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IMPLEMENTATION OF INDUSTRIAL PROJECTS^{1/}

Presented by the Executive Director of the United Nations
Industrial Development Organization

^{1/} This paper is based on a study, "The Implementation and Follow-up of Industrial Projects", prepared for UNIDO by B. Berkoff of the Commonwealth Development Finance Company, Ltd., London.

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

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The scope of the paper

1. Procedures for dynamic project implementation in developing countries are not sufficiently dealt with in published documents to be of immediate operational use. In great part, implementation has been approached at the level of development plans and is presented merely as the setting of certain policies such as monetary, fiscal, employment, which should be consistent to realize the development plan and attain its targets. Even at this level of aggregation, more theoretical than practical issues have been treated. In most developing countries there is no general procedure for considering analytically the various problems encountered in executing industrialization policies at the level of projects, which in the final analysis make up these aggregates, nor for evaluating their impact on development targets. As a result there has often been a great discrepancy between what has been planned and what could be achieved.

2. An attempt is made in this paper to propose an operational approach to project implementation and to the establishment of a sound system of implementation with the main objective of alleviating many of the shortfalls confronting developing countries in implementing industrial projects. The paper is in two main parts. Part I reviews briefly certain common shortfalls to implementation in developing countries and discusses in broad terms the prerequisites for effective implementation. Based on an understanding of these important elements, Part II discusses in greater detail the proposed operational approach to project implementation.

3. It is hoped that the various elements and measures discussed in this paper may provide guidelines to help the participants in project implementation appreciate the magnitude of the problem and collaborate in a systematic procedure to carry out the dynamic functions involved.

4. In some countries, all industry is the responsibility of the public sector. Other countries prefer to leave all industrial activity to private enterprise, and still others - probably the majority - favour a mixed economy. The paper is directed primarily to countries with a mixed economy

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where the economic system permits free private enterprise in industry while some industries are created and conducted in the public sector. Being primarily concerned with public sector activity in mixed economies, however, part of the paper will be equally applicable to centrally-planned economies.

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I. SHORTFALLS AND ESSENTIALS OF SUCCESSFUL IMPLEMENTATION

5. The aims of planning, the methods used to formulate and implement industrial development plans and programmes, and the results in terms of development and production are closely related to a country's political, economic and social values as well as to its level of development. Since these values and levels vary from one country to another, the results and repercussions of development planning in one country may well differ from those in another even though both have adopted similar methods.

6. In spite of the differences between countries, however, the growing body of experience contains lessons which are relevant to all countries. One lesson which stands out prominently is that planning by itself does not produce development. Developing countries have devoted a good deal of thought, energy and expertise to achieving comprehensiveness, consistency and precision in planning their industrial and economic development, but without devoting similar efforts to the steps to be taken to put the plans into action. The formulation of a development plan or programme has often become an end in itself.^{1/} Failure to achieve the intended development has frequently been attributed to shortcomings in planning techniques, whereas the real shortcoming has often been a failure to achieve successful or even satisfactory implementation.^{2/} Careful planning when it is not promptly followed by well organized implementation is like window-shopping: it may be pleasurable to the performer and give rise to attractive fantasies, but its practical effect may be negligible. This is true even if the planners go beyond aggregate planning to commission feasibility studies and evaluations of a number of projects. Although a step forward, the feasibility study still leaves the customer at the window-shopping stage; an estimated price has been put on the delectable merchandise and the delights to be expected from its ownership have been elaborated, but actual ownership still remains no more than an aspiration.

1/ Economic Weekly, Bombay, Vol. XIII, Nos. 27, 28, 29 (July 1961) p. 1023.

2/ Nehru, Jawaharlal, "Annual Address by the Prime Minister", Indian Journal of Public Administration, New Delhi, Vol. VII, No. 4, p. 435 (October-December 1961)

7. Industrial development should be viewed as a continuous activity, of which the plan or programme is only the beginning. The momentum must be maintained through all stages: programming of industrial development; setting of implementation policy; the creation of an organization for implementation; carrying out of feasibility studies; formulation and evaluation of projects; and finally the execution of projects, leading to project operation over a period of many years. The combined sweep of activities should be thought of as a continuous whole. The completion of one stage, e.g. the planning stage or the feasibility study, should not be regarded as a point at which to sit back and rest, but only as the essential starting point for the next stage. In fact, however, in many countries, this is not the course of action.

8. In implementing industrial projects, developing countries encounter various shortcomings of an economic, technical, administrative or managerial nature. Therefore, the use of sound policy measures, appropriate institutions and an effective communications system linking all the elements in the system of implementation with the controlling authority are prerequisites for successful implementation.^{3/} The following paragraphs will deal briefly with these important elements.

Some common shortfalls of implementation

9. It may be useful to list some of the principal obstacles to successful implementation in developing countries. Some are created by the Government itself through its failure to realize the need for continuous planning and action.

10. Although these obstacles are observable in all types of development programmes, they are particularly acute in the implementation of projects in the industrial sector because of the importance of industrial projects, their capital intensity etc.

11. Problems of planning as obstacles to effective implementation: While this paper is concerned with the implementation of industrial development projects, and the problems of planning are formally outside its scope, it must be recognized that project implementation is frequently impeded by shortcomings in

^{3/} Colm, G. and Geiger, T. "Country Programming as a Guide to Development", p.51 in "Development of the Emerging Countries", Brookings Institution, Washington D.C., (1962).

the planning process itself. The most common of these are:

- (a) Failure to take into account the inherent administrative, managerial, institutional, financial,^{4/} political and social limitations on the country's growth potential.^{5/}
- (b) Concentration on the largely macro-economic framework for the development programme, dealing with aggregates based on broad generalizations (such as over-all capital-output ratios) while not providing a framework for the translation of sectoral plans into individual projects.
- (c) Inconsistencies in industrial development programmes, which may lead to targets that cannot be implemented.^{6/}

12. Inadequate project evaluations: The lack of proper project evaluation usually results in wrong estimates of cost, inaccuracies in estimates of resources required etc.^{7/}

13. Inadequate administrative, organizational and managerial capacity: For any or all of the reasons mentioned, the administrative organization of the Government may exhibit a number of weaknesses, and structural reforms may be necessary before the country can measure up to the demands of its industrialization programmes.^{8/} The same applies to managerial competence.^{9/}

^{4/} Plan Organization of Iran, Division of Economic Affairs, "Review of the Second Seven-Year Plan Programme of Iran", pp. 73-74, Teheran (10 March 1960).

^{5/} Riggs, F.W. "Relearning an Old Lesson: The Political Context of Development Administration", Public Administration Review, Vol. XXV, No. 1, p. 71, Washington, D.C. (March 1965).

^{6/} Wilcox, C. "Planning and Execution of Economic Development in South-East Asia", Occasional Papers in International Affairs, No. 10, p. 10, Harvard University Centre for International Affairs, Cambridge, Mass., (January 1965).

^{7/} Planning Commission of India, "Third Five-Year Plan (1961-1966)", p. 280, New Delhi (1961).

^{8/} Morgan, T. "Economic Planning - Points of Success and Failure", paper presented at the Conference of Economic Planning in South-East Asia, Honolulu, Hawaii, 1-5 February, (1965) p. 14.

^{9/} United Nations Economic Commission for Asia and the Far East, "Economic Development and Planning in Asia and the Far East", Economic Bulletin for Asia and the Far East, Vol. XV, No. 3, p. 23, (December 1964).

14. Excessive governmental interference with the freedom of action of private enterprise: Excessive direct intervention of the Government should be avoided especially if it is non-economic, since it may discourage the growth of the private sector of the economy.^{10/} Indirect Government influence on the general setting in which the private enterprise operates is nevertheless possible through fiscal and monetary policy.

15. Pitfalls encountered in implementation by public enterprise: Unfortunately, as has been evident, industrial projects implemented under the control of the public sector are often subject to a complex of mutually contradictory objectives and considerations. Interference by politicians may be due to their belief that such enterprises can be used as a means of doing many things for many people; such attempts to achieve conflicting objectives usually preclude the hope of concentration on making the venture economically successful. Moreover, treating industrial projects as part of the governmental administrative system may retard the operation and lessen its efficiency. If decisions concerning this project are slow, adhering too closely to the original rules and not making proper allowance for changes in circumstances, the result may be confusion, delay and high costs.^{11/}

16. Ineffective techniques for programming and control of project implementation: The implementation of industrialization projects should be flexible in order to permit adjustment as conditions change. However, for the most part the developing countries do not recognize project implementation as a dynamic process, which is often more intricate in content and structure than the preparation of the development plan or programme itself. No effective techniques are available in most developing countries to enable them to consider analytically the problems encountered in the implementation of industrial projects, i.e.: to ensure the timely detection of bottlenecks such as delays or shortages in supplies, manpower, capital and

^{10/} Waterston, A., assisted by others, "Development Planning - Lessons of Experience", p. 342, Economic Development Institute, International Bank for Reconstruction and Development, Johns Hopkins Press, Baltimore, Maryland (June 1965).

^{11/} Plan Organization of Iran, Division of Economic Affairs, "Review of the Second Seven-Year Plan Programme of Iran", p. 72, Teheran (10 March 1960).

equipment; to co-ordinate the execution of dependent projects; and to allocate scarce resources. Nor are there adequate control systems to feed back actual performance results, to evaluate and revise policies as necessary, to reallocate available resources and update plans of implementation.

The essentials of effective implementation

17. It follows from this brief survey of common problems that planning for industrial development must be realistic in the light of the country's level of development, must take proper account of economic, political and social circumstances and the country's administrative and managerial level. It also follows that the Government must take steps to secure effective implementation.^{12/} To this end, it should consider a combination of: carefully devised policy measures; the creation of an effective institutional framework; and organized implementation and control methods.

18. Policy measures: These should be thoroughly indicated in the development programme and it would in any case be inappropriate to deal with them at any length in this paper.

19. Institutions and institutional frameworks: The principles governing the creation and operation of institutions for industrial development are discussed in Part II of this paper.

20. It is of primary importance to create effective institutions to ensure that they are under the control of men with the appropriate background and personal characteristics, and to delegate adequate powers and authority to them. Because of the complexity of the forces affecting industrial development, no institution can function in a vacuum but must have support and willing co-operation at the various administrative levels of the Government. Such support and collaboration must be assured at high decision-making levels, and officials at the medium and junior levels must also be aware of the industrialization targets and the means for their achievement and must appreciate the importance of giving their support and assistance to the institutions responsible for implementation.

^{12/} United Nations, Inter-Regional Workshop on Problems of Budget Classification and Management in Developing Countries (31 August-12 September 1964, Copenhagen, Denmark), "Relationship Between Planning and Government Budgeting in Developing Countries" (Part II), p. 3, (July 23, 1964).

21. This is only likely to be achieved if there is effective communication within the Government so that the officials concerned are conversant with industrial policy and participate in the formulation of the Industrial Development Programme so that they become involved and recognize that the programme targets affecting them may be of their own creation and arise out of work done by them. It should be the aim of the planners and policy makers to secure such involvement at all levels, from ministers down to junior officials. They should also seek to educate the Government to negate the assumption that once a development programme has been formulated, the Government has done all that it need do. There must be effective implementing institutions enjoying the support and co-operation of the Government, and the Government must always be ready to consider new circumstances encountered in practice and to make any changes in policy and provide any governmental action that may be required.

22. It will frequently be necessary to make significant changes in the Government administration. Administrative and organizational links must be created, not only between the implementing institutions but also between them and the Government. This may entail changes within the governmental machine, which will usually be best formulated through consultation by industrial planners and administrators or specialists in public administration, who would decide inter alia whether to endeavour to make a comprehensive reform at the outset or to proceed gradually. Such changes would involve designating the responsible departments and persons in connexion with project implementation, defining their roles and fixing their responsibilities and authority. It might also be necessary make a study of the Government organization to identify administrative, managerial and organizational weaknesses or shortcomings which might impede the work of implementation, ascertaining the causes and formulating and carrying out remedial action and reforms.

23. It may emerge as a result of this examination that the intended development is, in fact, too ambitious even after all practicable improvements have been made in the administrative structure. If so, it will be necessary to adopt more realistic targets. The existence of this possibility simply underscores the importance of studying the administrative organization and formulating all necessary changes in it at an early stage in the planning process.

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24. Implementation and control methods: The methodology of implementation at all levels between the planning organisation and the individual project management, and methods of reporting progress at the different levels and securing a feedback of relevant information gained from actual experience in the individual projects, are dealt with in Part II below.

II. IMPLEMENTATION OF INDIVIDUAL PROJECTS

The Government's organization for implementation

25. In government-sponsored industry, the Government usually has two principal objectives:

- (a) That each project should be effectively implemented and should succeed in reaching its direct objective - generally the production of certain goods or services - in as economical a manner as possible;
- (b) That the project should take its proper place in the planned attainment of the Government's broader objectives, both industrial and other.

26. The administrative methods adopted to secure these objectives should aim at avoiding the common shortcomings described in Part I. The implementation of industrial programmes and projects must be treated as a dynamic process. As many of the factors affecting industry are susceptible to quick, important change, considerable flexibility must be permitted in an industrial development programme. For these reasons, the system set up for implementation must avoid the danger of over-enthusiastic or single-minded departments attempting to direct the project management in too great detail, proffering too frequent advice or demanding too much information.

27. The problem is in effect the familiar one of finding the proper balance between centralization and decentralization: how to give the management of a public sector project the freedom to manage and to take quick, firm decisions in response to changing business conditions, while at the same time preserving the position and interests of the public sector in matters affecting the direction, content, duration, cost, termination and other broad policy aspects of the project. While the needs and problems of each project must be suitably represented to Government, an effective filter must be created to protect the project from Government involvement in its control and management.

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28. Institutions for implementation: Thus, we may visualize a hierarchy, with the Government at the head, the individual projects at the base and specialized institutions in between, each element being responsible to the element above it. The solution to the problem of decentralization would be to put project managements immediately under the surveillance of an institution in the hierarchy which is itself either insulated from the pressures referred to in the preceding paragraphs (which seem to be inseparable from the working of the Government machines) or which is capable of absorbing those pressures and passing on to the project only business-like directives consistent with the project's basic aims and with the management's operational autonomy. This may be achieved if such an institution is not itself part of a government department and its only responsibility is to ensure the success of some part (or the whole) of the industrial plan or programme. This kind of institution, which will be referred to in this paper as a "development agency", may be directly responsible to a department (say the Ministry of Industry or Development) or to a regional or national planning commission.

29. The development agency may take a variety of forms. It may be a purely promotional organization, with little finance of its own; or it may be both promotional and financial. It may maintain a staff from which the management of projects can be drawn or it may seek all echelons of management from outside. It may be in control of the industrial development of a specified geographical area; it may control the development of a single industrial sector; or it may be in control of a few named projects, or even of a single large one. It may combine the duties of promotion and implementation with those of a development bank; it may even be a development bank which the Government uses as a control agency. The possibilities are manifold, and only a knowledge of the circumstances (political, historical, social and financial) can lead to the right choice for a particular country. A few considerations may, however, be presented here:

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- (a) The staff of a development agency must be fully acquainted with and prepared to further the Government's long-term policies and intentions (which should be clearly stated in the plan or programme); at the same time, the staff must have an understanding of the business world and its dynamism, and of the way industrial management is conducted so as to ensure that their relation with the management of projects is realistic. This calls for a clear definition of objectives and responsibility. Desiderata of this kind are, in fact, a necessity for the successful operation of any element in a hierarchial system.
- (b) In order to fulfil the functions mentioned so far, and to feed back information derived from practical experience into the implementation system and the planning organization, the framework of the implementation system will require the followings:
- (i) A clear definition of goals, responsibilities and authority of each element in the system, and qualified personnel in each of them;
 - (ii) The creation by each element in the system, for its own guidance, of an effective implementation plan, taking into consideration its resources and the targets laid down for it;
 - (iii) The collection, processing and dissemination of information about the performance of each part of the system and flexibility in relation to objectives.

30. Definition of objectives: Unless clear objectives are laid down for each element in the implementation hierarchy, confusion and vacillation are almost inevitable. While each element should be left free to choose the method of performing its stated task within the limits and resources laid down for it, the nature of its task and the limits of its power and authority need to be clearly understood by all concerned. It may be of interest at this point to note a list of the "seven deadly sins of public enterprise in developing nations", as spelled out by H. Seidman:

1. Uneconomic and largely unplanned growth;
2. Sacrifice of long-run economic advantages to short-run political and social gains;
3. A bewildering and complex variety of forms of ownership, control and organization with no logical and orderly pattern for their use;
4. Excessive control of administrative and fiscal minutiae and almost complete license with respect to major matters of public policy;
5. Confused lines of authority and responsibility;
6. The 'blight of perpetual inspection';
7. Shortages of skilled managers and excessive rates of turnover in key posts." 13/

31. The objectives which are to be laid down for higher elements in the hierarchy will cover a wider field. They will be broader in scope and apply to a longer time span than those for the lower elements of the hierarchy. As an example, an agency concerned with the planning for industry may be given:

- (a) Broad directions about the field for which it is responsible;
- (b) Figures of targeted output in various fields, for instance over a five-year period;
- (c) The global capital and other resources available;
- (d) The principal lines of policy and the priority to be accorded to different purposes: improvement of the balance of payments, preserving the balance of regional development, diversification of industry, preference to certain industries, creation of employment etc.
- (e) The policy measures necessary to secure successful implementation, e.g. curbs on consumption, tax incentives for selected industries, export bonuses, assurance which can be held out to foreign entrepreneurs or investors etc.

32. Such an agency will prepare a plan for giving effect to those objectives, and will thereupon formulate terms of reference for, and allocate its allotted resources among the agencies to which it is authorized to delegate responsibility for implementation.

33. Below this planning agency, the hierarchy may include one or more development agencies responsible not for general industrial strategy but for creating and controlling a group of projects. To enable a development agency to perform such functions effectively and in the right relationship to the rest of the planning system, it must receive a clear statement of policy and objectives, including such matters as the following:

- (a) The industries or groups of industries under its responsibility;
- (b) The principal objectives it had to achieve, e.g. the development of capital goods industries, agricultural processing industries or consumer goods industries;
- (c) The targeted output for each industry in terms of cash generation and/or in terms of the rate of return on invested capital;

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- (d) The amount of capital and other resources available, and government policy (if any) about the division of capital and other resources among the different industries or objectives;
- (e) The degree to which the development agency is free to supplement capital by raising funds from non-government, including foreign sources;
- (f) The policy regarding whether the agency must always have control or may accept a minority position and whether this is to apply to all or only some industries;
- (g) Any directions necessitated by Government policy about the nationality of partners in projects etc.;
- (h) The departments which the agency is to consult with and report to, and the degree to which any of them will be authorized to give directives to the agency.

34. The establishment of these policies and objectives should be the subject of close consultation with the development agency. The agency's constitution or terms of reference may be framed so as to give it a measure of flexibility. Thus, the figures of targeted output and available resources may include some element of approximation within which the agency is free to manoeuvre. The policies and objectives may also prescribe that, apart from the control that it has over any business under the general law of the country, no department will be authorized to give directives to any project or sub-project under the control of the development agency and communications from the departments may be addressed to the development agency itself. The scope within which each department can give directives to the agency itself may also be prescribed; as a general rule all such directives, from whatever department, should be concerned only with questions of broad policy. The development agency should be entirely free to decide how such broad directives are to be translated into policy directives to the projects.

35. The development agency may thereupon prepare a master plan for the industries under its control, taking into consideration national objectives, available resources and the like. On the basis of this master plan, the development agency may draw up the objectives of each project (probably in consultation with other participants in the project and certainly in consultation with the management of the project). These objectives would, again, be more limited and more precise than the objectives laid down for the development agency. In general, they may be derived from the feasibility

study, the most important elements of which would be: what is to be manufactured, the targeted annual production, the process to be used, the factory location, and the necessary provisions for effective implementation. The provisions for implementation may contain the following:

- (a) The capital available (which may include a financing plan involving outside financiers);
- (b) Directives regarding the raising of working capital etc. from banks, or any long-term capital still required;
- (c) Pricing policy;
- (d) Policy on inter-relationships with other projects, e.g. where one project is intended to buy products from another, train its staff or labour, share facilities etc.;
- (e) Policy on management - employment of expatriates, training schemes etc.;
- (f) Directives (if any) about financial policy, payment for foreign know-how.

36. It should be noted particularly that the statements of objectives exemplified above include, in each case, a quantification of the objectives. This gives concrete form to the organization's task and affords a means of measuring its achievement. Without a realistic quantitative yardstick, the exercise becomes vague and the outcome is in danger of being equally uncertain. Business thrives on clear statements in quantitative terms. As an example of the beneficial effect of clear, precise objectives including quantitative measurements, G. Cyriax said:

Given a reasonably clear objective (maximizing the return to equity shareholders), reasonable incentives (which relate pay to performance) and a reasonable method of enabling executives to establish the return on capital under their command, many U.S. corporations show what first-class results can stem from no more than above-average individual abilities.

Confusion about objectives, on the other hand, is profligate of talent, as should be well known from the history of the British nationalized industries. These industries, until 1961, had no agreed aims, and at various times were instructed to maximise output, to balance their results one year with another, to reduce prices and to earn a satisfactory profit. Fuzzy objectives led to fussy management, and it was only the fixing of target rates of return on capital five years ago, combined with imaginative appointments of men to administer the targets, that created a dramatic improvement in morale."^{14/}

37. The same principles of decentralization may be applied in the selection of management for individual projects, in their powers and authorities and in relations between them and the development agency.

Organization for implementation of the project

38. In the course of implementation, changes in the project management are likely to result in changes of method, in failure to understand the purpose of some aspects of the work already done, and in new interpretations being placed on the stated objectives. Any one of these can lead to a waste of the work previously done, to additional expense, to loss of time, and even to confusion over the precise form or purpose of the project. It follows from this that a high degree of continuity in the project team, from the inception all the way through to successful operation, is critical to the successful creation of an efficient enterprise at the lowest feasible cost. Individuals or organizations may be attached to, or detached from, the project at different times as different skills are required, but consistency and the preservation of the understanding and insight that accumulates as the work proceeds demand a substantial degree of continuity of personnel.

39. The principles described earlier are just as applicable to a case where the development agency has set up an organization to conduct an individual project as at the higher levels. When the actual implementation of the project begins, the development agency may leave direction and control to the project management. The actual method of handing over responsibility is nonetheless a gradual one. There will be a "twilight" period during which the management may gradually assert more and more control, but the development agency would still be intimately concerned with the working out of the basic lines of the project. During this time, full and detailed exchange of ideas and co-operation in arriving at firm implementation plans are essential to ensure complete understanding and unity of purpose between the intended management and the development agency. This relationship will probably continue up to the point where contracts for the building of the factory and the procurement of plant and the finance have been signed. At that point all plans should be firm and the management should take full control.

40. Each project should almost invariably be conducted by an enterprise formed for that particular purpose; the convenience of this needs no explanation. The enterprise may be under the control of a board of directors

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appointed by the leading participants in the project, i.e. the development agency and such partners as may join it (as discussed below), including perhaps some or all of the financial participants. In conformity with what has been mentioned before, the objectives of the enterprise should be clearly defined. This may be the subject of discussion between the development agency, its co-participants in the project and the project management and, as mentioned above, the objectives should be further elaborated in close consultation as the programming of the project goes forward. A point which needs to be stressed here is that the development agency should ensure that its co-participants and the project management are made aware at the outset of any limitations which it wishes to place on the freedom of action of the Board of Directors and of any way in which it is expected that the growth and development of the enterprise may be limited or affected by broader economic considerations. A failure to disclose to the business interests concerned any such intended limitations upon the company until after they have become committed can be fatal to confidence between the participants in the project and to the success of the project itself.

41. The development agency should recruit the top as well as the middle management of the project according to the experience and background required. Top management includes the members of the board of directors and the general manager, while middle management comprises the functional managers who are responsible for certain administrative and technical activities such as, for example, personnel and quality control respectively.

42. A common problem to almost all developing countries is the scarcity of those who are qualified to occupy management posts, especially the technical management posts. Even if the development agency could recruit outside experts having the type of experience required, they may not have had experience under the local conditions of developing countries. Consequently, a technical manager may find himself contending with unexpected difficulties, owing, for example, to special climatic conditions, without easy access to specialist consulting engineers etc. Moreover, in his absence, as when he has to go abroad for consultation, if no local replacement is available, problems of continuity may arise. Therefore, in the event of very important projects, there is generally a good case for securing the technical participation of an organization (domestic, if there is any, or foreign) which is

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experienced in the same field rather than engaging a number of individuals. Such an organization will put one of its own staff into the technical management position and provide him with supporting key personnel, will put its experience and research and design facilities at the disposal of such personnel and provide continuity by replacing them in case of absence. Moreover, such an organization can also provide training for local personnel who will eventually take over.

43. Technical help provided in this way usually comes from an organization which falls into one of the following three categories:

- (a) Technical collaborators: This means an organization which has no financial stake in the project, but contracts to give technical assistance for an agreed fee over a period of years for a specified range of products. This usually includes the feasibility studies, plant designs, obtaining quotations, advising on the status and efficiency of suppliers, training of staff, supervising erection and assisting in bringing the plant into operation. They may send technical staff to the project for a period, additional technical help being provided on an annual fee basis or a royalty based on the sale of the product or on a proportion of the profits, or perhaps a combination of these two.
- (b) Technical partners: This term means an organization that puts its own money into the project, has directors on the board and derives benefits directly from the efficiency of implementation of the project and its final success. An independent fee is normally charged for the services it provides in bringing the project to fruition, as outlined above for a technical collaborator. The technical partner will usually provide the project manager and key staff to take charge of the installation of the project. When the plant comes into operation, it normally supplies the technical manager and key staff, and in some cases the general manager as well, for an initial period of several years, gradually reducing their number as the local personnel achieve the necessary competence to replace the expatriates.
- (c) Technical consultants: This term applies to an organization with no financial stake in the project, and which should have no connexion with any manufacturers or contractors eventually concerned with it. Such an organization carries out limited technical tasks for agreed fees. During the implementation of the project, the same consultant may undertake several consecutive independent contracts as each phase is completed and decisions are made to proceed further. Typical of the individual tasks which may be carried out by consultants are feasibility studies or their upgrading, advising on site selection,

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preparing plant specifications and obtaining tenders, advising on the award of contracts, advising on staff recruitment, inspection of equipment prior to dispatch to site, providing supervision of erection and supervising tests of plants. The training of personnel and provision of project management from their own staff are usually outside their scope of service. Their interest normally ceases when the project implementation is completed and is ready for production.

44. There may be considerable over-lapping between these categories of technical help, especially between the first two. The choice of the right type of technical help depends on the level of development of the country in question and the availability of local organization or know-how in one or more of the fields required for the implementation of the project and later for its efficient operation.

45. The preceding paragraphs have dealt with technical management primarily from the viewpoint of the part it will play in the project when production starts, and this, of course, is the major consideration to be kept in mind when selecting and negotiating with the interests which are to provide the technical expertise. However, the technical management will also have an important role to play in the implementation of the project - in the work leading to the placing of contracts, in co-ordinating the plant design etc.

46. The success or failure of the project in its operational phase depends to a great extent on the quality of its "general management", a term often used to denote the general manager and middle or functional managers (those in charge of personnel, administration, purchasing, sales, accountancy etc.). Owing to the scarcity of qualified personnel in a great number of developing countries, such staff may have to be provided in a variety of ways. The development agency may ask the technical partners to provide some of them, as indicated earlier, or ask a locally established enterprise to provide them (it would be an advantage if this enterprise has experience in the type of products to be manufactured in the country), or get a foreign firm to provide them, or recruit them from the open market.

47. A decision should be taken on whether it would be advantageous for the firm which agrees to provide part of the management to have a financial stake in the project. This should be considered in accordance with the specific conditions of the country. If this were to be recommended, the size of the investment to be made by the organization(e) which would participate in the project (as technical and perhaps management partners) calls for careful

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negotiation. On the one hand, it may be important to make the financial participation in the project large enough to carry a sufficient degree of involvement in the efficient operation of the project, and on the other the development agency must consider the question of voting control, as well as the right to nominate or appoint members of the board. In addition, further finance may be required from sources which would have no part in the management. This may be obtained by issuing shares to the public, but this kind of fund-raising is often not likely to be successful in developing countries; more likely, it would be necessary to approach financial institutions such as development banks, commercial banks and international financial institutions. These institutions may also require the right to appoint directors to the board as one of the terms on which their finance is provided.

48. After negotiating their respective roles, rights, responsibilities and financial contributions, the promoters of the project (the development agency, technical partners/collaborators and other participating bodies) should decide on a project management to proceed with implementation. The technical partners may best fill the role of project management at the outset, during the design and programming stage, but it may be preferable to form the board of directors at the **beginning** and ensure its functioning. The board, in consultation with the promoters, may then appoint the staff for implementation of the project (the project manager and his staff). The project manager, under the general directives and financial control of the board should be personally responsible for all aspects of implementation. Adequate funds should be at the disposal of project management to carry out the project implementation with minimum delay. It should be noted that sometimes the project manager may become the general manager when the project goes into production. However, the question of the differing abilities and experience required for the two posts needs to be considered.

Programming and control of implementation of the project

49. The basis of the work of the project management should be the feasibility study, although, because of the time which may have elapsed between the completion of that study and the commencement of the work on the project, many relevant circumstances are likely to have changed. Hence, it will often

be necessary for the study to be reconsidered and revised in order to bring it up to date and into line with current conditions, prices etc. As the feasibility study will be an important part of the stated objectives of the enterprise, it is essential that all the promoters should be in full agreement on its final form.

50. The project management must work to an implementation plan which will ensure that each of the numerous elements and tasks or activities involved in the creation of the project takes its rightful place, chronologically and financially, in the complex of events which will ultimately result in the factory starting operation. The feasibility study will have particularized most of these elements and activities to a certain extent, but the project management will need to survey all of them, down to the last detail. The project management should then develop a project implementation plan which will ensure that every activity in a large sequence of activities will take place and that they will start and end in the right sequential relationship. The elements and component activities necessary for the implementation of a project may include some or all of the following:

- (a) Site for the factory: investigating the title of land, acquiring land, clearing and levelling land;
- (b) Plant and equipment: designing plant and equipment, preparing tenders, obtaining quotations, finding out status and efficiency of suppliers, placing orders, inspecting, erecting, and testing;
- (c) Factory buildings (and perhaps housing for management and/or labour and construction of access roads): designing the buildings and roads, preparing tenders, obtaining quotations, finding out status and efficiency of contractors, selecting contractor and type of contract, placing or supervising and inspecting construction;
- (d) Materials (raw materials, components, semi-manufactures, ancillary items, etc.): designing specifications, preparing tenders, obtaining quotations, finding out status and efficiency of suppliers, placing orders, inspecting;
- (e) Services (including electric power, water, gas, means of disposing of scrap or waste, means of disposing of effluents, telecommunications, rail and road services etc.): determining requirements, negotiating with authorities, final agreement, providing services;
- (f) Finance: Finance may already have been arranged, but sometimes the precise amount will not be known until the final project designs and plans have been drawn up and prices obtained from contractors

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and suppliers. Moreover, some of it may be required in the form of foreign exchange, which may require government approval;

- (g) Manpower (managerial, skilled and unskilled labour necessary for the operation of the project): recruiting, briefing, training, transporting to the site etc.

This list is by no means exhaustive. Project management must ensure that all these different elements and component activities are secured or created and that each of them is ready at the right time.

51. For this reason, and because resources are frequently in short supply, the task of programming and control of project implementation is difficult.

For illustrations:

- Funds to finance the undertaking are frequently limited.
- Delays in implementation waste scarce resources, increase maintenance and repair work or spoilage and, hence, increase costs.
- Necessary manpower skills and experience in the type of work or at the level of magnitude involved are frequently scarce and hence, dependable estimates of productivity and resulting time, resource and cost requirements are not simple to develop.

For the same reasons, actual execution frequently deviates from forecasted execution which means that if an implementation plan is to continue to guide the execution of a project, it must be updated frequently. On the other hand, early completion with a minimum of delays allows the new facilities to commence production and furnish output that is usually badly needed, especially if a country is short of foreign exchange and the project is to supply a commodity for export, or if a project is an import-substitute.

52. For all of these reasons, successful implementation requires efficient programming of implementation and effective control of implementation, as discussed below.

53. Efficient programming of implementation of the project: The term "implementation programming" is used here in its broad sense to indicate not only the process of subdividing the project into its component activities and developing their sequential relationships, but also, to include for each of these activities the selection of methods, the assignment of resources, the estimating of time requirements, and the establishment of

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time scheduling data. The most effective techniques available for implementation programming should therefore be applied.

54. Efficient techniques for the programming of implementation must be capable of identifying those component activities which, by virtue of their work content and sequential relationships, control the time the project will take. In other words, if the performance of one or more of these activities is delayed, the project completion date will be delayed by a corresponding amount. The attention of the project management should be drawn to these activities so that it may know where to concentrate its effort when needed as, for example, when the project duration is to be shortened. These techniques must be able to provide adequate solutions for the problems of time-cost trade-off of project activities and allocation of scarce resources (such as materials, cement, structural iron and steel, and equipment, especially imported equipment, certain categories of skills, foreign exchange etc.).

55. The time-cost trade-off problem arises from the fact that most of the activities into which the over-all project is subdivided can be performed by alternative methods requiring different amounts of time, resources and money. Generally, it is true that those methods of performance which decrease the time requirements tend to increase direct or variable costs. The direct costs will rise more rapidly in some cases than in others as work is expedited. If the project completion time is arbitrarily specified or is set by external controls, these programming procedures will attempt to develop a combination of activity scheduling which meets the completion deadline with the lowest total direct cost. A more general problem would result if the procedures were applied to determine also the most favourable completion date. Here the additional fact must be recognized that reductions in project duration result in lower indirect, or fixed costs. Then the time-cost trade-off would be made with the objective of finding the schedule which gives the lowest combination of direct and indirect costs and, hence, the lowest total costs.

56. The problem of allocation of resources involves the determination of scheduling so as to satisfy resource restraints in as favourable a manner as possible. Most activities in a project require the use of one or more

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resources. If these requirements are stated and an initial schedule is developed, the number of units of each separate resource needed during each time period can be determined. If the resource demands at any time exceed the availability of any resource, potential bottlenecks can be identified in advance and some activities rescheduled to reduce the concurrent requirements for that resource. Sometimes this rescheduling necessitates extending the duration of the project. In such cases, a principal objective is to minimize the extension. Frequently, a time-cost trade-off approach can also be useful in these cases. Excessive resource requirements can usually be satisfied by means other than mere rescheduling, but which involve replanning of some project activities and higher costs. A secondary problem of resource allocation is that resource requirements should be as constant as possible. Peaks and valleys in resource schedules invariably indicate uneconomic performance. Improvements can be achieved to some degree by rescheduling. The utilization of idle resources can also offer important opportunities for favourable time-cost trade-offs.

57. A more complex resource allocation problem is created by the necessity to schedule concurrently several projects which draw resources from the same resource pools. This multi-project problem presents an added difficulty because it involves a simultaneous consideration of a larger amount of data than demanded by individual analysis of the projects separately. It also requires proper consideration of the respective priorities of the various projects and of the mobility of resources from project to project.

58. Effective control of implementation of the project: Once an implementation plan has been adopted, it must be communicated to those responsible for its execution. Then it must be carried out. Effective control procedures are therefore of essential importance in order to translate the project implementation plan from a paper concept into reality.

59. Even an implementation plan that is initially sound and well conceived may cease to be so during the progress of its execution. The faults may be attributed to present problems and to unforeseen conditions that may be encountered. For example, the actual durations required for individual tasks will frequently vary from those forecast even by the most competent estimators. Suppliers of services and materials may fail to perform on time or in the way promised. There may be inadequate inspection by the

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technical partners or inadequacy of the project management; or external factors over which there is little or no control, such as unusual weather, labour strikes or changes in government policy (e.g. import duties) may prevent the undertaking of the project in accordance with original ideas. Therefore, procedures for programming and control of implementation should be flexible enough to permit modifications when they become necessary or advantageous. If an implementation plan is not altered to reflect changes, it ceases to be valid. This is the fate of many plans which have resulted from competent, and often expensive, efforts and which originally offered an excellent solution to the problem involved. Yet, soon after the undertaking has commenced, changes have occurred and the implementation plan has not been updated. Subsequent work, then, is performed in the same manner as if it had not been programmed or, and this may be still more hazardous, in accordance with a plan that has ceased to be valid.

60. It should also be emphasized that, for truly effective implementation, there should be continued programming in greater detail as the job progresses. No matter how excellent the original programming, there are practical limits on the amount of detail that should be developed at this early stage. It must be recognized that changes are inevitable as the project proceeds and that extremely detailed over-all implementation programming is not justified. However, work in the immediate future can profitably be programmed in great detail. Therefore, this level of implementation programming for a limited period ahead should be carried on as the work progresses and should supplement the original, or updated, master implementation programming. There should also be a constant effort to improve job performance through replanning. It was pointed out in the preceding paragraph that unforeseen conditions may often be encountered. It is also likely that these unforeseen conditions may offer opportunities for improvements. Sometimes, also, a better knowledge of job conditions and of actual productivity levels may make it possible to make advantageous changes. While it is commendable to follow a well conceived plan of implementation faithfully in order to reap the benefits of the skill

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and thought that have gone into its development, it is even better to continue to seek better solutions and, when they are found, to be willing to change the plan accordingly. It is, of course, important that the change receive very careful analysis in order to ensure that it is, in fact, an improvement. Then it is important that the existing plan be updated, not abandoned.

61. It has also been mentioned before that for an implementation plan to be executed successfully, those who manage the work should know the relative importance of the elements of the plan. This will allow them to concentrate efforts where they are most needed. For example, the effects of deviations in the timing or the sequencing of activities can range from negligible to extremely serious. The information developed by the implementation programming procedures should indicate the nature of these effects to project management. Effective control also requires appropriate corrective action after changes occur in order to re-establish a realistic project implementation plan.

62. Therefore, great stress must be laid throughout the implementation of the project on continued programming, and on checking that actual progress is on schedule. This covers both physical and financial targets, and the main check on progress is through reporting, as discussed below. Unfortunately, the task of reporting is usually unpopular and is given minor attention. Those engaged in it often feel their efforts could be better employed on more productive work. Also, naturally, none like to place it on record if they are falling behind with their work. Also, experience indicates that progress evaluation frequently takes place long after the end of the period to which the reports refer.^{15/} Therefore, good reporting needs the co-operation of all concerned.

63. Evaluation of progress: In many developing countries, owing to a lack of effective communication between the line organizations, there is no efficient basis for making periodic evaluation of progress nor for necessary adjustments in strategy when conditions change.^{16/} Each element in the

^{15/} See Economic Times, Bombay, 8 November 1963.

^{16/} National Board of Economic Planning and Co-ordination of Ecuador, Chapter IV, "The Organization for the Plan for Economic Development and the Administrative Reform", included in: General Plan for Economic and Social Development, p. 7, Quito (1963).

hierarchical organization for industrial development should keep in touch with the performance of the elements below it in order to ensure that those elements are punctually achieving their stated objectives. This is true at all levels: planning committees should keep in touch with their development agencies, development agencies with project managements, project managements with project staff etc. In addition, it is necessary to apply time and energy to developing good liaison between different elements in the hierarchy. For example, the development agency should build up personal links with the project management with a view to creating more than one level of contact with the project so that more favourable relationships can be established and more understanding of the shortcomings encountered.

64. The life-blood of this kind of contact is information. A flow of accurate, up to date, relevant information reaching the right point at the right time is an essential for control, correct decisions, co-operative action, correct mutual adjustment and understanding. The information will nearly always be in writing when it is sent from the project to the development agency, or from the development agency to the planning committee. Within an organization, however, it will sometimes be communicated orally, for instance, on the factory floor or at staff meetings, and at times it will be imparted at meetings between separate organizations.

65. It may be useful to list the principal considerations of the relationship between the development agency and its projects:

- (a) The development agency will wish to ensure that the implementation plans it has agreed with the management are in fact carried out; that resources are devoted to the purpose for which they were intended; that costs are kept within estimates; that the project takes no more than its appropriate share of scarce resources and materials; and that the time schedule is adhered to;
- (b) Because the project may from time to time require help from the development agency, in the form of extra money, allocation of scarce resources, influence with the Government to secure tariff changes etc., the development agency should ensure that it is kept fully informed so that such requests can be foreseen well in advance and be either assisted or prevented from arising;
- (c) The development agency, being responsible for a broad sector of industry represented by all the projects sponsored by it, will wish to have early warning of developments in a project which may necessitate the consideration of consequential adaptations in other projects.

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66. Reporting progress: However, it is important to note that the follow-up procedure should not derogate from the management's independent control of the undertaking or worsen the relationship between the management and the development agency. Thus, what is needed is a procedure which will give the development agency the information and status to enable it to exercise the functions described in the previous paragraph, but will avoid the adverse effects. This can be achieved by the development agency, if it receives continuous, up to date, relevant information on the progress of the project, in a summarized report containing little detail. The report should be confined to information needed by the recipient, in order to impose the least extra work on the management and to avoid distracting it unnecessarily from its main task.

67. In addition, there may be other authorities which should receive reports from the project. Certain departments or agencies of Government, outside the hierarchy responsible for industrial development but concerned with some aspects of the project, may need to be kept informed of its progress, e.g. the agencies concerned with transport, power, public health, labour, housing. The financial sources of capital will also require follow-up reports from the project. It would be putting an intolerable burden on the management if it were compelled to produce separate information for all these agencies. It is therefore most desirable to evolve a type of report that can for the most part be put together as a matter of routine at the junior management level, in a form suitable for all recipients and permitting parts to be eliminated as the report moves up the hierarchy or outside it. A possible method would be to have a series of columns or sections, all of which have to be completed, submitted to and collated by the management accountant, and some of which are required by all who are to receive information. Since each element in the hierarchy of industrial development has a broader responsibility than the one below it, those in the higher echelon will require less detail than those with more detailed responsibility in the lower echelons and the form of the reports should reflect this. As the reports move upwards in the hierarchy, certain sections or columns can be ignored or eliminated from the copies as they are passed on.

68. Thus, the project manager will need to create a system of reporting not only between his staff and himself but also linking the work of the
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civil contractors, the machinery suppliers and the erection contractors with his office. The system will be designed principally to enable the manager to compare the progress of each item in the preparatory and construction schedule with the actual programme, and to compare its cost with the estimates. The form of the report will depend on the size of the project staff, and the degree to which control of the contractors and machinery suppliers is exercised directly or through consulting engineers, architects, technical partners etc. Whatever the methods adopted, it is essential to ensure that reports on the progress of all parts of the work are brought together rapidly at one point, i.e. the project manager's office, which should be the nerve-centre of the project. There, progress and cost can be watched and compared with the programme, the consequences of any variation from schedule assessed, and decisions taken, whether as to the need for action or adaptation of the implementation plans.

69. The development agency should receive frequent reports during the implementation of the project. If the implementation period is reasonably short, say, up to 18 months, it would be appropriate for these reports to be provided once a month; otherwise, once in three months, which has generally been found satisfactory for most industrial projects in most countries. The reports will usually consist of statements of the amounts expended on various items of capital,^{17/} together with a physical description of the progress achieved. They should be accompanied by information about major contracts placed by the management since the date of the last report. An official of the development agency would visit the site from time to time to obtain visual verification of the reports and to keep in touch with the project management.

70. Receipt of regular progress reports and supporting data will enable the development agency to ascertain whether:

- (a) The money is being spent at the rate that was forecast;
- (b) It is being spent in the way that was agreed;

^{17/} The capital expenditure should be broken down in the report into a number of headings, which can be compared with the corresponding breakdown prepared by the technical partners and project management when making the original estimates. The breakdown should be sufficiently detailed to make plain whether any part of the project implementation is out of phase.

- (c) The progress of each different element of the plant is correctly phased in relation to the others;
- (d) Estimates of expenditure are likely to be exceeded.

71. The development agency should have a systematic method of processing the reports. Progress reports should normally be studied first by the technical staff, who are best able to interpret the technical and practical implications, check performance and cost with the forecasts and with the terms of the major contracts placed for the project, perceive the reasons for variations from estimates and draw the appropriate conclusions. The technical staff then pass the reports and their comments to an accounting section which checks the figures, takes note of the state of capital expenditure and makes any corresponding adjustments they think necessary in their own disbursement forecasts. If their study of the reports suggests that any change should be made in the capital estimates, they advise their own management and the question is raised with the project management.

72. If delays in implementation appear likely, the agency will consider whether and how the delays will affect the completion of the whole project and whether they will affect the different parts of the plant. Delays in starting up the plant will generally result in a need for further capital, because pre-production expenses such as staff salaries and wages, rent and interest on borrowed funds, will be incurred over a longer period than was previously envisaged. If a delay is expected in one section of the plant only, the consequences of this will have to be assessed. In a fully integrated operation (e.g. a chemical works) a delay may well delay the start of production as a whole, but this will not be so in other cases. For instance, in a spinning, weaving and finishing plant, delays in completing the spinning mill need not hold up the weaving section if arrangements are made in time to buy in yarn of the right specification. Similarly, if the finishing section is completed first, it can go into production on bought-in grey cloth, thus minimizing the loss resulting from the delay.

73. It should be noted that, while changes in method and small changes in objectives may be left to the discretion of the project management, the

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management must still adhere to the general lines of the scheme and its stated objectives. Any proposed changes likely to cause significant differences in timing, performance and cost, should be regarded as a departure from the stated objectives, requiring the consent of the promoters and the financial sources. In their turn, the promoters and the financial sources must maintain a flexible attitude. Subject to receiving timely notice, they should be ready to give careful consideration to any suggested changes. It is of the essence of successful industry that it should be able to adapt itself rapidly to changes in the environment, and the scheme as described in the implementation plan must never be regarded as immutable. The development agency, in its turn, may have to present the proposed changes to Government and fight for them to be allowed. Whether this is necessary will depend on the degree of flexibility in the agency's own terms of reference, as discussed above.

74. When the implementation of the project is completed, the project management should prepare a final cost analysis, giving a breakdown of the capital cost into the constituent elements of each section. Such an analysis will give a clear picture of the way estimates are being fulfilled, and will provide a useful check on the estimating practices used in preparing the project.

75. This systematic and effective control of project implementation will enable the development agency to accumulate an inventory of valuable information about typical project activities, their actual costs, unit costs and realistic time duration, and the productivity levels of the various categories of manpower engaged in implementation. Such information is of paramount importance for comparing the execution of different projects, with a view to ensuring more efficient implementation, as well as more realistic and effective future planning and programming.

III. SUMMARY AND CONCLUSION

76. Since the last decade, a great number of developing countries have embarked on planning for economic and industrial development, and have devoted a vast amount of effort and expertise to the formulation of development plans and programmes, without, however, giving similar attention to their implementation. In most developing countries, the shortfall in

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attainment of development targets has frequently been the failure to achieve successful or even satisfactory implementation. Experience has shown that deficiencies of successful implementation are many, and their casual factors vary. Some of them are beyond the control of the country.

77. It should be noted that this paper deals primarily with mixed economies and assumes an economic system which permits some industries to be created and conducted by the public sector. Being primarily concerned with public sector activity, however, part of the paper is equally applicable to countries with centrally planned economies.

78. While this paper is concerned with the implementation of industrial projects, and the problems of planning are formally outside its scope, it must be recognized that in order to achieve more effective project implementation, many shortcomings in the planning process should be overcome. The planning of industrial development programmes should therefore take into consideration: the inherent administrative, managerial, institutional, financial, political and social limitations on a country's growth potential; the aggregates based on broad generalizations, as well as the investment projects which, in the last analysis, must go to make up these aggregates; consistency of programmes etc. Proper project formulation and evaluation should also be provided.

79. In addition to realistic preparation of industrial development programmes, the Government must also try to secure effective project implementation by a combination of: carefully devised policy measures; the creation of an effective institutional framework, with adequate powers and resources for each operative element; and organized implementation and control methods. Policy measures such as monetary policy, fiscal measures, employment and wage policy and administrative policy should have been thoroughly expressed in the development programme, and it is beyond the scope of this paper to deal with them at any length.

80. As regards industries to be established by the public sector, it is essential that their implementation and control be effectively decentralized.

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It is therefore recommended that the promotion and control of their implementation be entrusted to an institution, "a development agency", which may not be part of a government department. The development agency, while preserving the Government's interests in matters affecting the direction, duration, cost and other broad policy aspects of the project, would protect the project from government involvement in the control and management and preserve the management's autonomy within its own sphere.

81. Thus, a hierarchy is established with the Government planning organs at the head, the projects at the bottom, and one or more development agencies in between. For success, each element of the system requires: a clear definition of its goals, responsibilities and authority and provision of necessary powers (financial etc.); staffing with qualified personnel; development of an implementation plan for that part of the industrialization programme for which it is responsible, taking available resources into consideration; the collection and processing of information about the performance of each part of the system below it; and flexibility in relation to objectives.

82. The higher an institution stands in the hierarchy, the broader in scope and the longer in time-span will be the objectives laid down for it. Each element should normally lay down the objectives for the element next below it, after full discussion with it. It is most desirable that objectives be quantified as definitely as possible, and that the objectives for individual projects be based on the relevant feasibility study.

83. Because the type of industry may be entirely new to the country and therefore give rise to various problems, especially in the operation phase of the project, it is generally much to be preferred, in the event of very important projects, that the management be the responsibility of one or more existing firms for a number of years, during which they can also provide training for local counterparts. "Technical collaborators" or "technical partners", and infrequently "technical consultants" may provide the technical and perhaps the general management in the early years. A decision should be taken as to whether a firm which agrees to provide part of the management may have a financial stake in the project. This should be considered in accordance with the specific conditions of the country. If this were to be recommended, the size of the financial participation of each

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a firm would require careful consideration. It may be recommended that it be made large enough to guarantee an adequate degree of involvement of the firm in the efficient operation of the project, and this virtually requires the right to appoint members of the board.

84. Once the promoters (the development agency and any other organization participating in the project) have agreed on their representation on the board, the responsibilities and the limitations which the development agency places on the board's freedom of action, the project management of the project should be selected. The board, project manager and his staff have the responsibility of implementing the project and making it ready for production. They should take over responsibility from the development agency, usually in a gradual manner, but the latter will still be intimately concerned with the working out of the basic lines of the project until the project management takes full control. It is advisable that the team responsible for creation of the project remain continuously in charge of it from the outset until the project goes into production in order to preserve the understanding and insight which accumulate as the work proceeds.

85. The feasibility study may need to be brought up to date. After this, project management should analyse in detail all elements of the project (such as site of factory, buildings and access roads, plant and equipment) and its component activities (the activities to be carried out in order to bring the project into existence, such as designing of buildings, preparing tenders for plant and equipment, erecting plant and equipment and testing). Project management should then lay great stress on programming and control of the implementation of the project. This includes not only the process of identifying project activities and determining their interrelationships chronologically and financially, but also for each activity, the selection of methods, the allocation of resources, the estimation of time requirements and the establishment of the most economic implementation schedule for the project, taking into consideration the scarcity of resources and the required project completion date. In addition, constant checking should be carried out to ensure that actual progress (both physical and financial) is on schedule. The most effective techniques for programming and control of implementation

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(network techniques adapted to conditions prevailing in developing countries) should be used.

86. After preparation of the project implementation plan, an efficient control procedure should be employed to transfer it from a paper concept into reality. It should be noted that in the course of implementation, conditions change and frequently render obsolete the estimates previously made during the preparation of the implementation plan. It is therefore necessary to determine any deviation from pre-stated objectives, to study causal factors, take corrective measures and update the implementation plan to keep it realistic. This necessitates continued programming in more detail, as the project implementation proceeds, and continual re-planning of the existing strategy based on effective evaluation of progress.
87. As regards effective progress evaluation, each element in the hierarchy should keep watch on the performance of the elements below it. The requisites for success in this effort are information and liaison: a system of reports containing accurate, up to date and relevant information about financial as well as physical progress of the project, reaching the right point at the right time; and the building up of good personal relations for a better understanding based on mutual respect, at various levels, between all elements which have to communicate or keep contact with each other (for example, between the planning agency and the development agency, and between the development agency and the project management).
88. In addition to the development agency, there may be other authorities which are to receive reports from the project. To avoid putting an intolerable burden on the management, it is desirable to evolve a form of report, the bulk of which can be put together as a matter of routine at the junior management level, in a form which will contain the information truly needed by all recipients of the returns, although portions may be eliminated for the various recipients.
89. Lessons for the development agency: In addition to following the progress of the project, the development agency will also need to bear in mind its responsibility for carrying forward a section of the country's development
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plan, and its staff should follow a procedure designed to ensure that this aspect is kept in mind whenever reports from a project are under study. Implications for other projects or for the programme as a whole should be identified and acted on, and lessons for the future or for use in connexion with other projects should be noted and fed back into the planning and implementation machinery. Each development agency will have to establish its own check list, depending on the scope of its responsibilities and the priorities which have been laid down for it by the programme or by the planning authority. While it would be impossible here to put forward a definitive list, the following are some items for such a check list:

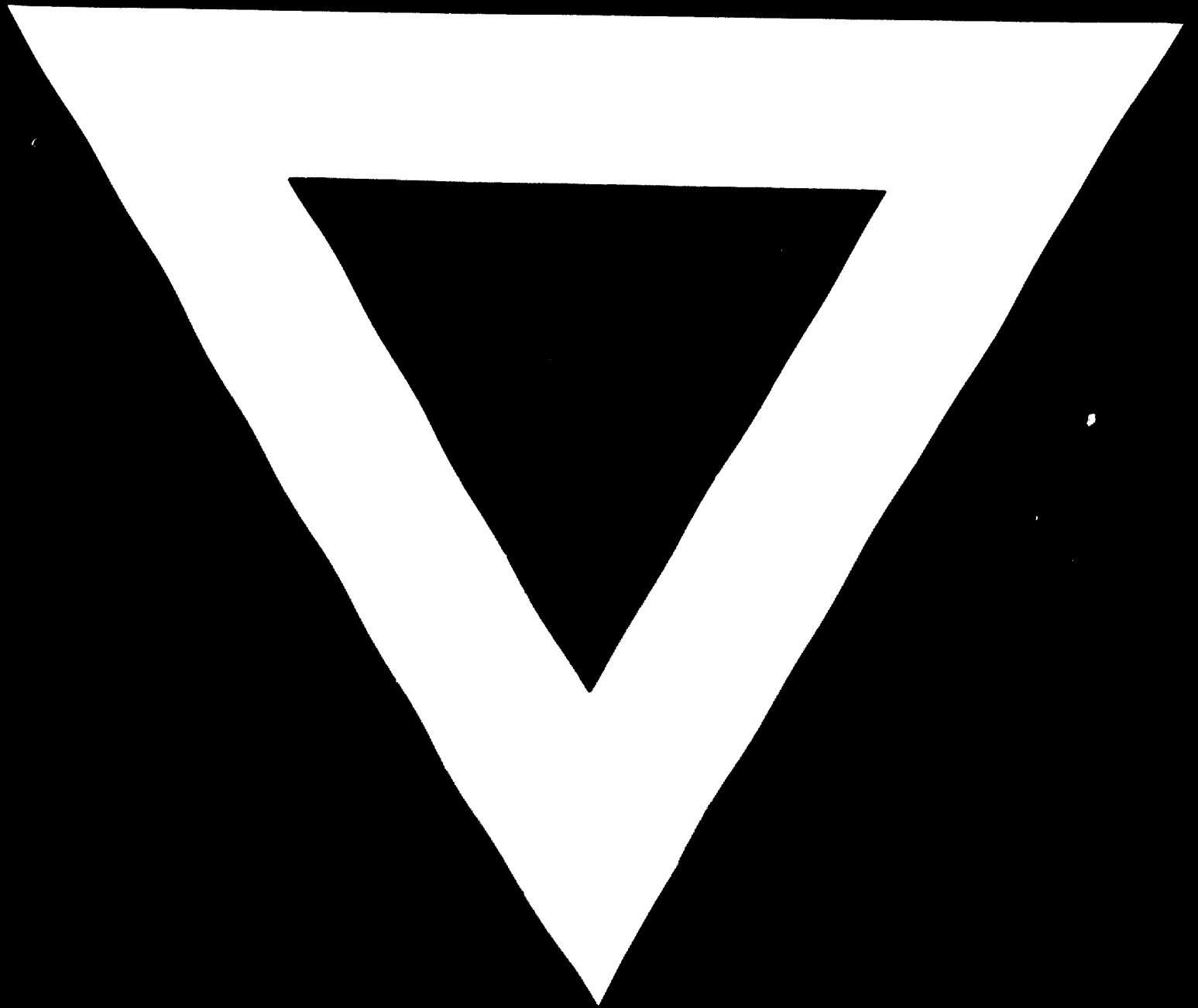
(a) The development agency can help:

- (i) In connexion with transport delays, customs delays, delays in obtaining government licences, work permits etc.
- (ii) In finding remunerative short-term employment of funds if capital expenditure is taking place more slowly than expected;
- (iii) By making early preparations for the raising of further funds if it appears that there will be a deficiency of funds;

(b) If progress is slower than expected, these questions should be asked:

- (i) What implications has this for other projects for which the development agency is responsible and which may depend on this project, for instance, for supplies of materials etc.?
- (ii) Is the output or the early completion of this project sufficiently important to warrant emergency action to get the programme back to normal?
- (iii) What implications has this development for the fulfilment of the whole programme, and might change in programme targets be called for?
- (iv) What implications has this development for the Government's import policy (e.g. allowing the import of competing goods to continue longer than previously planned), or for its industrial licensing policy?
- (v) What light does the slow progress throw on planning procedures, the efficiency of the planners or their advisers, the evaluation methods used by them etc.?





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