training and consultancy.

In paying for institutional services, there is no reason why public industries should be on any different footing from similar private enterprises. If the institution relies on a government budget appropriation and ordinarily makes no charge for its services, the public client presumably should receive free service. If the institution relies on fees or service charges, the public corporation is as well able to pay as most private firms, and should do so. It may not matter greatly except as a means of ensuring responsibility whether that payment comes directly from the public industry as a reimbursement for specified services, or is charged in detail against a general annual grant from government specifically to cover such services to any and all of its ministries, agencies and enterprises, or is merely counted as an amount off-setting a certain part of the annual budgetary appropriation to the institution. In any case, full accounting and costing should be made.

While research and training are what might be called "voluntary" services which can be utilized or ignored at the preference of the public enterprise, consultancy is coming to have a different status in some developing countries. Concerned at the costs and disadvantages of much imported consultancy, and desiring to build local economic, managerial and technical consultancy capacity, a number of countries are not only encouraging the growth of local public and private consultant units, but are pressuring public industries to give preference to using those local consultants. This poses a dilemma for many public industries. They recognize the long-term need to develop local consultancy capacity, which must be done gradually and requires work assignments to give the local consultants experience. At the same

time the public enterprises are reluctant to be the experimental ground for that training. Many of them have resisted, and have either attempted to continue using foreign consultants or have tried to create their own in-house consultancy capability. As suggested in the previous chapter, a solution may perhaps be found through contracts in which foreign firms are required to associate themselves with local consultants, with careful arrangements to try to ensure that the local personnel will have responsibilities and gain benefits rather than merely assisting in some routine capacity.

d) Marketing

Public industry is more susceptible than the private sector to the pressures of public policies regarding marketing and pricing. Although few countries have set up general marketing institutions for public industrial products other than processed foodstuffs, rather commonly a public industry is expected to sell all or a priority part of its output to domestic consumers. This often requires some type of public distribution machinery at the wholesale level, as is common for government cigarette factory output, while some public industrial enterprises have established their own systems of retail outlets for their particular products. In Sri Lanka the Leather Products Corporation has a chain of shoe shops, while the several corporations of the Ministry of Industry have a joint display location where orders are taken for their products. In Tanzania the wood products holding corporation has set up a marketing subsidiary which handles both domestic and export marketing of the several sawmill and wood processing companies of its group.

One of the reasons prompting establishment of a public industry is sometimes the government's desire to supply a product to the public at a socially reasonable price. That price may not necessarily be fixed at an economically profitable level or even at a break-even point. A private industry cannot indefinitely sell its products at a loss; if government imposes a controlled price which is too low, eventually the private firm must go out of business, unless it receives a subsidy. The same classical economic mathematics apply to public industry. However, government may be willing for political, social, or even economic reasons to provide a more or less permanent subsidy in order to keep the price of the public product at an unprofitably low level. This

involves the public industry in a number of policy and institutional considerations.

Public industries are often in a monopoly position. They thus have great freedom, at least in theory, in fixing their prices. In practice there is often intervention by the ministry of industry or commerce, by a price commission, or by political organs such as the council of ministers. In the absence of evaluation of costs, quality and acceptability of product through the rise or fall of sales, a greater burden falls upon whatever agency supervises and controls the public enterprise, to ensure that its efficiency and honesty and decisions are optimal.

Although any evaluations of finances or production efficiency are the responsibility of these controlling ministries or agencies, evaluation of products design and consumer satisfaction may draw upon the assistance of a number of industrial institutions. Public enterprises like private firms need feed-back from their customers, and the more alert public industries are now beginning to explore ways of securing this. They can be helped in that effort by some of the institutions already supplying them with various other services. Those institutions are generally sympathetic to the needs and problems and improvement of the enterprises, yet are in a position to be objective and through their investigative resources and techniques, and even through the reactions of their own staff as consumers, can supply some of the marketing feed-back and research not yet available in more sophisticated form.

(14) Participation of public industry in institutional programming and decisions

We have been concentrating on what industrial institutions can do for the public sector of industry. At the same time, there is much that public industry should be able to do for industrial institutions to improve their services and ensure that they best meet industrial needs.

In chapter V it was emphasized that all institutions and all industry must be closely linked together. Yet it was noted that this linkage too often was weak, and that industry had little participation in institutional planning and decision-making.

When one considers the linkage and the participation for public industries in particular, the insufficiencies are especially acute not only with regard to industrial institutions alone but with regard to national industrial planning and decision-making as a whole. This should cause great concern. Yet rarely is the problem recognized or the reasons for it understood.

The usual assumption is that public industry is adequately represented in the processes concerning it, in the decision-making affecting it, and in the institutions servicing it, in either of two ways: by direct participation, or through a sponsoring ministry. Enquiry in a number of developing countries shows that this assumption is unwarranted.

Rarely there is adequate direct participation of public industries in planning, decision-making, or institutions. This is because of three factors:

(1) The machinery for participation usually must balance representation of a number of ministries, agencies, and interests against the disadvantages of too large a participating group. In resolving this, direct representation of public industries has usually been ruled out and replaced by indirect representation through their ministries, which have strong claims to be represented in their own right. Also, some older processes or institutions were established and participation in them fixed before many of the relatively new public industrial enterprises were created.

(2) The sheer number of public industrial establishments in almost every developing country can make it impossible for all of them to participate individually and directly. Even in those cases where at least a token representation exists, this may include only the older or stronger or more obvious enterprises. These cannot necessarily speak for all the others, and they have no mandate to do so.

(3) Private industry in nearly all developing countries has its organized associations which can represent and speak for it. Where interests are specialized, branch or other smaller groupings are formed; where a unified voice is needed and possible, a national or multi-branch federation provides it. Public industry lacks such organization. The special

interests, industrial and otherwise, stemming from its public nature cannot be expressed sufficiently through a general industry federation, even when, as is rare, the membership of that federation adequately includes public as well as private enterprises. Scattered among a number of ministries, public industries are inhibited from forming interministerial government-wide groupings of their own. Hence there is almost never a "federation of public industries" which could act as their unified voice and representative. Not only are formal ties lacking; even informal contacts bringing together managers or representatives of all public industrial enterprises almost never occur.

Direct participation of public industry in matters concerning it would be less important if that sector of industry were properly represented even in indirect fashion by its parent ministries or by other agencies. Unfortunately this is not usually the case. Again there are three major reasons:

(1) There is no one ministry or other body which can speak for the entire public industrial sector as a whole. Neither the Ministry of Industry nor the major development corporation in any country has oversight of every public industrial plant. At best each supervising body can represent the interests and opinions only of its particular group of subsidiary enterprises.

(2) The flow of information from enterprise to sponsoring ministry or other agency is normally not effective enough to enable that ministry or agency to reflect completely the enterprise's interests. To the extent that the flow does occur, it tends to concern problems rather than forward thinking which could help in future decision-making. Industrial plants may be far from the capital, with communications difficult. Harried civil servants trying to compile up to date information on several different enterprises may have to rely largely on delayed periodic reports. Direct personal communications

between plant managers and the sponsoring agency's headquarters staff is less frequent than it should be, while round table meetings of all managers of the plants which are under a single sponsorship are extremely rare.

(3) By its very supervisory nature the entire role of a ministry or other holding agency differs greatly from that of the industrial plant itself. While both should be interested in industrial development and production, and in the plant's success in achieving this, there is nonetheless a division of labour, and their points of view are different. Representation of both is needed in most decisions, and the opinions of the enterprises themselves are essential to industrial institutions.

Much of the improvement of this serious situation must depend on its general recognition and on action by government. But industrial institutions can in a number of ways move to mitigate it. They cannot always expand representation on their boards, but they can build consultative machinery of advisory committees, periodic conferences, and plant visits as special efforts to obtain the views of public industry. Many institutions are in a strong position to further functional interaction among public industrial plants, by arranging special programmes of training, research, and information which will bring together personnel from many or all public industries to share views on at least a single subject of common interest. Most important, each institution in planning its activities needs to keep aware of the relative importance of public industry in the country and of its special needs. The institution can then be careful to provide programmes attractive to public industry. Thus can be built closer relationships encouraging the private sector to participate not only in receiving services but also in the decisions producing those services.

D. Deconcentration of Industry

Fully as important as having sufficient industry of the needed type is having it in the right location. Some industry is placed near its sources of raw materials, other near markets, still other near available manpower. In most countries, developing and already developed, industrial growth has tended to concentrate in and around a few major cities. The industrial revolution has led to urban concentration in massive sprawling complexes. Along with a concentration of industry there has been a socio-economic drift to the cities in search of employment.

Very often in developing countries the capital city is the centre of this growth of population and industry. There are a number of reasons why industry has tended to concentrate there. In many developing countries there is a heritage from a colonial administrative centre, usually at a port for import-export trade. This developed with a physical and economic infrastructure usually far more advanced than that of the rest of the colony. Before and since independence this has made the capital city attractive to entrepreneurs, first foreigners and now increasingly nationals. The banks and other sources of finance are there, the government's regulatory and servicing offices are there, and the various commercial, subsidiary and supporting services needed by industry, such as wholesalers of raw materials, sellers and repairers of equipment, the country's largest pool of trained labour, a concentrated body of domestic consumers, and the most advantageous facilities for exporting, all are usually located in this metropolis. Commenting on this, an official in one country pointed out that in a highly developed country most of these advantages are available throughout the national territory, while in a still-developing country nearly all are scarce or not to be found outside the central city. Hence industry inevitably

settles where they are available, which further builds the incentives for still more concentration in the future.

A few figures, merely indicative, show the result. In Haiti 80% of industrial employment is in or around Port au Prince; in Ghana 73 % of industrial firms are in the Accra-Tema area; 90 % of Sri Lanka's industrial production comes from Greater Colombo; while in El Salvador 61.5 % of industrial investment is in the San Salvador metropolitan zone.

Counter to this trend runs the desire of a great many countries to spread employment and other economic and social benefits as broadly as possible through their territory. This is in accord with a provision of the Lima Plan of Action which urges that emphasis be given to the equitable distribution of the benefits of industrialization among all sectors of the population. Countries are adopting this goal and taking action to implement it, not only for humanistic, social and economic reasons, but also for the political need to consolidate national unity, eliminate pockets of discontent, and promote local satisfaction that government has become mindful of those who live far from the metropolitan centres.

In a number of countries there is an interesting new welding of the belief in the benefits of industrialization with an equal or greater belief in the importance of rural and village values and development. This has led to a dualism in most policies of deconcentration of population and industry. On the one hand, there are efforts somehow to prevent additional industry within the metropolis, or even to move industry away from it. Parallel to this are various actions to improve the attractiveness and standard of living in provincial areas and to encourage the location of industry there.

A number of developing countries have adopted policies of deconcentration, enunciated in their development plans. In some cases the intention is merely to discourage the location of industry in already crowded metropolitan centres and to scatter it elsewhere in the country. More positively, it may be an assertion of a government policy to build more industry in the provinces, reflected in the specific locations planned for public industrial projects contained in the plan.

More detailed planning anticipates a focussing of industrial growth in particular provincial cities or nuclei. One form, such as used by Bolivia and Haiti, plans for several major general industrial complexes, usually located around a sizeable provincial city, each complex to be a centre for several less comprehensive industrial developments in smaller towns. A variant of this is to designate various nuclei as centres for particular branches of industry. This is often because of the availability of appropriate agricultural or mineral resources, especially petroleum, iron ore, or cotton. Iran in establishing its Industrial Development and Renovation Organization in 1967 set as one of its duties "to concentrate, as far as possible in one region, groups of similar units of the basic industries to be established by the Government, so that specialized industrial centres will come into being in appropriate parts of the country".

El Salvador's current government programme calls for construction of industrial centres of attraction endowed with infrastructure and functional buildings to facilitate and encourage the development of the selected areas. The location of the centre is to be based on condition that the region has road access and immediate availability of manpower. Each centre will include areas allocated for industrial buildings, commercial support, schools, housing and recreation. Particular centres are designated for heavy industry, chemicals, and metallurgy; metal-mechanics; woodworking and construction; agro-industry; and maritime industry.

Venezuela has now prohibited all new location of industry in the Greater Caracas area, as well as any expansion of existing industry there. Among the devices it is using to promote deconcentration are the government's control over public enterprises, mixed companies, and investment loan funds. Other countries are similarly prohibiting more industry in metropolitan areas or seriously considering doing so.

However, prohibition of industrial expansion in a metropolis is merely the negative part of most of these deconcentration policies. It neither answers the problems of existing industry which may wish to expand nor encourages further increase of the nation's industry. Nor is it enough to encourage or require that expanded and new industry locate outside the major cities. Guidance is needed to prevent ill-advised choices of location, or choices which will be newly detrimental to the economy, society, or environment. (It might be noted that these problems of location apply equally to the placing of new public industrial plants; also that they are not unique to developing countries, as shown by recent arguments and demonstrations in developed countries).

To the extent that policies of deconcentration run counter, as they almost inevitably do, to the natural tendencies of industry to settle in the metropolis, the same reasons earlier mentioned for industrial concentration there form in reverse the reasons why industry is unwilling or even unable to settle elsewhere. Hence in addition to policy and legislation and guidance, governments find that incentives and assistance are needed to promote deconcentration. As with all services to industry these require institutions for their administration.

For many government deconcentration of industry is becoming a major feature of their industrial development policy. As such, it automatically becomes an important commitment to which industrial institutions in all functions should be adjusting their programmes.

They are not always doing so. Deconcentration is a relatively new policy in most countries. Its implications to governmental and industrial action have not always been spelled out. Although implementation of deconcentration involves nearly all industrial institutions, many of them have not yet begun to recognize the substantial changes in their planning and services which will be required. Even fewer have moved to provide active support to deconcentration.

Deconcentration is an outstanding example of the necessity, which we have emphasized in Chapter II, to plan institutions in support of physical and economic planning. For if a policy of deconcentration requires implementing action by all industrial institutions, that action must be balanced and co-ordinated. It will be ineffectual if land is provided where no financing is available, or if plants are erected but trained manpower is unavailable, or if products are manufactured but distribution and marketing facilities are still to be created.

Industrial institutions and their services are not the only essential parts of this necessary unity of action. The agencies responsible for providing physical, economic and social infrastructure must also do their part. Industry itself cannot play a passive role. Public industrial projects are often key elements in deconcentration. The location of a large public industrial plant in a provincial area can change the whole nature of the surroundings, and can stimulate the location nearby of subsidiary or companion private as well as public plants. The same is true of the location of a large private industrial enterprise; also medium and small industries may be encouraged to make decisions to settle jointly in a branch nuclear location.

Regional and local governments are important participants in any deconcentration programme. In most countries they are responsible for much of the physical and economic infrastructure that new industry needs. They may themselves take on some of the additional responsibilities required by deconcentration.

Regional development corporations are increasingly common and generally successful. They are sometimes created as subsidiaries of national development corporations, but frequently are autonomous, directly dependent on a national ministry or a regional government. Their boards almost always contain substantial participation from the area.

Although the regional development corporations understandably are active in promoting industry outside the metropoli, some problems seem yet to be solved. Financing is often weak, or bears no direct relationship either to the development needs of the region or to a corporation's capacity to use funds. In Bolivia, where a fixed percentage of revenues from oil and other natural resources go to the regions from which they are derived, and then usually to the regional development corporations, it becomes a case increasingly of building up the areas which are already becoming strong, while the weaker areas lag further behind.

Whether deconcentration of industry and its build-up in outlying parts of the country are centrally administered, become at least a partial responsibility of regional and local governments, or are sponsored by development corporations, all industrial institutions have some responsibilities for its facilitation through their functional actions.

Their participation in the planning of deconcentration is of a triple nature:

- a) To the extent that industrial institutions take part in the process of development planning for the industrial sector, directly or through the Ministry of Industry, they naturally will need to keep alert to the policy of deconcentration in their recommendations and project proposals. They will need to think in terms of location and growth of industry in new areas and its diversion from the metropoli.
- b) The changing of geographical emphasis due to deconcentration means changes in the action programmes of many industrial institutions. Obvious examples are the opening of new vocational training institutes and new industrial estates in provincial development areas rather than expanding existing facilities in a metropolitan centre. To the extent that deconcentration is accompanied by creation of branch complexes in provincial areas, institutions may need to adjust their programmes by concentrating some activities not only in new geographical locations but also dividing them in new substantive ways, such as establishment of a branch textile research institute in a new textile complex or an agro-industry financing unit in a new agro-industrial development area.
- c) Finally, with these changes in the geographical location of industry and in the types of programmes to be offered, the institutions themselves find that the planning of their own internal structure and operations may have to be readjusted to meet the changed location and needs of their industrial clientele. In Thailand, as the government attempted to develop industries in the northern part of the country, one of the first steps taken was to establish a branch of the Industrial Services Institute in the northern city of Chiang Mai. Due to communication difficulties and the differing nature of industry and its needs as between Chiang Mai and Bangkok it has since been found desirable to make the branch a separate institution reporting directly to the Minister of Industry.

As emphasized earlier, deconcentration requires active promotion to encourage industry to settle in the provinces. Mention has been made of the role of regional development corporations as vehicles for this promotion. It should be recognized that these are in themselves new industrial institutions, with all the needs and problems which we describe throughout this study. But no country does or can rely merely on regional or local action to promote deconcentration, since it is a national policy, programme, and problem. As such it is a major responsibility of central bodies such as the Ministry of Industry and the Industrial Development Corporation. Since the promotional effort should be directed in part to encourage provincial entrepreneurs to establish industries, and in any case calls for much on-site consultation with potential investors whether provincial, metropolitan or foreign, the central promotional body very often finds it necessary to set up branch offices in some of these provincial development centres, and to co-operate with any regional or local development institutions.

In a number of cases it has been found that these branches, or outposting of central staff, are necessary before any actual promotional discussions with investors take place, in order to arrange with local governments and with national transportation and utilities agencies the installation of the physical and social infrastructure without which no industry will be willing to settle. If the deconcentration and local development plans call for an industrial estate, this preliminary period may be lengthy.

Any promotional effort requires adequate information to potential investors regarding the advantages of particular provincial areas. This calls for aggressive publicity, similar to that produced by European new towns or by local chambers of commerce. Some of that information can be in the form of brochures, films, etc. made available overseas and at the promotional agencies, and at one-stop investment centres and other industrial institutions in the national capital. The Korean Industrial Estate Corporation has a well-made general information film used for this purpose. Any overall publicity must be backed by staff with detailed data, if an interested investor is to give serious consideration to the promoted location. Finally,

promotional centres at the provincial locations, with adequate staff of sufficient rank and with adequate transportation and hotel accommodation, are needed to encourage investors to final decision.

Special financial arrangements are usually needed to support a policy of deconcentration. On the restrictive side, government may prohibit credits for location or expansion in the metropolis. On the positive side, various incentives can be offered. Among these are loan funds for deconcentrated establishment of industry, lower rates of interest or interest exemption for an initial period, tax reductions, lower building rentals, and occasionally special favourable rates on transport or other facilities.

From the institutional point of view these incentives may require special units for their administration. As industry moves to areas away from the metropolis, the handling of credit requests and especially the supervision of loans will require placing bank staff and branch offices in outlying cities. Along with the new demands on development banks as such, commercial banking facilities will be needed by industry as it develops in new parts of the country. In some countries it has become desirable to establish a special development bank for the financing and promotion of industry in some particular region. In developing countries an early and important regional development bank was Brazil's Banco do Nordeste.

One of the reasons for deconcentration of industry is to provide employment opportunities outside the metropolis and thus to encourage manpower to remain in the provinces. This assumes that this local manpower is qualified for industrial employment, or that it is to be trained for such employment. But the necessary training for most industrial skills can take months or years. Hence the planning and initiation of training programmes need to run parallel with or even predate the establishment of physical infrastructure and the construction of the industrial plants. Unfortunately this rarely occurs. While

ideally the availability of already trained manpower is a powerful promotional incentive, there is a hesitancy to invest heavily in training in the provinces unless and until there is a strong prospect that industry will settle there and provide jobs. As a result, crash programmes become necessary when plants are being constructed, which result in partially-trained manpower, or else trained manpower have to be imported from the metropolis or other existing industrial centres, which negates the intention of producing new employment for local residents.

If the new industry is in the form of a large public or foreign plant, it may be possible for the plant to establish its own training facilities. Otherwise the industrial training agencies will need to establish programmes, branches, even new institutions to carry out this function in the newly developing location. In general, these training facilities are most important and most common for middle level industrial personnel. Unskilled and semi-skilled labour can be given any necessary training in-plant. High level managerial and technical staff will need to be recruited on a national level, from whatever pool of experience and training is available country-wide. The same is true of any new training staff whom industrial institutions assign to the new location. Sometimes, as in Tanzania, an existing metropolitan vocational training centre may divide itself, cell-fashion, sending out staff to form new training centres. While the cost of staffing and equipping additional training centres is great, it is less and results are better than trying to move large numbers of regional trainees to a metropolitan training centre for many weeks or months.

Along with training, amenities are needed for plant personnel in new industrial development areas. This is not directly a concern of most industrial institutions, but it is of immediate importance if they are to send staff to new industrial locations as trainers, bankers, technical advisers, etc. These officers will share common concern with plant managerial and technical staff, also new to the location, for housing, school, health, recreation and other facilities.

Even subordinate plant personnel, presumably already living in the development area, will begin to demand more and better facilities as part of the good life which industrialization and employment are supposed to bring them. Industrial institutions are in an appropriate position to insist that provision for these facilities be included in the planning and development of deconcentration.

One of the advantages anticipated from the establishment of centres or complexes of industry in the provinces is that their promotion will lead to ancillary smaller plants located close to the larger new plants. In this respect the Argentine policy emphasizes the importance of planning and supporting its provincial development centres in such a way that they will have self-sustained growth. If this is to occur, however, it must be encouraged by institutional support programmes, especially by small-industry institutions and industrial estates, and by institutions supplying managerial and technical help to medium-level entrepreneurs. There is a place here for encouragement of sub-contracting, an activity still neglected in the industrial programmes of most developing countries.

All that has been said about the need to decentralize and often to modify institutional services to adjust to the new realities of deconcentration applies particularly to advisory services, whether on managerial or on technical matters. Such assistance cannot be given long-distance, and institutions will have to set up branches or new sister institutions, as done in Thailand, or outpost staff, or face the time and costs of advisory trips to the provinces, or else ignore the needs of non-metropolitan industry. That last course of action would be especially unfortunate since newly established industries in the provinces usually need advisory service more than do the older well-established firms in the central cities.

Accessibility to sources of advice is important, but access to information is an additional problem outside the metropolis. Entrepreneurs there find that their access to market information is especially limited, both regarding domestic prices in areas of major consumption such as the large cities, and regarding opportunities for exporting. This puts a large responsibility on those industrial institutions concerned with trade and marketing, such as chambers of industry and commerce, standards bureaus, and export promotion centres, to improve their flow of information not only to industry as a whole but especially to firms outside the traditional metropolitan locations.

A notable marketing feature of some deconcentration plans is the intention that general industrial centres in the provinces should serve as focal points of production of many commodities for regional rather than necessarily national needs. This would not be true of complexes based on availability of minerals or petroleum or a major agricultural crop such as sugar or cotton, which produce for the entire nation and even for export. But where an industry in a provincial centre is to produce a range of general consumer goods, inadequacies and costs of transportation and variations in local tastes make it desirable to think in terms of regional rather than national distribution and sales. These regional industrial centres in turn can serve as focal points for smaller towns which are centres for smaller firms producing less complex goods or subcontracting for firms in the regional centres.

Obviously, the service needs of supporting a policy of deconcentration are broader than the capacity and responsibilities of any one industrial institution. In Venezuela the Deconcentration Committee, under the chairmanship of the Director of Industry, includes representation from the national development corporation, investment agencies, and the electric and water authorities. If a government is to carry out deconcentration successfully, and especially if it is to emphasise the positive aspect of building regional and local industry in the provinces, then a national unified effort is required. It may well be that the

co-ordination needed is beyond the capacity of the existing system of institutions. One of the country studies for this project reports:

"Up to now there exists no mechanism to further geographical decentralization, upon the importance of which there is unanimous consensus in the country and in its current development programme. At present the majority of public institutions individually support decentralization, but they have received no motivation to put this intention into effect".

Although as far as is known no country has yet established a ministry or development corporation specifically and solely charged with the deconcentration of industry, this appears to be worthy of serious consideration. At present, deconcentration seems to fall between the general interests of industrial ministries and institutions and those of the varied agencies which try to promote improvement in rural life. Deconcentration is a new and special aspect of industry; much of the deconcentrated industry will settle in, or will create, provincial cities or towns rather than being merely an adjunct to rural life. Both factors mean that deconcentration of industry warrants careful and special treatment. If existing industrial institutions cannot adjust and coordinate themselves to do it justice, the case is strong for a new type of institution to deal with this important new industrial need.

B. Industrial Estates

An industrial estate is a planned area for the grouping of industrial plants, providing various services of physical infrastructure and usually some additional institutional services.^{1/} As such, it is in itself a service institution and at the same time can be the vehicle for services to be provided to its tenants by other industrial institutions.

^{1/} The terms "industrial park", "industrial area", "industrial district" are also used.

Various benefits may be sought and derived from this form of industrial support:

- a) The most obvious is the provision of well located land with adequate facilities and buildings. This is a primary reason for establishment of industrial estates in Hong Kong, where land is scarce and hard to rent or purchase. Many industrial estates throughout the world provide factory buildings which can be hired or bought by firms which might otherwise find difficulty in securing proper accommodation.
- b) By grouping several industrial plants close together, it becomes more economical to supply them with physical infrastructure such as roads, transport, water, and electricity.
- c) This grouping also makes it easier to supply institutional services like banking and postal facilities as well as more specific industrial services such as repair shops and technical advice.
- d) The grouping of similar types of plants encourages establishment and use of auxiliary firms supplying partly processed materials to other plants, or carrying on specialized parts of a process, or repairing equipment, or assisting in transport, marketing or other support activities. Where the estate includes one or more large firms, smaller satellites located close to them may take on subcontracting.
- e) Thus the grouping of plants in an estate can facilitate in several ways economies of specialization and scale without forcing smaller plants into consolidation.
- f) Many developing countries are finding that a number of these benefits are especially important to small-scale industry, and are encouraging small plants to take advantage of locating in industrial estates or are establishing special estates for small industry alone.

g) Occasionally space in an industrial estate is made available as part of a process of relocation of industry, when plants must be moved out of the way of new streets or of slum clearance or other similar urban renewal, or when for some reason industry must be moved out of a city altogether or to a new part of the country.

h) Increasingly industrial estates have become a means of promoting industry in provincial areas, either to encourage regional development or as part of programmes to deconcentrate industry from central metropolitan areas.

Many industrial estates are planned for, and open to, industry of all sizes and branches. However, a UNIDO study has listed several types of specialized estates: ^{1/}

a) Single trade: grouping several plants engaged in manufacturing the same or similar products;

b) Functional: with several plants each dealing with a different stage in a single process, such as spinning, weaving and dyeing of cotton cloth.

c) Nursery: designed for enterprises likely to grow and thus needing an increasing amount of space, buildings and infrastructure.

d) Ancillary: such as a grouping of a central enterprise and its sub-contractors;

e) Free zone; designed for export production in customs isolation.

f) Flatted; providing small areas of work space in concentrated multistory buildings.

^{1/} From Industrialization of Developing Countries: Problems and Prospects. Small-scale Industry. UNIDO Monographs on Industrial Development No. 11. (ID/40/11; E.69.II.B.39, Vol. 11) p. 23.

g) Small industry estates, including those for co-operatives, craftsmen and artisans, although not included in this earlier listing have become more important and common within recent years and are now being given priority in several developing countries.

An industrial estate is basically a commercial operation, even if it is initially subsidized by government for promotional or social reasons. **Because of this its management is rarely part of the regular activities within the structure of a ministry such as Industry or Commerce.** However, in Nepal the Industrial Districts Coordination Division of the autonomous Industrial Services Centre supervises the country's seven industrial districts (estates) through its appointed managers.

Aside from a few such cases, industrial estates are almost always organized either as public corporations on their own, or as sub-divisions of an industrial development corporation. In Tanzania estates are being established as units of the small-industries corporation. In a number of countries many industrial estates are owned and managed by regional or local governments. Occasionally an estate may be established by a co-operative, an industrial organization such as a chamber of commerce, or by a private entrepreneur.

Regardless of sponsorship, their initial capital is nearly always supplied by government, and an estate is expected to cover its operating costs from rental income. In most cases it is under some obligation to pay back the initial capital advanced. The Haitian Société Nationale du Parc Industriel is making monthly repayments on its capital loans from parent governmental bodies.

As government corporations, estates have boards of directors which include representatives of ministries such as finance, industry or commerce, and development corporations and banks. In the case of some specialized estates, export or small-industry agencies are represented. In the Republic of Korea there are representatives of the localities on the boards of nationally-owned estates.

There is rarely any provision for tenant participation in the planning, policies, decisions or operations of estates, even where the government may have the long-term intention of eventually selling land or buildings to tenants. The role of government is almost universally conceived as that of a paternalistic landlord who rents on attractive terms but whose relationship with tenants is one of persuading them to rent, keeping them satisfied, and perhaps providing some institutional services along with physical facilities, but in no way sharing the responsibility for all this with those tenants.

The facilities and services provided by industrial estates vary greatly from one country to another, and sometimes from one estate to another within the same country.

The basic facility always provided is land (or floor space in a flatted estate). Along with raw land, levelled and graded, nearly all estates furnish basic utilities such as electricity and water supply, and access by road, rail or water. Estates with emphasis on export production or free zones, such as that in Port au Prince, Haiti, are often located at or beside airports, or like that at Dasan, Republic of Korea, are parts of a port complex.

Some industrial estates supply nothing more, merely leasing (or very rarely selling) the land to industrial enterprises for whatever further planning, construction and use they may wish. If the estate is planned for reasonably large and well-financed tenants, they usually prefer to arrange for construction of factory plants fitting their specific needs, and can arrange private or government financing to meet the cost. Many governments and their industrial estates encourage private construction and ownership of factory buildings. This transfers a substantial capital cost from the estate to the entrepreneur, while it increases the obligation on him to remain in the area as producer and employer, or at worst to find another firm to buy the building and replace him. Needless to say, any relationships

involving construction of a factory building by an enterprise also calls for a long-term contract for lease and use of the land on which it is built. As a special promotional incentive, some industrial estates assist manufacturers to arrange financing of their buildings or construct those buildings for hire-purchase.

When an industrial estate is designed for smaller-sized or varied establishments it is common to build at least a few standard factory units for rental. Ideally these are designed so that tenants can rent smaller or larger areas, adjusting the amount of space rented to their varying needs from time to time. Usually an estate begins by trying to secure a few tenants who will construct their own factories, while at the same time erecting several standard shell buildings which can be rented. Then if demand grows and capital is available the estate can gradually build more units.

As landlord, an industrial estate is in competition with land and buildings which may be available elsewhere. A potential tenant will balance the rental which the estate charges and the benefits of locating there against the costs and benefits (or lack of them) elsewhere. Hence the estate to be successful must restrict its charges to somewhat near the "going rate". Many industrial estates in practice offer

lower concessionary rates, at least at the beginning of their operation, or to new tenants for an initial term. Sometimes this is in order to raise occupancy of the estate toward an economical level; sometimes it is due to a government policy to encourage new industries by the incentive of a low rent. In most cases the rent incentive is gradually reduced over a period of several years.

As earlier mentioned, the capital investment in land and utilities, as well as in any standard buildings, is initially furnished by government or by whatever other body has established the estate. Once the estate is fully operative its rental income should at least cover operating costs. Yet as in all commercial undertakings the period of initial growth may be one in which income is insufficient to cover costs. To the extent that rentals are concessionary, this gap is made greater. Governments seem reconciled to having industrial estates show deficits, and many estates do so rather permanently. This is explainable to a certain extent; most industrial estates in developing countries are new and not yet fully occupied; many are charging uneconomically low initial or promotional rentals; some are badly located, overcapitalized, or uneconomically managed.

Looking at industrial estates in developing countries as a whole, it appears that governments would be well advised to improve mechanisms for accounting and financial control. Some countries do not seem to be segregating accounts for each individual estate but instead lump all their estates into one set of accounts.

Since many estates are relatively new, there is danger of insufficient provision for maintenance in future years. Not all countries have set policy as to whether initial capital is to be repaid, or even whether interest on capital is to be charged against estate income. In the absence of proper managerial controls and costing, estate staffing can become overloaded and uneconomical. As additional physical and institutional services are demanded and added, agreement must be reached whether these are to be the financial responsibility of the estate and supported from its rental revenue, or paid for by fee charges, or financed from the government budget. Especially important, any subsidy of industry in the estate through reduction of rentals, low interest loans for buildings, etc., should be covered directly through specific payments from government to the estate, rather than disguised in the form of an operating loss.

An industrial estate which is at least reasonably fully occupied groups together a number of potential users of industrial institutional services, and by that very grouping makes it more feasible and economical to provide those services.

Banking offices are located in many estates. Generally these are intended for commercial banking purposes, facilitating the deposit of enterprise receipts and the payment of payrolls. There is no reason whatever, when they are branches of State banks, why they cannot at least assist in the negotiating of loans for working capital or expansion, in the supervision of credits granted by government and its banks to enterprises in the estate, and in arranging for various credit and export guarantees. Although the scale of operations rarely would warrant a full

branch of a national development bank, it would be well worth exploring ways in which such a bank might contract to use for these purposes the staff of whatever banking facility is located in an estate, or at least arranging to have one of the development bank officers available periodically at the estate for consultation with entrepreneurs.

A modification of financial credit is the provision of machinery and tools on a hire-purchase basis. While not confined to enterprises located in an industrial estate, this benefit is sometimes made a part of the planning for an estate, especially where it is specifically for small industry or for some particular branch of industry. The grouping of potential hire purchasers in a single location facilitates promotion and administration of the programme, as well as supervision of the care of the machinery, training and assistance in its proper use, and collection of payments. It is not customary to place this responsibility on either the estate management or the branch bank, but arrangements for their assisting the hire-purchase agency should not be impossible.

A variation of this means of supplying machinery, especially adaptable to industrial estates, is purchase by some government agency or by a tenant co-operative of pieces of machinery for joint use, preferably on a rental basis. Again this is particularly feasible for small industry or branch estates, where many pieces of machinery are needed only part-time by any one tenant and would be too costly for each to purchase.

Industrial enterprises, especially those which are medium and small in size, need outside help in the repair of equipment. Although this is not always

considered primarily within the range of institutional services, there are some instances where technical training institutes, small-industry support agencies, or other institutions do carry out some repair work for industry. A number of industrial estate sponsors have this in mind as an eventual service to offer. In some cases they may be able to encourage a private repair shop to establish itself in the estate. A few small-industry agencies envision co-operative repair shops in their estates. Where the scale and need is large enough, the estate itself or some assisting industrial institution may find it desirable to set up government-operated repair facilities.

The plants which industrial estates group together are not only machinery users but are also employers of labour, with an interest in a supply of qualified personnel. Here again, their proximity facilitates the providing of training. While a training institution might not be able to set up separate training programmes for several small and scattered factories, it could better do so for all of them together in one estate. Efforts are being made in a few countries to overcome competitive suspicions and to promote joint in-plant training in estates, and even to arrange short training assignments of personnel from one plant to another.

The physical proximity of several plants should encourage staff of industrial institutions to visit all of them more frequently. This can contribute to building an assistance and trouble-shooting relationship. Where an estate contains several establishments of a similar nature, it may be feasible to arrange periodic visits

of institution officers or teams, or even to station a staff member at the estate. An option in the latter case would be for the estate itself to employ technical aid staff.

One particular function where aid would be most helpful would be in facilities and expertise to support quality testing. Like the help which banking institutions could give estate tenants in facilitating guarantees and other marketing documents, joint testing facilities would similarly help marketing. The same is of course true of the physical transport and communications facilities inherent in an industrial estate, and in the customs facilities derived from location in a free zone estate. In fact a major purpose of a free zone estate is to promote and ease export marketing. Where an estate is part of a general programme of support to small industry, and especially when tenants are organized into co-operatives, there is often some arrangement to help them in joint marketing, either through the co-operative or through the estate itself. The same is true for branch estates. At the other end of the production process, experiments have been made in joint purchasing of raw materials for branch or small industry estate tenants.

Taking a world-wide view of industrial estates as service institutions, several general needs must be met if they are to become more effective aids to industrial development.

a) Few countries seem to have fixed a clear policy regarding the size and scope of role to be assigned to estates in industrial development. Up to now the estates have usually been step-children. Once a government's intentions have been clarified, it will be possible adequately to

promote use of its estates. In many countries at present the industrial institutions as a whole do not seem sufficiently cognisant of the industrial estates, their possibilities, and their needs. Institutions do not try to relate their service programmes to those possibilities and needs. As a result, the promotion and development of estates are often left completely to those few officials who are most closely concerned with their financial viability and their day to day operations.

b) As part of the policy clarification, governments need to determine exactly what are the goals of their estates in general and of each individual estate. Then plans can be made regarding what kinds of enterprises are to be encouraged or allowed to enter, the incentives needed and regulations to be applied, and the institutional services which need to be furnished. For example, one country which has successfully promoted an estate with several foreign tenants renting buildings and processing for export now belatedly recognizes that those firms have no loyalty to the country and will leave at the first drop in world demand for their products. The policy is now being shifted to give priority to national enterprises or those with very substantial local participation.

c) Mention was made earlier of the need for better financial and accounting control of estates. This would be encouraged by the more clear-cut policies just urged; in turn it would encourage optimum quality of management.

d) One reflection of the lack of clear policy regarding industrial estates is the lack of their co-ordination not only with other industrial institution but also with other facilities. Too often estates have been established without proper supporting facilities such as adequate housing, schools, clinics or hospitals, recreation, and transportation of personnel. (One manager, when asked about housing for plant employees replied that instead of housing his estate had arranged for rush hour bus trips from and to two cities each 30 km. away.) All these socio-economic facilities require co-ordination with a number of ministries and agencies, public and private. While that co-ordination obviously should take place when the estate is being planned and constructed, it needs to continue as the **estate is being operated, and hence is one of the** responsibilities of the estate's management. In **this** some machinery for tenant input is desirable, not only from plant management but from the workers. Few if any industrial estates have created such machinery.

At the levels of ministerial co-ordination, the need for a unified approach in carrying out government policy regarding estates may be obvious but it is rarely met in practice. Not only as a device of industrial support but in its working operations the industrial estate is but one part of a total development strategy, for the region in which it is located, for the types of industry it serves, and for the national economic improvement as a whole.

CHAPTER VIII

THE ROLE OF INDUSTRIAL INSTITUTIONS IN REGIONAL CO-OPERATION
AND IN ASSISTING THE LEAST DEVELOPED COUNTRIES

The industrial institutions we have been describing are sponsored by national governments or by national private bodies, and their purpose is to assist industrial development within the boundaries of their own countries. Yet it is clear that although nations compete in industry they are nonetheless interdependent in raw materials, in markets, and above all in technology. Each national industrial institution must be in many ways self-sufficient, but this need not conflict with, but instead can only gain from, co-operation with similar institutions in other countries.

One of the major concerns of the Lima Conference and its Declaration was that nations should collaborate more closely in industrial development. This includes co-operation between industrialized and developing countries, collaboration among neighbouring countries in regions or sub-regions of the world, and special industrial assistance to those countries which are still among the least developed in the world.

Some of that collaboration and assistance, can take the form of direct action to finance or construct industrial plants, or trading arrangements for importing or exporting industrial materials and products. Another type of relationship, however, is in building the effectiveness of national industrial infrastructure, especially institutional infrastructure. Collaboration or help of this type can have a multiplier effect which can make its importance greater than is the construction of any single industrial plant.

A. Regional and Sub-regional Co-operation

The most restricted form of co-operation, in a geographical sense, is that between two adjoining or neighbouring countries. The extent to which this will take place depends to a large degree on stimulating or inhibiting factors such as language, economic systems, historic ties or enmities, and even on similarity of stage of development.

More than commonly recognized there appears to be a very substantial amount of contact between neighbouring industrial institutions on a personal and informal basis. Senior staff meet at international or regional conferences, personnel visit sister institutions while on official or private travel, and correspondence is frequent.

In a number of cases this has led to more formalized relationships. Libraries agree to exchange publications. Bureaux of standards collect the standards promulgated by neighbours, with permission to use them as needed. Increasingly institutions provide training to staff from other countries, either through formal courses or through periods of in-service training. A recent example has been the training

of a Zambian vocational instructor at the Tanzania Vocational Training Centre, while several instructors at the Tanzanian centre have attended a training course in Zambia. A senior officer of the Ghana Industrial Bank has been seconded to assist in the establishment, management, and staff training of a new Development Bank in Sierra Leone.

Occasionally industrial institutions develop "twinning" arrangements in which two institutions arrange mutual support not only in training or information but in joint studies, researches, or development of techniques, frequently by teams drawn from both institutions. Until recently these twinning arrangements usually paired an institution in a developed country with one in a still-developing country. Sometimes these arrangements are general and long-term, such as that between the Battelle Institute in the U.S.A. and the Korea Institute of Science and Technology, or that between the New Brunswick (Canada) Research and Productivity Council and the Caribbean Industrial Research Institute. Others are for specific projects, as the joint studies by the Tropical Products Institute of Great Britain and the Applied Science Research Corporation of Thailand leading to the development of technology for an essential oil industry.

A tendency is now developing, however, for developing countries to seek such twinning with institutions in other countries which though more highly developed are not yet industrialized to the most complex degree. Thus the Tanzanian Investment Bank has a broad contract with Tata Associates of India for support to develop staff and experience in making pre-feasibility studies. Occasionally two countries establish joint industrial enterprises, as for example the Egyptian-Kuwaiti cement, glass, and paper factories, and the Cameroon-Chad cement plant.

Sub-regional or regional collaboration ^{1/} can have greater value to institutions than is usually provided by these bilateral arrangements, for several reasons. First of all, the volume of experience is expanded to embrace several countries instead of two. Not only this, but the range of that experience is usually broadened to include that of countries with different backgrounds and modes of administrative thinking. This can result in stimulation even if sometimes conflict.

^{1/} Since "regions" and "sub-regions" differ primarily only in size and in number of countries, we shall for simplicity use the term "region" for both types of multinational groupings.

Perhaps the most productive regional activity is that of meetings which concentrate upon one or more rather specific needs of some particular type of institution. Examples in recent years include

a regional seminar for managers of chambers of industry of Arab countries;

a seminar on industrial information for African countries;

a joint consultation on the stimulation of industrial research activities in Latin America;

an Asian regional seminar on know-how about licensing arrangements;

a meeting on financial assistance and extension services for the promotion of small-scale industry in the Caribbean area.

Meetings such as these bring together specialists who will have reason to continue their professional relationships in future years. Equally important, they are action and problem oriented, with an aim of producing results with practical value.

Their major disadvantages are that they are brief and are restricted in subject matter. It is indicative that very frequently one result of their discussions is a desire for follow-up of a broader and more continuing nature. This has produced a sizeable number of regional associations which group particular types of national industrial institutions. Examples are the Arab Standardization and Metrology Organization, which is a specialized agency of the Arab League, the Asian Packaging Association, the Association of African Development Finance Institutions, and the Standards Association of Central Africa. Nine African states have recently agreed to establish an Association of African Industrial Technology Organizations linking research institutions, universities, and industry in collaboration.

Associations such as these have a symbiotic relationship with the seminars and workshops just described. Almost always the association is a result of the interest generated in some conference or seminar. And the association, once formed, in turn serves as the sponsoring vehicle for new meetings and study seminars.

In addition to promoting personal contacts, regional associations fulfil an important role in spreading information among national institutions. This is done in two ways. The association acts as a clearing house which collects ideas and data from among its members and then through newsletters, journals and other means redistributes them to all the membership. Additionally, regional associations usually are intermediate links between national institutions and world-wide associations. It is not practicable for institutions in each of the world's 147 countries to have direct contact with all of the others in their function. The regional associations serve to make the flow of information and concerns manageable.

Few regional associations of industrial institutions have sufficient resources to provide their national members with assistance other than information and occasional help in training. They often do perform a somewhat informal service in helping to put an institution which has a problem into contact with another which can provide assistance with personnel or expertise. Financing in such cases is the responsibility not of the association but of the countries concerned.

Sometimes the regional association of industrial institutions may be able to promote this financing from a general regional assistance programme such as the Colombo Plan. Although not designed for the sole purpose of industrial servicing, these regional programmes usually work collaboratively with regional functional associations of all types. As a result, one finds recent regional programme assistance to industrial services through support such as that mentioned earlier from the Organization of American States to a technology transfer service in El Salvador. In the context of ASEAN regional co-operation research on design of a cargo ship especially suitable for use in that region is being undertaken with the Singapore government-supported Applied Research Corporation doing the first phase systems engineering study.

Regional associations of institutions are paralleled by regional associations of industry or industry branches. A notable example is the Arab Federation for Iron and Steel with 74 organizations and firms from 14 countries as members. With a wide mandate to promote production and exports, this Federation has initially concentrated on a number of technical studies.

An even closer form of regional action is through the creation and operation of actual regional (or subregional) industrial institutions which supplement, and in some ways substitute for, the work of national institutions. The Industrial Development Center for Arab States has created a major industrial information center and has promoted technical co-operation. Its activity has been supplemented by financial action through several Arab development banks such as the Arab-International Bank and the Arab African Bank and several Arab bilateral joint investment companies. Africa has its African Development Bank and East African Development Bank. Other examples are the Asian Institute of Technology, the Central American Industrial Technology Institute, the Asian Productivity Organization, and the Office Africain et Malagache de la Propriété Industrielle. It is noteworthy that many of these institutions have been created as results of broader regional economic co-operation or integration schemes.

On the surface it would seem that these multinational institutions would be an almost ideal way of pooling scarce finances and personnel for common use. Yet up to now the record of experience has not been generally bright. As we mentioned at the beginning of this chapter, countries, especially those in the same subregion, frequently are competitive in their industrial development and hence in their institutions. Sometimes it is difficult to move the best qualified persons from their home national service to a new regional institution in a foreign country. For financial reasons the junior staff of secretaries, technicians and other support personnel are primarily or completely recruited from the country in which the regional institution happens to be located. This affects its operating language and general orientation. For these and many other reasons there is a danger that the institution may remain or become in fact though not in name a service to its host country rather than to the region as a whole. This has occurred, for instance, with the Caribbean Industrial Research Institute in Trinidad and the Public Administration Institute for Turkey and the Middle East.

One or two national institution directors have pointed out that any regional institution must serve a specified clientele. If the clients are industries themselves, those near to the regional institution will find it more convenient to utilize its services, while those in more distant countries will be less likely to do so.

The most hopeful arrangement for regional industrial institutions appears to be one in which the regional institution is the centre for a net-work of national institutions and performs work which is of a common value and too complex or costly for any one national unit. To the extent that it can provide its staff with challenging tasks and the facilities needed to perform them, it can help to stem the brain drain to more developed areas. It can also serve as a centre for advanced training in a realistic close-to-home setting, as does the Asian Institute of Technology. Desirably the regional institution would be the co-ordinating

point for joint projects in which each national institution has a specific part. Financing of the regional institution needs to be an accepted responsibility of all the participating countries, and some system of rotating staff between regional and national institutions is essential. The present situation of several of the East African Community specialized institutions makes it clear that any regional industrial institution needs in some way to have a stability of existence protected to the maximum extent against transient political detriment.

In a number of cases these various needs have been met initially through sponsorship and support to regional institutions by the United Nations and other international organizations. This can maximize the regional scope of new institutions and minimize the political dangers. Yet international sponsorship is not a total answer to such problems. It is ordinarily temporary; eventually a time should come when the countries of the region trust themselves to finance, staff and co-operatively operate the institution. The international organizations can only stimulate and assist. They cannot force reluctant nations to provide support or co-operation to a regional institution, nor can they ensure that its services will be utilized.

B. Institutional Help to Least Developed Countries

It is usually though not universally true that the countries which are at present least developed in their industrialization also have the least highly developed system of institutions to support industrialization. Development is largely a unified movement in which no part can be very far in advance of any other. Industrial institutions tend to be

created or to grow in answer to present needs, rather than in anticipation of the future. Least developed countries are especially short of qualified persons to staff new institutions.

Whatever these reasons, it is clear that the least developed countries need special help in building their industrial support services if they are to have any hope of industrializing. Much of the help they need can come from the regional support we have just been considering, but obviously more and concentrated aid is also needed. This was emphasized in the Lima Plan of Action, which noted that the least developed, land-locked and island developing countries present a set of problems which require special measures if these countries are to obtain an acceptable level of economic development. Industrialization in these countries must take place at a more rapid pace than average. Concerted action and special measures of assistance from other countries and international organizations are necessary to mobilize a greater volume of resources to make possible the laying of a sound basis for the promotion of their industrialization.

In a number of cases a least developed country has been able to secure assistance from some particular more advanced country. Occasionally a former colony continues to receive technical help from the once-imperial power, as in Papua/New Guinea's relationship to Australia.. In other instances a more advanced country has for various reasons taken on some special assistance relationship to a less developed neighbour, as with India's assistance to Nepal. While many of these relationships are for general assistance in a number of sectors,

at times there may be specific assistance arrangement for individual industrial institutions. Although informal, several such arrangements have led to training and other help from industrial institutions in Trinidad, Jamaica, and Barbados to the small island countries of the Caribbean. Ghana's National Investment Bank has assisted Gambia in the preparation of feasibility studies, project selection, and other consultancy services. Such help is in line with the Lima recommendation that developing countries with sufficient financial resources should share in the economic and social development efforts of the least advanced countries.

Although few of the regional or subregional mechanisms such as associations, institutions or assistance schemes give special attention to the least developed member countries, they are at least potentially useful vehicles for this. Naturally they tend to draw such of their strength and expertise from those member institutions or countries which are the more highly developed. At the same time, those who manage such regional activities appear highly aware of their responsibility and opportunity to channel that expertise to members having greatest need.

As the Lima Declaration makes clear, responsibility to help the least developed countries rests upon the world as a whole, not merely with neighbouring countries or a subregion or a region. Hence international sources must be looked to for provision of such of the help for development of industrial institutions in these countries.

This special responsibility has been accepted in recent planning of technical assistance by the United Nations group of organizations. Examples of current UNIDO projects involving industrial institutions are the development of an institute of training for the leather industry in Southern Yemen, which has led to the establishment of a pilot factory; creation of industrial research and consultancy in the Sudan; and support of industrial promotion and development activities, including planning and feasibility studies, in Chad, the Central African Empire, and Upper Volta.

Finally, one should not ignore the role which is being performed increasingly by non-governmental international bodies. In our researches we have found instances in which developing countries have called upon industrial and labour organizations for help in building institutional skills and programmes. There is a large possibility of expanding that help, especially in directing it to the least developed countries, where reasonably simple experience can be helpful, and where the donors need fear little competition in the immediate future.

Mention has already been made of the work of international associations for various industrial functions such as standards, research, training, packaging, etc. Although these functional associations cannot concern themselves with the needs of every developing country, it is reasonable to hope that like their regional counterparts they may be able to give special attention to the least developed countries. In some instances

they might be expected to form special sections or bureaux which could concentrate on channelling help from their members to those countries. Similar assistance could be provided by international professional associations of engineers, accountants, economists, administrators and others, whose members in government, in industry, and in individual employment have skills which could be encouraged toward the building of industrial institutions in the least developed countries.

Effective assistance from any source to a least developed country is greatly dependent upon that country's ability to absorb help. Nearly all assistance very properly requires some local participation in the form of staff, facilities, and administration. The limited absorptive capacity of a country is most obviously shown in its difficulties of providing qualified trainees and project personnel. More than recognized, however, a limited capacity to absorb assistance is also a result of institutional weakness. This points up the importance in early stages of assistance to least developed countries of building and strengthening industrial institutions, which will in turn improve the ability to absorb future assistance.

CHAPTER IX

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

In the course of this study a number of fundamental points have become increasingly clear. Some of them are no doubt obvious but can well be restated. Others have gradually revealed themselves until their importance has become recognizable. All are parts of the foundation upon which any analysis of industrial institutions must be based.

All countries seek economic development, and nearly all developing countries have chosen industrialization as a primary route toward that development.

Most industrialization does not occur spontaneously. It requires a number of varied stimuli and supports. These can ordinarily be provided only through organized agencies or institutions. In most developing countries nearly all of this support is provided by the government through public institutions.

The institutional sophistication, needs, forms and sufficiency in developing countries differ in rather direct ratio to their degree of industrial development. However, most countries except a few of the least developed now possess a substantially full number and range of industrial services, at least in microcomm. These institutions have developed individually, over a period of time. In practically

no country do they form a rational and cohesive system to furnish the balanced support needed for industrial development.

The existence and value of an industrial institution is to be judged primarily, if not solely, by the extent and effectiveness to which it services and promotes industrial development, reflecting the goals of national economic planning. The most successful institutions result from a clearly acknowledged need.

The range, form, and operations of institutions should be determined in the first instance by the existing conditions of the country. In addition, they should be adapted, or at least adaptable, to the industrial potentials of the country and its industrial policies and strategies.

This means that these institutions must accept a mission of leadership, carrying out an active role of leading change to promote greater and better industrialization, rather than merely reacting passively to, or providing services to, the industry which already exists.

Most industrial institutions in most developing countries are still in a preliminary or experimental stage. Their resources and experience are small while their tasks are limitless. Even the most cursory review of these institutions throughout the world indicates that they still fall short of fulfilling the hopes and expectations which led to their creation. Industrial institutions in general do not provide sufficient support to meet the needs of industrial development or even of existing industry. Often this is through no fault of their own.

Certain conclusions can be made from the present survey. These in turn lead to recommendations as to how industrial institutions can better contribute to economic development. Each of these conclusions and recommendations has been treated in some detail earlier in this report; hence they are presented here in summary form. Not all of them will be applicable to every developing country, but hopefully all will stimulate constructive thought.

1. In approving the Declaration on Establishment of a New International Economic Order and the Lima Declaration, as well as their accompanying Plans of Action, developing countries have accepted certain obligations. Some of those obligations involve regional and world-wide co-operative action. Others call for domestic action to equip each country to participate fully in this global effort and in the industrial part thereof.

To better fulfill those obligations it is urged and recommended that each developing country should:

(i) Create a "think-unit" designed and equipped to consider the broad implications of the country's participation in the efforts toward a New International Economic Order, to prepare the information and drafts for policies required in that participation, and to interpret to the government and to the public the requirements of participation in terms of the domestic institutions, programmes and actions needed.

(ii) Develop, with full participation of all interests which may be concerned, a broad, long-term, and practical industrial strategy, fitted to the goals of the New International Economic Order and the specific conditions and needs of the particular country. This strategy should specify the industrial goals and priorities, and should show among other things the incentives and disincentives to be applied to industrial investment, the intended ways of financing industrial development, and the institutions which are to support that development.

(iii) Improve the machinery and staffing required to achieve realistic and comprehensive planning for the industrial sector, as part of national economic development planning. This again will require improved participation of all interests concerned.

(iv) Create effective machinery to promote the implementation of industrial development plans; improve the machinery for the furthering, monitoring and control of implementation of individual planned projects as well as for periodic critical central review of project progress.

(v) Make greater use of project expeditors and special inter-institutional or inter-ministerial task forces to speed and smooth project implementation.

(vi) Establish within its national development plan a specific portion concentrating on the "institutional sector", planning the detailed development of, and allocation of resources to, all the nation's institutions in relation to the support which they are to give to the economic, social, industrial, and other development, which is projected in the plan.

(vii) Establish machinery to improve the co-ordination and control of the system of industrial institutions.

2. Industrial institutions exist not only to provide support to industrial development; they are also tools of national economic development as a whole. As such, they share the national responsibility to become better equipped to promote achievement of the goals of the New International Economic Order. Their role is not only one of translating those goals into details of industrial development; they also have a balancing responsibility to translate industrial needs into new economic support programme which will meet those needs. In this, industrial institutions cannot be passive. They need to be dynamic and promotional, leading the way toward industrial development.

It is therefore urged and recommended that developing countries, and each institution:

Frame institution programmes of service and action in dynamic terms, taking cognizance not only of current needs, but projecting on as long a term as possible the development of the institution, so that it will be prepared and able to give adequate support to industry as that industry is planned to develop in the future.

3. These various obligations cannot be carried out successfully by institutions working individually. In most developing countries the institutional effort is already spread too broadly. Countries with limited numbers of professional and technical personnel cannot adequately staff numerous industrial institutions. Too much of the time of the few available specialists becomes diverted to administrative routine. Where possible, any new need or programme should become the responsibility of an existing institution, revised or strengthened as necessary. Only when such assignment is impossible or cannot produce effective results should the creation of a new institution be considered.

In almost no developing country do the industrial institutions form a cohesive system for carrying out governmental development programmes. Linkage is commonly insufficient between institutions charged with promotion and development of new industry and others responsible for the support of existing industry. Similarly, those institutions concerned with action in a given area of industrial development (such as research or small industry) are not usually linked together into a sub-system, but tend to work separately or even competitively. Although much industrial development should be co-dependent with action in other sectors such as agriculture, commerce, or transport, institutional contacts and joint action among sectors are usually insufficient or non-existent.

It is urged and recommended that each developing country should:

(1) Carry out as a matter of urgency an overall review of its industrial institutions with the aim of harmonising all of those institutions into a cohesive total system,

including a number of subsystems, and with effective inter-sectoral linkages;

(ii) Establish adequate machinery and procedures to ensure that these systems and their relationships, both internal and external, are constantly readjusted to changing development plans and progress;

(iii) In this, and in considering the future establishment or modification of any institutions, define first of all the specific objectives and scope of each institution, relating these to the industrial needs and strategy of the country as a whole;

(iv) Designate some central high-level organ to pass upon all proposals for creation, expansion, or major modification of any industrial institution, in order to ensure that the proposed changes will be in accordance with the industrial needs and strategy and will fit within the rationalized system of institutions;

(v) Require with any such proposal a comprehensive "institutional feasibility study" or justification equal in detail to those required for industrial projects as such, and containing realistic cost-benefit data, not only in terms of finances but also in terms of the human and material resources to be invested in the institution and the industrial improvements which can reasonably be expected from that investment.

4. In most developing countries direct and strong linkages have not been achieved between industrial institutions and industry itself, whether public or private. Industry does not participate sufficiently in the institutions' planning and actions, nor does it receive adequately the

service which those institutions exist to provide. The institutions have not sufficiently developed trust and acceptance by industry. They have not learned to sell their service products; more important, they have not recognized that they must have products which are worth selling and are needed. This is in part because many industrial institutions tend to be subject-oriented rather than client oriented. They concentrate upon developing work programmes which appear technically or professionally sound and which they assume will attract and help industry, rather than upon seeking out industry's needs and building programmes to meet them. At the same time, industry is not free from responsibility. In many developing countries industry has shown little interest or willingness to seek institutional help or to participate in strengthening industrial institutions and in making their work programmes more useful.

It is recommended that each industrial institution:

(i) Review its programmes and actions, as well as the underlying attitudes, to assess (a) How well they are designed to cover actual and expressed needs of industry itself; (b) How practically and directly they are related to those needs as tested by actual contact in enterprise offices and on the shop floor; and take steps to make programmes and actions more direct and practical;

(ii) Promote that direct contact by all possible means, such as by insisting that greater proportions of institution staff time be spent in industrial plants, by exchanges of staff between institutions and enterprises, and by joint staffing of service projects;

(iii) Expand and improve the machinery for, and the encouragement of, participation by industry including its workers, and consumers in programming and decisions, both those relating to industrial development as a whole and those concerning individual institutions.

This improvement also requires co-operative action by industry itself; it is recommended that industrial enterprises and organisations take a more active and aggressive stance toward participation in those programmes and decisions which concern them.

5. If industrial institutions are to fulfil their responsibilities properly, their programmes and operations must be administratively sound. This requires attention to a number of factors, most of which are common to the improvement of all organized administration, public and private. However, certain of them are especially important for industrial institutions in developing countries.

It is therefore recommended that developing countries, and each industrial institution, be alert to:

(i) Provide sufficient and consistent financing for industrial institutions' programmes of work, whether through stable governmental budget appropriations or through allowing and encouraging an institution to seek support from its industrial clients;

(ii) Improve the quality of staffing of industrial institutions through creating arrangements enabling greater interchange of personnel between institutions and ministries, autonomous agencies and, above all, public and private industry itself; balance stability of tenure in institutions with opportunities for promotion as well as practical industrial work; accept a role of industrial institutions as training areas to build personnel for industrial management and technical posts and for economic development as a whole.

6. The public industrial sector is of major importance in almost every developing country. In many of them it has grown to this importance without clear intended policies and organization. If its role and potentialities are to be utilized effectively in achieving national development, clarifications and improvements need to be made.

It is recommended that the government of each developing country should:

(i) Delimit clearly, in terms of law and industrial strategy, the areas intended for public industrial development, those reserved for private industry, and those open to both public and private action.

(ii) Act immediately and aggressively to establish a coherent organization system for all public industry, to enable planning for the public sector as a whole, to coordinate its operations and improve controls over it, and to minimize duplication and promote joint services.

(iii) Increase and encourage the participation of public industrial enterprises, individually and through new joint organized machinery, in all types of planning and decision-making concerning the public industrial sector.

(iv) Stimulate for public industry closer relationships with, and participation in the planning and decisions of, industrial service institutions.

7. Since industrial institutions deal with a large range of functions and industrial problems, it is difficult and may be inappropriate to draw particular attention to the needs of any one of them. However, several

areas seem especially weak in relation to the goals set in the international economic Declarations and in most national development plans.

Hence it is recommended that governments give priority attention to strengthen institutional machinery and actions to:

(i) Develop or improve national staff and organizations adequately qualified to carry out feasibility studies for all proposed industrial projects;

(ii) Build similar national capacity to provide management and technical consultancy on all but the most complex matters;

(iii) Expand training of middle-level, technician and supervisory staff for industry; improve the practical nature of that and other industrial training; expand in-plant training and develop programmes of apprenticeship; initiate or up-date accurate manpower surveys as the base for industrial training;

(iv) Promote and service small-scale industry;

(v) Improve co-ordinated machinery for the development and supervision of agro-industry;

(vi) Clarify the industrial roles of co-operatives, rural development programmes, local governments, and national populist and self-help movements;

(vii) Establish comprehensive plans for deconcentration of industry, supported by measures such as financial incentives, technical advice, and industrial estates;

(viii) Support policies of export promotion by expanded and adequate institutional service.

8. The need for economic co-operation among nations is emphasized in the New Economic Order. Regional and international interchange among industrial institutions can be a means of strengthening national institutional capacity and effectiveness. At the present time each developing country is struggling to build a full range of industrial institutions. This is often beyond available national resources, especially of expert specialists. It is leading to a multiplicity of small national institutions, often duplicating work being done in neighboring countries or in other parts of the world.

It is recommended that governments of developing countries and their industrial institutions:

(i) Seriously consider the technological and economic advantages of subregional, regional and international co-operative action, and in the creation and programming of their national industrial institutions seek to maximise those advantages through such co-operation;

(ii) Attempt in all possible ways to increase contacts between national institutions and similar institutions in neighboring countries as well as throughout the world;

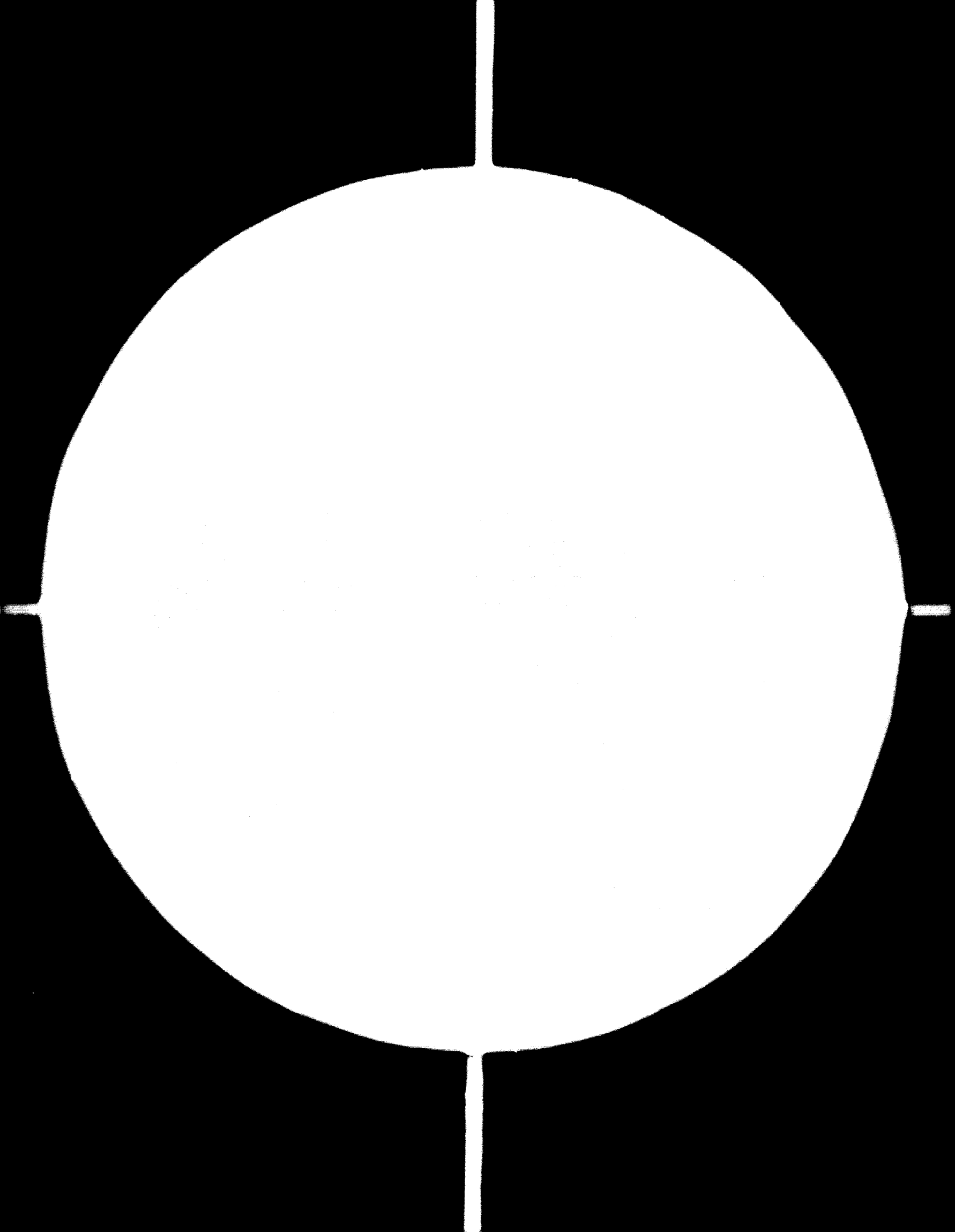
(iii) Promote joint work programmes of institutional research, training and service;

(iv) Actively work to create regional interaction of all types among industrial institutions, including,

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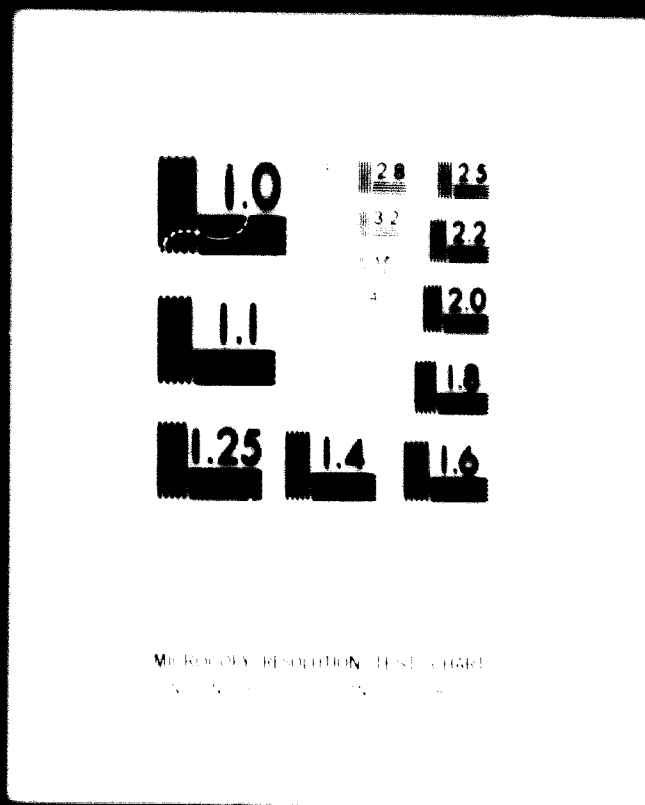


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where practicable, regional industrial service institutions, especially of a federated type.

9. A recognized priority of need in economic and industrial development is that of the least developed countries. They are usually the least industrialized and their group of institutions is usually the most rudimentary. Much of the financial and technical assistance these countries need must come from the developed countries or from international agencies and the international community as a whole. But the developing countries which have already begun to industrialize are in many ways best qualified to provide a "transfer of institutional technology". They already have working, though perhaps simple, institutions. Their experience will usually be more useful to the least developed countries than will examples from large well-industrialized countries with costly complexes of institutions.

It is therefore recommended that each developing country, and its industrial institutions:

(i) Review its experience and capabilities, to note the types of help it might render to industrial institutions in countries which are less developed;

(ii) Freely provide institutions in those countries with information and data which is based on that experience, with frank assessments of its strong and weak points and advice on its applicability in a less developed country;

(iii) Develop arrangements to receive and train institution staff from other countries;

(iv) Facilitate as fully as possible the temporary secondment of institution staff to strengthen and assist development of similar institutions in less and least developed countries.

ANNEX I

UNIDO ACTION TO STRENGTHEN INDUSTRIAL INSTITUTIONS

Since its preliminary period as the Centre for Industrial Development, UNIDO has worked consistently to improve industrial institutions and services, in general and of particular types. It has done this through its headquarters work, through numerous international seminars and other meetings, and through technical assistance to specific national industrial institutions.

The landmark International Symposium on Industrial Development convened by UNIDO in Athens in 1967, devoted substantial attention to institutional matters. A recommendation of its committee which dealt with "Policies and Measures in Developing Countries" called upon those countries to:

"review the present administrative machinery for industrial development, its structure functions and potentialities" (1)

UNIDO was requested to:

"undertaken a comparative survey of administrative machineries for industrial development in order to see if it is possible to distil therefrom a set of general principles and establish a world inventory of institutions and organisations for the administration and promotion of industrial development in the patterns most suited to the specific needs of each country." (2)

(1) Report of the International Symposium on Industrial Development, Athens, 1967, para. 119.

(2) Ibid., para. 120.

Numerous other recommendations dealt with a variety of specific institutional service activities.

As recommended by the Athens Symposium, UNIDO has continuously surveyed institutional machinery on a comparative basis. A major device for doing this has been a series of regional seminars, dealing with the organisation and administration of industrial services in Africa (Tangier, August 1967), Asia and the Middle East (Tashkent, October 1970), and Latin America (Santiago, November-December 1971).

The Athens discussions formed the basis for a monograph on "Administrative Machinery" in the UNIDO series on "Industrialisation of Developing Countries: Problems and Prospects". (3) Each of the regional seminars resulted in considerable documentation, both regarding institutional problems in general and regarding the institutions of individual countries as described by participating country representatives. Other documentation came from a seminar on Industrial Administration held in Krems, Austria, in 1973.

During the past ten years a very large number of seminars and workshops, with accompanying papers, have been sponsored by UNIDO to consider various aspects of particular institutional services, either world-wide or in an individual region. The reports of many of these meetings are listed in Annex II and show the range of UNIDO support.

(3) UNIDO, 1969, ID/40/15; 69.II.B.39, vol.15.

UNIDO's headquarters machinery has always included a division especially concerned with industrial institutions, while many other parts of its structure have also been constantly dealing with institutional activities and with the need to strengthen institutions to deal with industrial problems.

Similarly, a sizable part of UNIDO's technical assistance to developing countries has been institution-oriented. Much of it has directly aided in the building or improvement of national industrial institutions. In many other cases, assistance of a technical nature to industry has resulted in encouraging countries to strengthen institutions so that they might become permanent vehicles for supplying continued technical expertise and help.

ANNEX II

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10. Contracts and sub-contracting.
11. Public enterprises.
12. Industrial location; Deconcentration; Regional development.
13. Industrial estates; Free zones.
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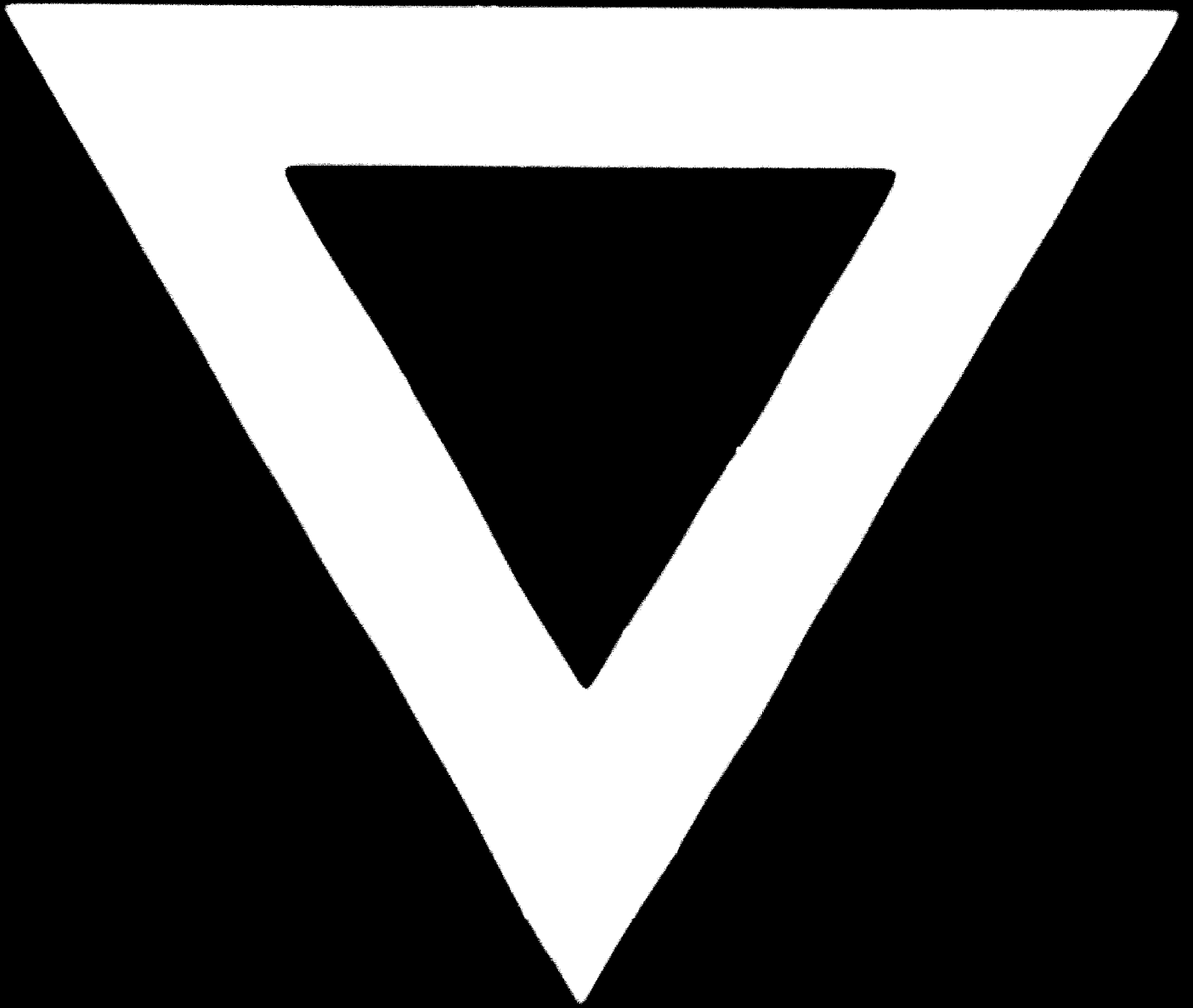
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