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STAGES OF PROJECT PREPARATION 1/

Introductory Study

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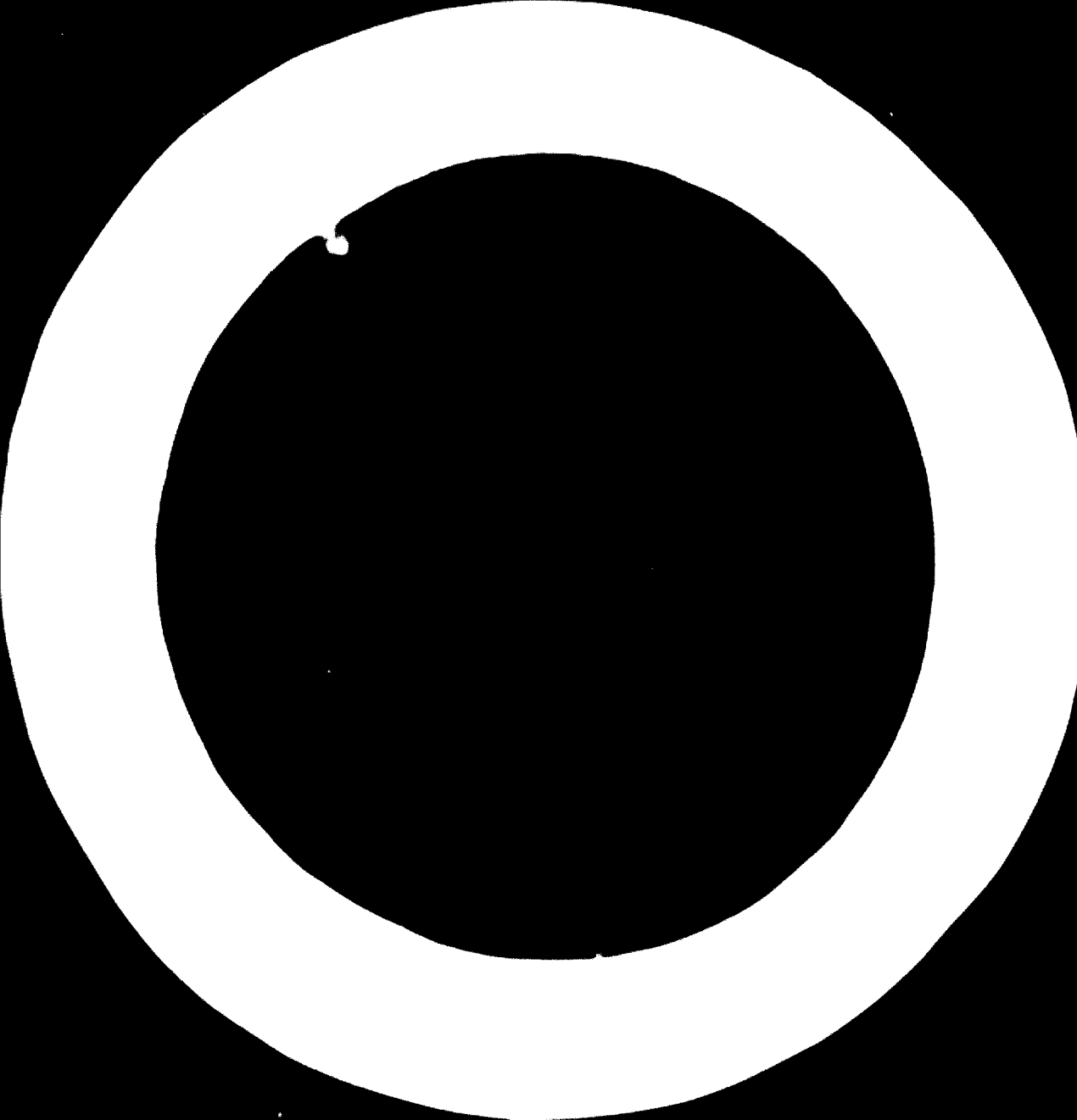

Introduction

It is generally recognised that the preparation of an industrial project is a complex process which passes through many stages, at each of which decisions [illegible] made by various [illegible] interested in the project [illegible]. [illegible] the complex, inter-linked [illegible] general [illegible] of the [illegible] process, [illegible] commissioned [illegible] the [illegible] terms of reference:

"a. to prepare a description [illegible] including [illegible] [illegible], starting from [illegible] and [illegible] industrial opportunities [illegible] the implementation of projects. Every stage and [illegible] of the decision-making process should be [illegible],

b. definition of [illegible] scope and content of the supporting [illegible] reports, [illegible], etc.) needed at each stage of the process. The implementation phase does not have to be elaborated in detail,

c. information [illegible] to [illegible] the documents referred to [illegible]. The implementation phase does not have to be elaborated in detail."

Accordingly, [illegible] elaborated to show how the project preparation process has been broken down into discrete stages for the purposes of this study. An explanation of, and comments on, the block scheme are [illegible] in Chapter III. The [illegible] and content of the "supporting documents" and the informational requirements for each stage of the process are treated in Chapter IV. [illegible] the general scope of this study, [illegible] only in [illegible] general terms, [illegible] detailed [illegible] would require a higher degree of specification with regard to the branch of industrial sector, the size of the project, etc. Moreover, such [illegible] could only be carried out in co-operation with a whole team of [illegible] (technologists, [illegible] engineers, [illegible], marketing and management experts), who are [illegible] with the relevant technical parameters of the project.

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Finally, it should be noted that the definitions and systems suggested in this study are not intended to reflect current practises in any one country; however, it is impossible for any author to free himself from his own experience. Therefore, it is hoped that this study will be considered as a modest attempt to contribute to the general development of planning and project preparation methodologies in the developing countries and not as a certain prescription for an absolute truth.

II. Basic Approach

This was prepared with reference to the following general principles.

1. An industrial project has a variety of impacts on the economic and social structure of the specific place, the region and the country wherein it is located. To this end, it is clear that industrial projects do not just "occur" in isolation, but rather have an entire constellation of cause and effect relationships with a number of persons and institutions. In theoretical terms, this number may be extremely large; however, in practical terms there are four principle "subjects" which potentially play a key, formative role in the realization of any given industrial project, namely:

a) the investor
b) the financing institution
c) the central governmental authority
d) the local authority

Each of these has its own unique, special interest in the project and accordingly has its own set of criteria for the evaluation of the project. The bank which provides credit for the project is primarily interested in the pay-back period, thus, it will focus its attention on justifying the financial profitability of the project to ensure that funds will exist to pay back the creditor with interest. The central governmental authority, on the other hand, regards the project from the vantage of the over-all national plan and policies, in conformity with the regional policy and/or in other benefits to the country which the project might generate. The local (community) authority, for its part, is interested in the impact of the project on employment and the day-to-day movements of manpower and materials, in changes of urban structure, civil engineering, housing and other infrastructural expenditures necessitated by the project, in water and air pollution, etc.

The investor is in perhaps the most clearly specified position of all; he has his own interest but at the same time must be able to envisage and take into account the interests of the other subjects because only thus can he truly prepare for the project to materialize.

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Similarly, all the changes and amendments initiated by the other subjects must be checked with regard to their effect on the investor's basic interest in creating a profitable project. Thus, project preparation must be viewed as an iterative process with both forward and backward linkages.

2. With reference to the above remarks concerning the various "subjects" concerned with project preparation, a clear warning should be sounded to avoid possible confusion of organizational with functional roles. For example, the central governmental authority may function in its own right as the investor, and as the financing institution. Thus, it is the functional, and not the organizational, position which is important for our study. On the basis of this understanding, it should be understood that the functions of the investor do not necessarily have to be performed by an actual "investor", per se. That is, there may be a "shadow investor", e.g., a planner in the first stages of project preparation or a consulting or research institution which studies and formulates the parameters of the project. In fact, it is envisaged within this study that most projects will be prepared by such organizations, since our experience shows that most individual investors-with the exception of a few big enterprises-do not possess sufficient technical skill to carry out all necessary studies and to organize the whole process of project preparation.

3. The preparation of an industrial project is a time-consuming and sometimes costly process. In order to minimize the time and costs involved, the flow of decisions has to be organized properly so as to make it possible, and/or necessary, for the "subjects" to step into the "game" at the proper time. This study, therefore, had laid out an "ideal" case in which all the subjects take an active part and assume their responsibility on schedule. In practice this is, of course, often not the case. For example, the government administration may be unaware of the importance of macro-location aspects and, therefore, the Regional (Macro-location) Economic Study may be left out.[1]

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[1] However, it is advisable to undertake such a study, even if it is not required for official reasons; the study may reveal facts important for the investor. Additionally, the position of the administration may be changed in this respect.

The lay-out is "maximal" in another respect, too. It was the intention of the author to lay out the project preparation process in its most complete form. It is evident that in the case of smaller projects or of projects involving simple technologies, some of the activities of the project preparation process might be carried out on a limited scale or could be left out altogether. Thus, the study is an effort to provide the reader with a concept, rather than with a "made-to-order" instruction book for a given industrial project.

III. Description of the Sequence of Activities and Decisions in the Process of Project Preparation

This part of the study is with the sequence of activities and decisions as expressed in block schemes No. 3 and No. 4. The activities themselves are described only in so much detail as is required to enable the reader to understand the block schemes. A more detailed description of the various activities is the subject of Chapter IV.

In order to facilitate a reading of the block schere, we should point out that:

1. As should be clear from the block scheme, there are backward linkages from all activities to the shadow investor. In order not to break the continuity of the process, it is necessary that all partial results, evaluations and variants are confronted with the Project Idea.

2. In the feasibility stage the backward linkages go to "Shadow Investor 2" block. The following two blocks ("Are factors outside of F-stage involved?", "Are factors within F-stage involved?") are auxiliary; they should help identify reasons for which the process was interrupted.

Scheme No. 1 (General Scheme of Stages of Project Preparation) illustrates the whole process broken down into three basic stages; each stage has its own set of functions. The Opportunity Stage should identify the Project Idea, that is the goal and basic parameters of investment. It should also entail a testing of whether or not the Project Idea is sufficiently promising to justify more detailed consideration. The Feasibility Stage should involve a consideration of the project alternatives, viz capacity, technology, location, etc., and subsequently define the "best" variant. Essentially, this phase involves gathering information to provide a basis for making a decision as to the project's implementation. The Implementation Stage follows from the final decision about the erection. During this stage the implementation programme has to be prepared, a detailed project plan elaborated, the plant erected and run-in. It is imperative that activities be tightly co-ordinated in order to avoid unnecessary delays.

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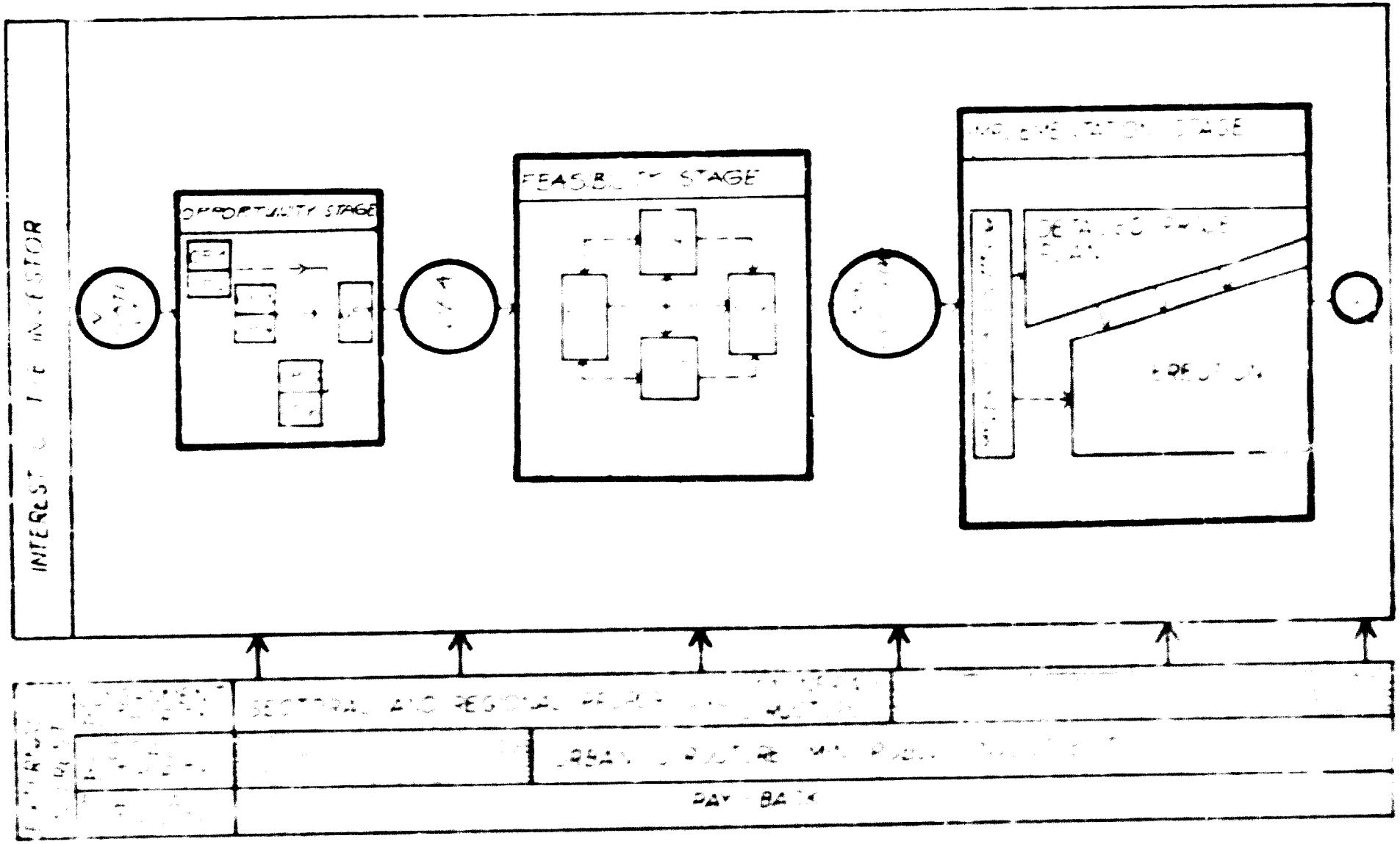
SCHEME No 1

STAGES OF PROJECT PREPARATION — GENERAL SCHEME



A. [illegible]

[illegible] incorporated into the [illegible] at the [illegible] "[illegible] inventor" [illegible] unities for [illegible]

[illegible] institute [illegible] in which [illegible] three [illegible]

[illegible] (inventor, [illegible]) [illegible] the [illegible] either [illegible] other source. [illegible] will be [illegible] as well as of [illegible] the [illegible] alternative [illegible] review. The [illegible] original [illegible] completely new idea [illegible].

b) [illegible] project initiator [illegible] the various [illegible] of these [illegible] to be [illegible] required [illegible] carried out by the [illegible] initiator. [illegible]

c) [illegible] undertaken [illegible] all steps [illegible]

...

defined cases, certain steps have been completed previously; these should always be omitted from the sequence (situation I-A').

In the situation I-A' the shadow investor faces the problem of how to convert an impulse into an idea. As very often happens, much of the required information on economic and social factors in the country or region is not readily available. In this case the shadow investor must decide first toward which industrial branch he should direct his attention. In this case we believe that a method which we refer to as "analogical situation analysis" should be applied. It calls for the following activities:

CP-1 Survey of existing economic factors - existing industrial capacities and output, natural resources, available raw materials, human and financial resources, etc.

CP-2 Survey and inventory of industrial activities which developed under analogical conditions in other countries[1/] - (subsequently referred to as "analogical situations").

The activities grouped under CP-1 should be presented in separate documents. CP-1 is a survey of the country, CP-2 represents a data bank of analogical situations. The preparation and requisite up-dating of the data bank is an extensive and expensive effort. It can be replaced by applying the knowledge and experience of a team of experts specialized in individual industrial branches; however, the experience and knowledge of even the largest and most broadly skilled such groups is, perforce necessarily, limited; thus, there is a real risk that certain promising opportunities may be missed as a result of relying on the expert group approach. It is, therefore, felt that it is essential that a data bank approach be used to provide the means, in the first place, for discovering the opportunities;

/...

1/ The ongoing development of technology and the changes in technical and economic parameters evolved by it may open new fields in addition to the existing ones. It is, therefore, desirous that future effects of technology development are estimated and confronted with the existing facts.

it is at a later stage of evaluation, the opportunities that the specialists with their creative, individual approaches should enter the picture.

The confrontation (or critical comparison of the findings) of OP-1 and OP-2 may not in itself be sufficient to provide a satisfactory basis for formulating a detailed investment idea for several reasons. First, there may be too many variants of possible projects. Secondly, the future conditions under which a given plant is to be put into operation might well have a very significant impact upon the production; they should, therefore, be studied in more detail. Accordingly, this calls for the preparation of the following documents:

OP-3 Projections of economic structure, which are broader and should reveal both possible and expected trends of regional location for the relevant industrial branches,

OP-4 Projections of urbanistic structure, which should reveal the trends of settlement and anticipate the future development of both social and economic infra-structure.

A further definition of the situation may be achieved by means of preparing the following documents:

OP-5 Analysis of the techno-economic potentials of specific industrial branches, which are to contain an evaluation of current fixed capital assets, estimates of the effects of probable technological change and estimates of the future demand for products of the branch.

OP-6 Regional plan, which projects the techno-economic analysis (OP-5), makes it possible to confront the idea with the probable regional conditions, and to evaluate the network of possible cost and benefit effects viz the region.

It should be emphasized here that OP-3, OP-4, OP-5 and OP-6 are not integral parts of the project preparation as such, rather, they are activities which are normally carried out under the heading of sectoral and regional planning. In many countries, they are not presently being carried out and yet, somehow, industrial projects are still being prepared. We have introduced them into the project preparation process primarily because

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of our strong belief that a development project should be viewed in terms of the general trends, strategy and objectives in the project environment, and that such macro-analysis should be carried out at the very beginning of the project preparation process.

Although the above considerations [illegible] the idea of examination from several [illegible] they themselves do not form integral parts of the project study. It is the Opportunity Study which represents the first [illegible] project document.

CP-7 The Opportunity Study should contain the results and conclusions of the partial studies. The report should also [illegible] which have been carried out, the criteria used in the course of the Opportunity Study.

As has been mentioned, the [illegible] project variants [illegible] a "best" project variant, the Project Idea. If the latter proves worthy of further study, a potential [illegible] investor is found, a first [illegible] institution to investigate the [illegible] investment [illegible] would be. Only then is a Call for Tenders to undertake the feasibility study (CP-8) be prepared. The investment information [illegible] to the Call for Tenders must [illegible] out the [illegible] will deserve special attention in the feasibility study.

B. Feasibility Study

With the exception of certain small-scale industrial projects, the Project Idea cannot by itself serve to provide adequate guidance for the preparation of the project. The Project Idea provides no more than a first-hand presentation of the [illegible] parameters. Clearly, the [illegible] carefully checked [illegible] to implement the project. The risk of [illegible] the course of the implementation phase, all of which might well lower

...

The Te[illegible]ical Economic "S[illegible]tion" [illegible]s, of course, to be located in [illegible] region. Therefore, [illegible] the [illegible] general regional implications of [illegible] should [illegible] in studies F-[illegible] F-[illegible], [illegible] the feasibility stage. The purposes [illegible]:

- [illegible] look of the implications of location [illegible] given [illegible];
- they [illegible] not only of the location upon the proj[illegible] of the supporting [illegible] follow-[illegible] will be required to [illegible] the project [illegible] infra-structure, etc., [illegible] total investment [illegible] costs [illegible] in the [illegible] "Sol[illegible]ion";
- they [illegible], evaluation [illegible] optimization of [illegible] investor and of the Co[illegible];
- they [illegible] for subsequent planning of the infra-structure.

I[illegible] F-4 and F-5 will [illegible] to be optimized, first sep[illegible] a "Location Sol[illegible]tion" can be finalized.

After all [illegible] have been [illegible]leted, the final [illegible]lution [illegible] can be made, resulting in [illegible] "Com[illegible] Solution".

St[illegible] F-[illegible] Solution, [illegible] be worked out in such a way that [illegible] final [illegible] via [illegible] implementation [illegible] made and justified [illegible]. It [illegible] all variants of the Comprehensive Solution, expl[illegible] their [illegible] and [illegible] in detail [illegible]. As the recommended variant will require exte[illegible] to lay out the document [illegible] in three parts:

a) [illegible] - the [illegible] and format are [illegible] prescribed,
b) for [illegible] local [illegible] - [illegible], etc.,
[illegible]) [illegible] prescribed by [illegible].

. . .

With the preparation of the Comprehensive Solution the feasibility stage is complete. The final decision about project implementation can now be taken. It should be emphasized, however, that project implementation does not involve just a single decision made by the investor, rather it consists of a network of decisions by all parties involved, including banks, Government and community.

The investor has next to look for suppliers of equipment and construction services and then to call for offers. This activity differs from the previous ones: here the investor actually enters the market. The investment costs calculated in the previous studies are now compared with the actual price of the equipment, construction services, land reclamation, etc. The offers have to be evaluated carefully since they may change the whole picture substantially. Even if the technical parameters are adhered to, a change may occur due to:

a) higher prices,

b) longer delivery time, etc.

Any such change may result in a decrease in the efficiency or benefits such that the project has to be discontinued.

If the parameters of the offers are acceptable, final investment costs can then be calculated and negotiations with the bank about the financing conditions may start.

Simultaneously, the investor may have to secure Government licenses as well as the final approval of the community (the construction office) as far as location, construction and the technical solution are concerned.

All these activities and decisions must be checked with the investor; all such changes in the project are to be evaluated viz the relevant parameters of the Comprehensive Solution or with F-1 - F-5 respectively.

Only at this stage can a definite "yes" or "no" be given by the investor. With this decision all phases of project preparation are "frozen"; the implementation phase then follows.

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C. Implementation Stage

The implementation stage is described in a general way only in the block scheme. It can be divided into three sub-stages: preparation of Implementation Programme, of the Technical Plan and the erection of the plant (and follow-up activities). We are not concerned with the third sub-stage here.

As far as the second is concerned, the activities and decisions at this point are basically of a technical nature only; no fundamental changes in the technical and economic parameters of the project should be envisaged. In fact, the detailed project plan should elaborate the final variant of the feasibility stage and the others into blueprints, drawings, implementation plans and charts, etc. Possibility of new variants viz products, capacity, technology, location, etc. should be excluded.

All activities in the implementation stage should be strictly co-ordinated so as to minimize unnecessary construction and start-up delays.

Therefore, it is essential to work out a fully detailed implementation programme at the beginning of the implementation stage.

IV. Scope and Contents of Activities at each Individual Stage of the Preparation Process

In this chapter we set out to show in detail what are the contents of each individual stage in the project preparation process. Chapter III can be thought of as concentrating on the flow aspects of project preparation. In Chapter IV we are primarily concerned with examining the stock aspects of each of the indicated stages of the process.

1. Opportunity Stage

OP-1 Survey of existing economic factors (including data)

The purpose of the study which sets up this phase of the preparation process is to take stock of and review the available surveys, research and data and the economic environment of the project, updating those which are out of date and supplementing these as required. The primary objects of the survey are to determine:

1.1. the quantity and quality of available raw materials,

1.2. the actual and potential stocks of human resources,

1.3. present and expected industrial capacities, with their chief features,

1.4. the market, broken down into major groups with price data,

1.5. the financial resources available and possibilities and problems involved in their mobilization,

1.6. the infra-structure, as according to the probable demands of the project.

The scope of the additional activities to be undertaken can be defined only once the initial inventory has been completed. Both surveys of raw materials and demographic surveys are normally expensive operations and should be undertaken only if previous surveys are judged insufficient or out of date. On the other hand, surveys of existing industrial capacities have to be up-dated periodically and market studies must be of a recent date.

OP-2 Survey and Inventory of "Technical" Data (project programming information)

As noted in Chapter III, appropriate project programming information of a reference variety can be made available in two ways:

/...

a) by a data bank containing basic information on key parametres of existing (and/or planned) industrial establishments,

b) by involving many specialized industrial experts and drawing on their knowledge and experience in projecting, constructing and following up particular projects.[1/]

The minimum scope of data to be stocked in this phase should detail:

2.1. identification

2.2. output
- product mix
- capacity (planned and actual)

2.3. Financial parametres
- fixed assets: equipment, construction
- working capital
- running-in costs
- operating costs
- profits, etc.

2.4. technical parametres and conditions
- inputs (raw materials, water, energy, etc.)
- major equipment
- construction
- number and qualifications of manpower
- site requirements (area, communications, water, energy, etc.)

If the data bank option should be pursued, this will enable direct and easy access to the data needed; in this case, the registers should be organized both horizontally (by industries) and vertically (by conditions).

In Block Scheme no. 2 the stage wherein data on the existing structure are confronted with "analogical" data is described as being part of OP-2. It will be seen that the logic of the block scheme makes this necessary, with the confrontation proceeding successively, step by step.

/...

[1/] It may be noted that UNIDO's Profiles of Manufacturing Establishments or Extracts of Pre-Feasibility Studies, which summarize industrial "experiences" which are felt to have transfer utility are intended to supplement any such local data banks.

OP-3 Projection of Economic Structure

Generally, it is reasonable to project for 10-15 years; the exact period can vary considerably depending in part on the "life expectancy" of the project. It is desirable to estimate the development of all related key economic factors, to project demographic, social and technological trends as well as to estimate the degree of implementation of the various economic plans. At this stage these projections should be of a general nature only, estimating the relative proportions of the primary, secondary and tertiary sectors and projecting data on the decisive industries. Most important from industry's point of view is the evaluation of possible future combinations of industrial branches and an indication of the nature and size of probable future industrial complexes.

These projections are of two sorts: analytical projections are undertaken to evaluate the probable raw material basis, future industrial capacities, demographic development, purchasing power and demand patterns as well as trends in primary, secondary and tertiary sectors. These analytical projections may also serve to check investment ideas derived as the result of a "first stage confrontation" of the results of OP-1 with those of OP-2.

On the other hand, normative projections must also be carried out to estimate the probable (hoped for) effects of government policy, particularly as it will affect the most important industrial branches. The technique of "optimization" of future economic structures are less than perfect; analysis of present inter-industry relations may help but a fully satisfactory and reliable methodology for reaching future optimums still has yet to be worked out. In countries which resort to long-term economic planning all such plans should also be considered.

It should be pointed out that these are subject to considerable variations. An invariable solution can be worked out only at the level of the regional plan (after urbanistic and other related structures have been incorporated into the overall evaluation).

OP-4 Projection of urbanistic structures

The function of this "document" is to forecast the probable settlement structure. Major urban complexes have to be defined according to their geographic, infrastructural and internal conditions; an urban complex should be oriented to obtain harmony in production, housing, recreation, transport, etc.

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Though the urban "plan" is a multi-purpose document, it is useful for industry planning, too. Project ideas can now be checked in terms of location requirements.

The methodology of these projects has been elaborated in many studies and countries, it is felt that there is no need to describe it here.

OP-5 Analysis of the techno-economic potentials of specific industrial branches

The purpose of this study is to find the most suitable technological alternatives of technology development and to lay out a development programme for the branch in question. The study should include the following steps:

5.1. preliminary determination of products to be produced

5.2. market research

5.3. evaluation of 5.1. and 5.2. and elaboration of the future production programme

5.4. screening and evaluation of applicable technologies

5.5. evaluation of existing capacities of each and of the possible technological innovations therein

5.6. determination of optimal product mix and scale of production of the new establishments

(or alternatively)

5.6' evaluation of technical and economic feasibility of multi-plant industrial co-operation

5.7. allocation of the production programmes among establishments (or projects) in particular regions

Elaboration of the techno-economic analysis is a complex planning activity calling for a team of highly qualified experts.

In instances where several projects are worked out simultaneously for different industrial branches, a careful balancing and evaluation of inter-industry relations among the branches should take place.

OP-6 Regional plan

The regional plan is the most appropriate basis for the overall formulation of the investment idea, since it should take into account both the economic and ancient structure. If properly inter-linked, they should simulate the future "system" of the region.

/...

The methodology of establishing a regional industrial plan will not be discussed here. It should be noted, however, that there are (roughly) two ways of formulating a regional industrial plan:

(a) the development potentials of specific industrial branches (OP-5) are analyzed, taking into full account the macro-location element or the industrial regional plan may be established by merging the macro-location elements;

(b) the regional industrial plan is prepared independently on OP-5; it is based on straight forward projections of economic structure (OP-3) and urban structure (OP-4). The branch analysis and the regional industrial plans are confronted only after each has been formulated separately.

The former alternative is, technically, the more difficult and hence the latter has been more frequently applied in the past. However, it should be noted that in the latter case the plan as such consists more of general principles and guidelines than of clearly defined, closely integrated targets. Thus, the procedure is probably more helpful in checking on the desirability of given project ideas than in initiating a project.

OP-7 Opportunity Study

The studies carried out in stages OP-1 - OP-6 are closely related, but they normally are carried out separately. In rather simple conditions the confrontation of OP-1 with OP-2 may provide sufficient basis for generating the investment ideas. Although all the studies are independent from one another, they are related to one another and to the Opportunity Study as well (see Scheme No. 4).

The Opportunity Study summarizes the results and conclusions of the partial studies. The more detailed the preliminary studies which have been undertaken, the smaller need be the scope of the Opportunity Study itself.

The Opportunity Study should have two parts: first a complete inventory and evaluation of all possible alternatives, and then the final formulation of the Project Idea. In the first part all possible product, capacity, technology and location alternatives should be mentioned and their priorities established. The best alternatives should then be described in full detail as the Project Idea.

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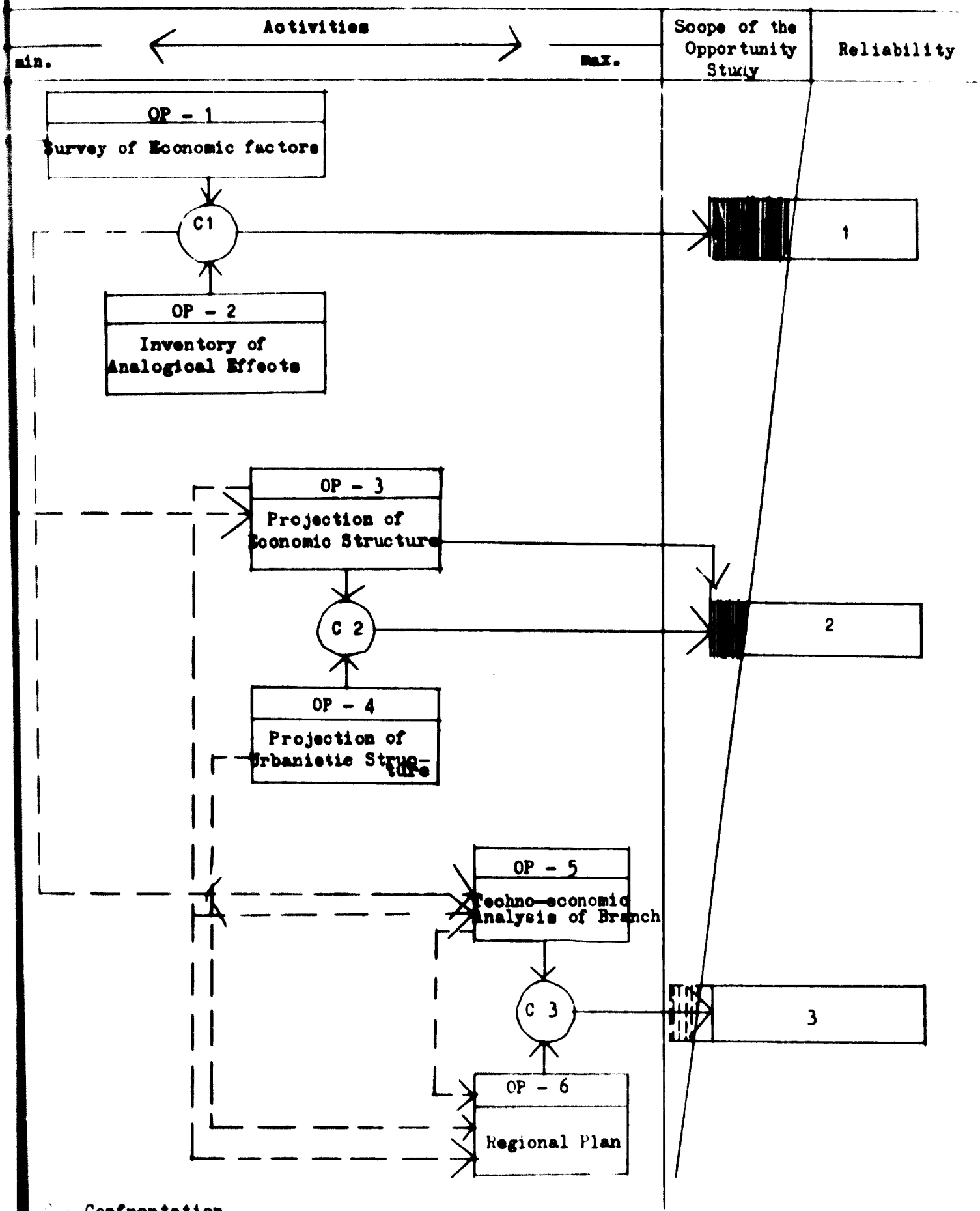
Inter-relation of Studies

Made During the Opportunity Stage

Scheme No. 4



C - Confrontation

The Project Idea should define the goal of the investment and the basic parameters of the project:

1. product to be produced, tentative specifications;
2. estimated market, tentative capacity;
3. raw materials to be used, alternative technologies;
4. location;
5. financial evaluation.

The definition should not exclude examination of other alternatives in product mix, technologies or location. However, the more precise the definition of the Idea, the more simple the feasibility stage which follows.

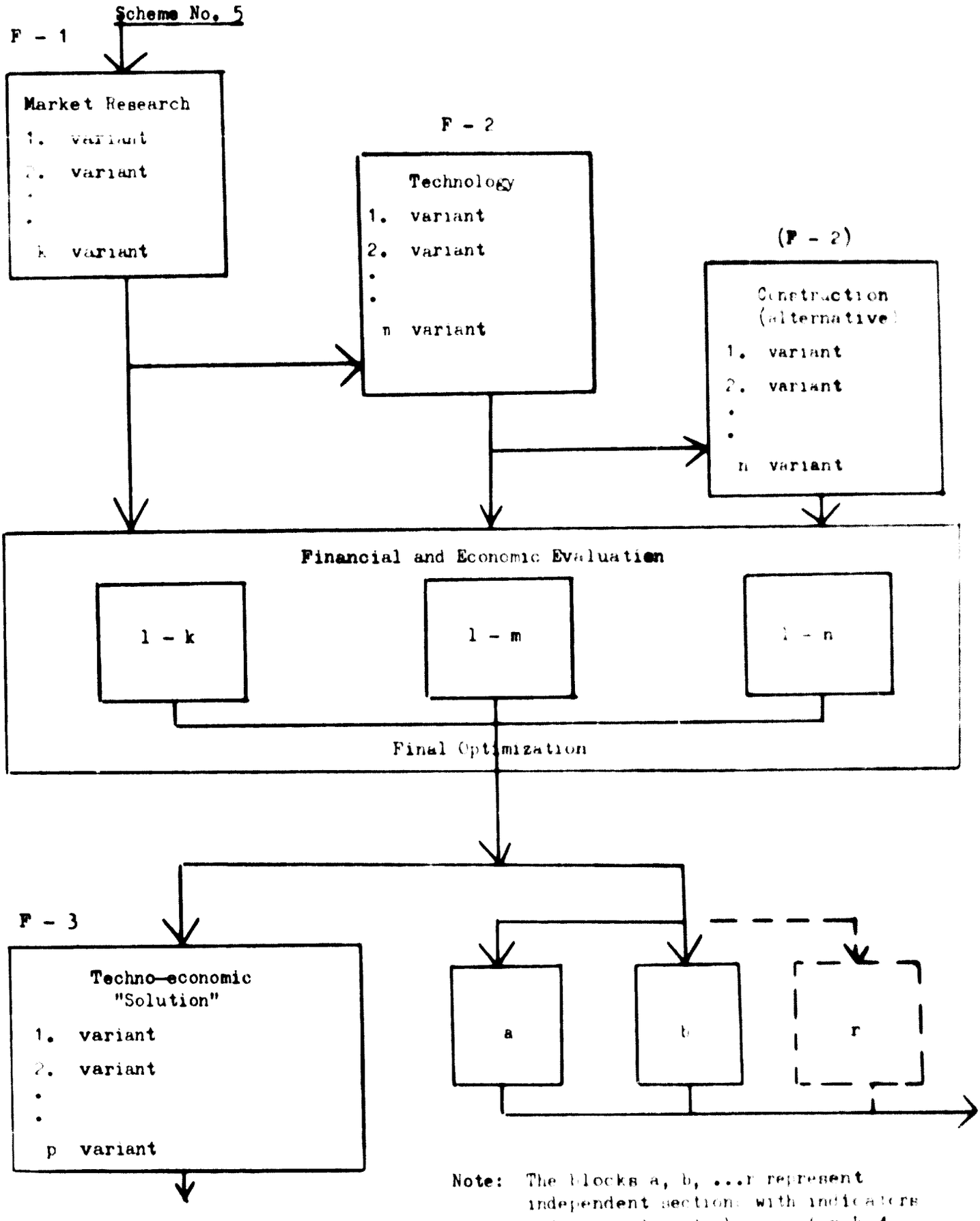
OP-8 Call for Tenders and the Investment Intention

The "Call for Tenders" to perform certain consulting and engineering services (such as undertaking a feasibility study) consists of two parts: first, to define the scope of the work to be done and then to spell out the conditions under which such work should be done.

The more precise the description of the work to be done, the more accurate the offer. Therefore, it is recommended that the Investment Intention be formulated in detail as a preliminary to the Call. The Investment Intention should consist of the Project Idea (or the most important data from it), with an indication as to which aspects of the Idea should receive special attention.

Then it is left to describe the sequence and scope of the services to be performed, time of completion, ways of reporting and follow-up, regulations to be adhered to, principles of remuneration, etc.

Inter-relation of F-1, F-2 and F-3



Note: The blocks a, b, ...r represent independent sections with indicators and parametres to be used for F-4, F-5 and F-6.

F.4. Regional (Micro-location) Economic Study

The Regional (Micro-location) Economic Study represents the first spatial or areal [illegible] of the activities undertaken [illegible] feasibility of a formal regional [illegible] regulations. If both are available, the study will start by:

- confronting the Micro-economic solution (i.e.) with the regional plan which will involve evaluation of the positive and negative impacts of the project upon the region,
- examining carefully the applicable policy regulations upon the project [illegible] the project.

On the basis of the above, several, potentially attractive micro-regions of possible location are defined and the investments are calculated and benefits attributed to each of them. Then, the best (micro-region) for the alternative is selected.

If there is no regional plan and no applicable policy regulations, the study must be [illegible] to facilitate the identification of the most suitable region and, consequently, to evaluate the impact of the project upon the environment. In the latter case the study should analyze:

4.1. the [illegible] attraction (manpower, transport, energy, etc.)

4.2. [illegible] of the regions considered,

4.3. natural conditions and infrastructure,

4.4. the existing industrial structure in the alternative regions under [illegible] possibility of territorial concentration of industrial branches; the [illegible]

4.5. selection of the micro-region best fulfilling the project's requirements and attraction of the investment, existing infrastructure, and finally

4.6. the [illegible] of the several selected micro-regions and selection of the most attractive.

/...

It may prove rather difficult to express the benefit of the project in figures alone. Occasionally, this can be enumerated only by means of general qualitative judgement.[1]

The recommendations contained in the regional study should be passed on to the prepriation investment authority, so that all comments can be considered in the final version of the study.

The "outputs" of the regional economic study are, of course, the "inputs" of the location study, specifically, data on the following subjects are taken from the regional study:

- the micro-region(s)
- the population (engaged in economic activities, qualification, etc.)
- infra-structure

F.5. Location Study

The location study draws on the results and findings of the regional study and looks into more detailed aspects of location. The purpose of the location study is to analyze the micro-region and to select the particular site which would call for minimum additional direct investment (land reclamation, etc.) and indirect investment (housing, communications, etc.) Two groups of problems are studied separately:

a) techno-economic conditions of the area
b) urban conditions

For a) the evaluation of the techno-economic conditions of the area, it will be necessary to have precise information on:

5.1. mapping of the area (according to F.2.)

5.2. geographic and civil engineering conditions (necessary levelling, seismography)

5.3. legal aspects (ownership, prices)

5.4. transport conditions (road, railway and water transport network)

5.5. water supply system (sources of industrial and drinking water, waste water, etc.)

/...

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[1] Regional study may, sometimes, be the impulse for elaborating a regional plan. Then, however, the project preparation should go on without awaiting completion of the regional plan.

5.6. energy network (electricity, gas, fuel, etc.)

5.7. protection of environment (waste treatment, air and water pollution, noise regulations, green areas protection, etc.)

5.8. the investment necessary

For b) the evaluation of the urban conditions requires information on:

5.9. generated investment in housing

5.10. additional investment to be required in tertiary sector (schools, shops, medical services)

5.11. additional technical facilities (drainage, energy network, etc.)

On the basis of the above studies, the sites are selected and priorities determined. The conclusions and recommendations of this study should be communicated to the local authority; this is particularly necessary if further investments in public utilities is required by the project.

It should be noted that in case of rather simple projects, the studies F.4. and F.5. can be merged into one "location study".

F.6. Comprehensive Solution (Complete feasibility study)

As described in Chapter III, the Comprehensive Solution represents the final project document, the basic parametres of which should not be changed once the decision about implementation has been made. The final decision, which is supported by offers, by the selection of (foreign) technical partners (suppliers of equipment or know-how), by the tendering of credit by the bank and, by the approval of the local authority, should not be exposed to arbitrary changes. If any change is thus imposed, the cost increase should be borne by the party requesting the change.

The Comprehensive Solution is the final result of sub-optimization arrived at in the previous studies. Methodologies and techniques of overall optimization are among the most complicated activities to be undertaken, requiring as they do the assignment of weights to each particular criteria. The document should be presented in such a way as to make the Yes-No decision possible.

/...

This ultimate document should thus consist of:

1. a techno-economic section, enumerating and describing (briefly) all variants considered in F.3. and describing in more detail the particular variant recommended,
2. the original financial analysis enumerating the variants of F.4. with subsidies and tax and other incentives envisaged,
3. the locational study describing the variants of F.5. with the position of the local authorities.

The final optimization is a complicated process, the result does not have to be identical with the best variants which appeared in any of the previous steps.

The result of the final optimization should be presented as follows:

4. a comprehensive and detailed description of the final version (text, tables, charts, etc.) with summaries for the decision-makers
5. separated extract for submission to the various bodies involved in the decision-making process, i.e.:

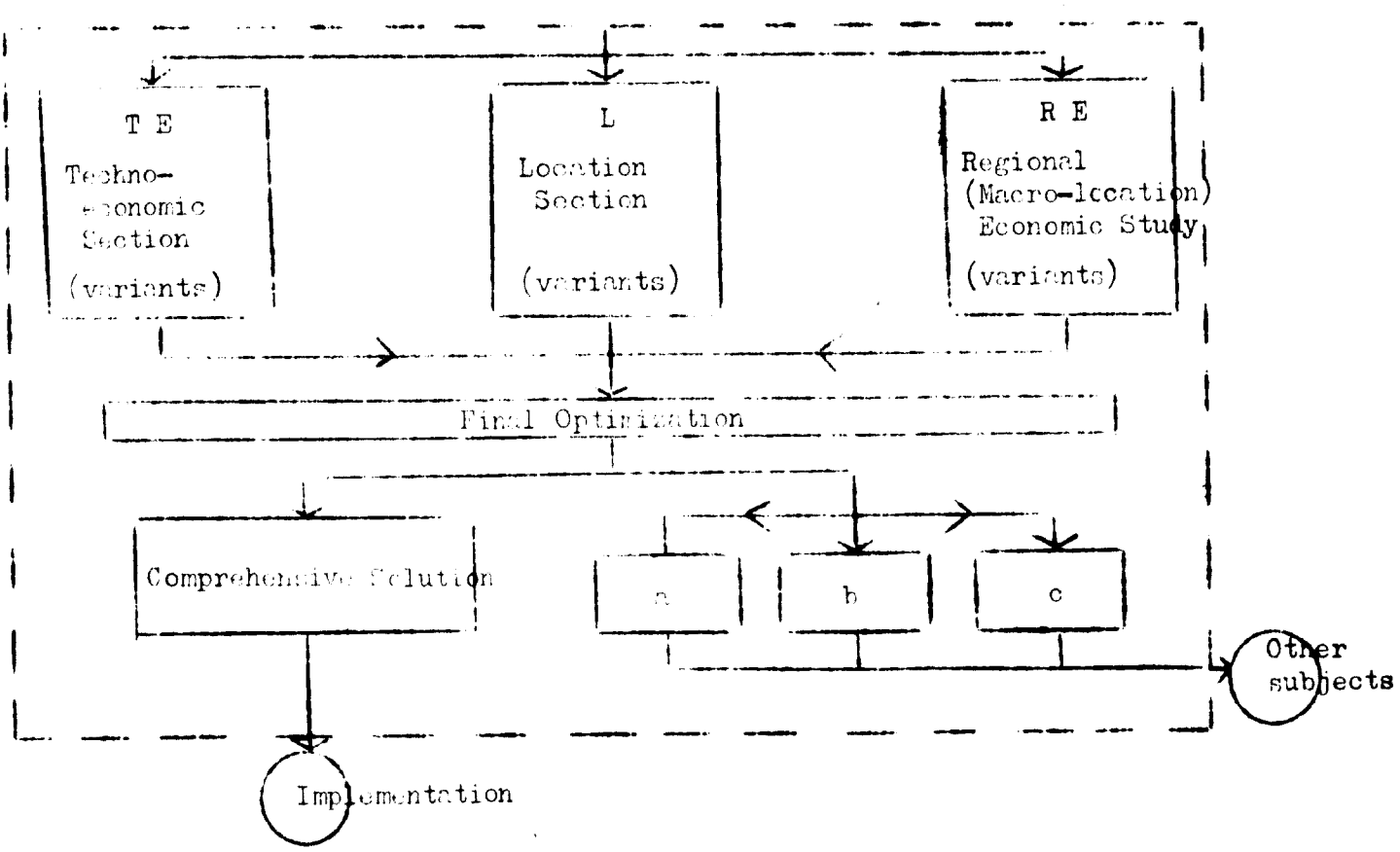
   a) the government authority (sometimes specified; usually consists of information on the various economic and social aspects of the project, about financing and about transfer of technology, etc.)

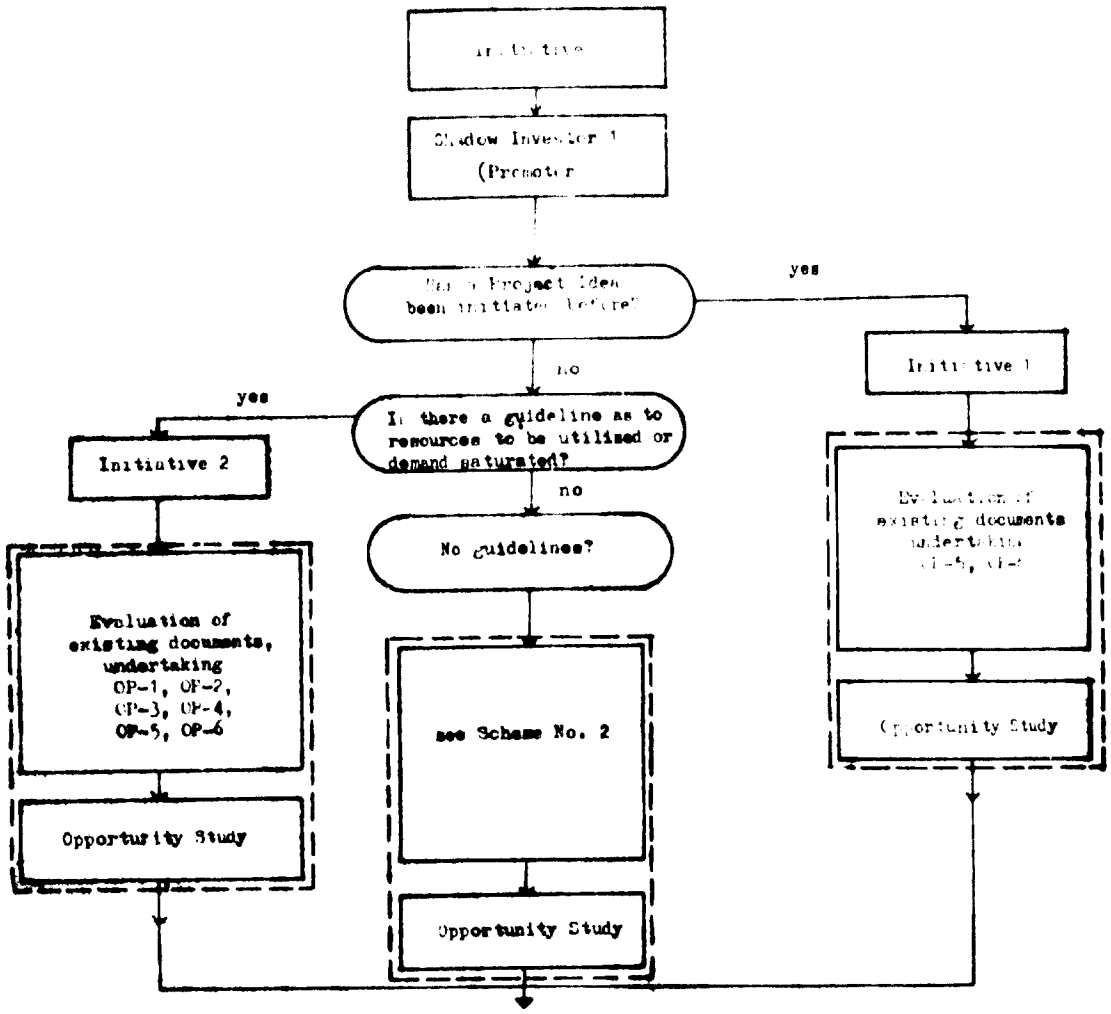
   b) the financial authority (specified by most banks; usually consists of information about financial performance of the project, financial standing of the investor, guarantees by the supplier of the equipment, etc.)

   c) the local authority (information concerning the site, the compliance with health and other regulations, the additional investment to be undertaken by the public sector, mainly infra-structural, etc.).

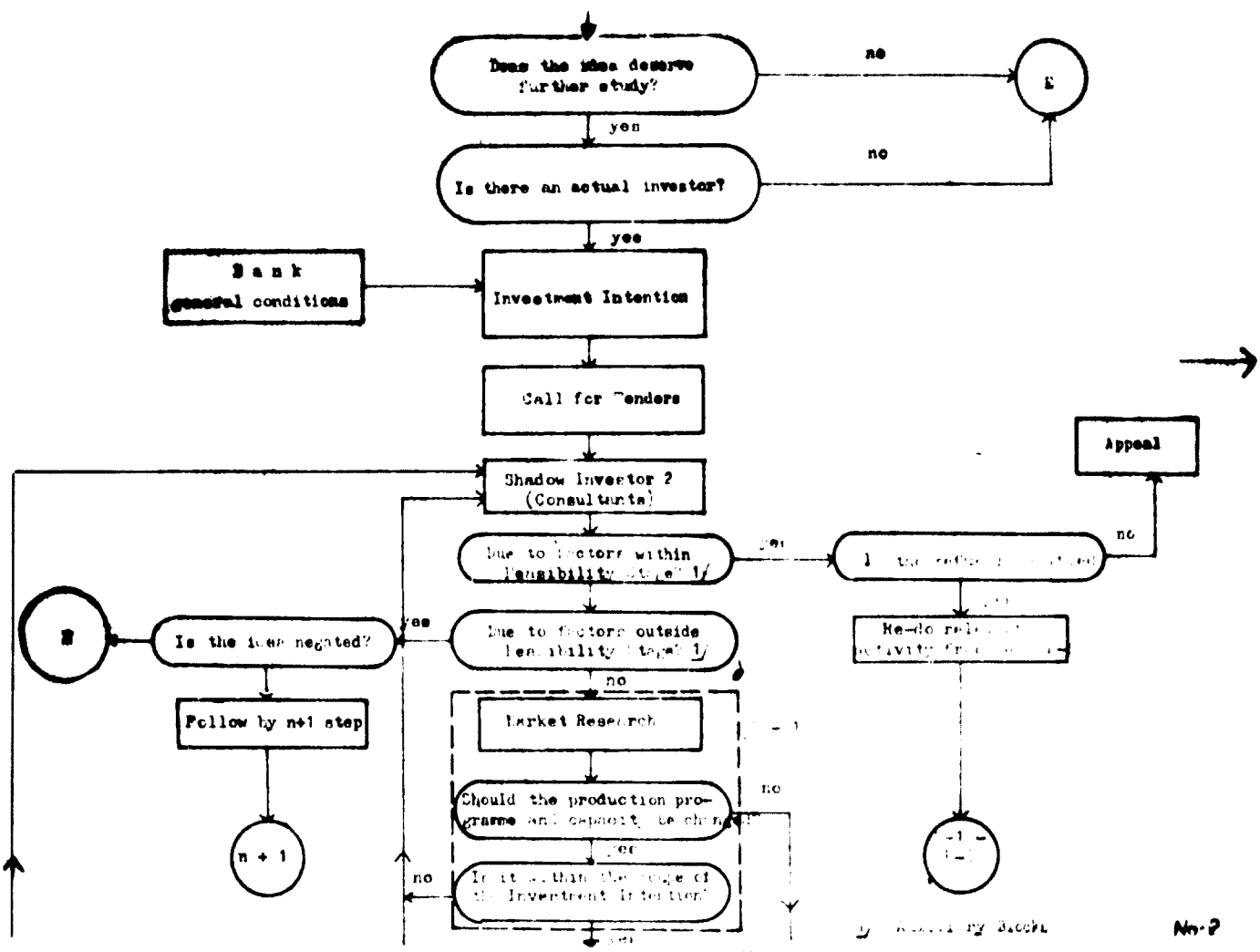
A simplified scheme is given below:

/...

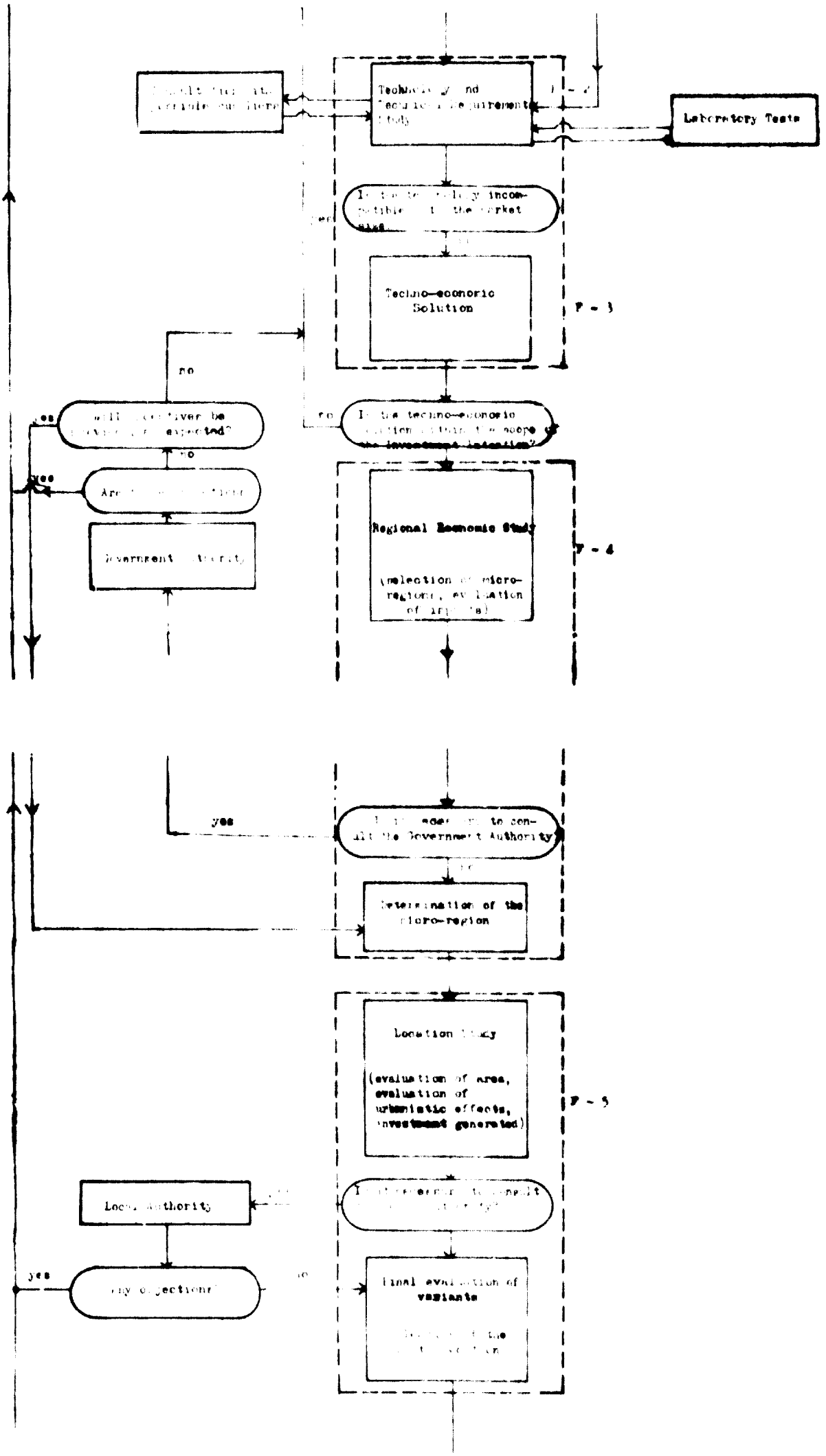

T E
Techno-economic Section
(variants)
L
Location Section
(variants)
R E
Regional (Macro-location) Economic Study
(variants)
Final Optimization
Comprehensive Solution
a
b
c
Other subjects
Implementation

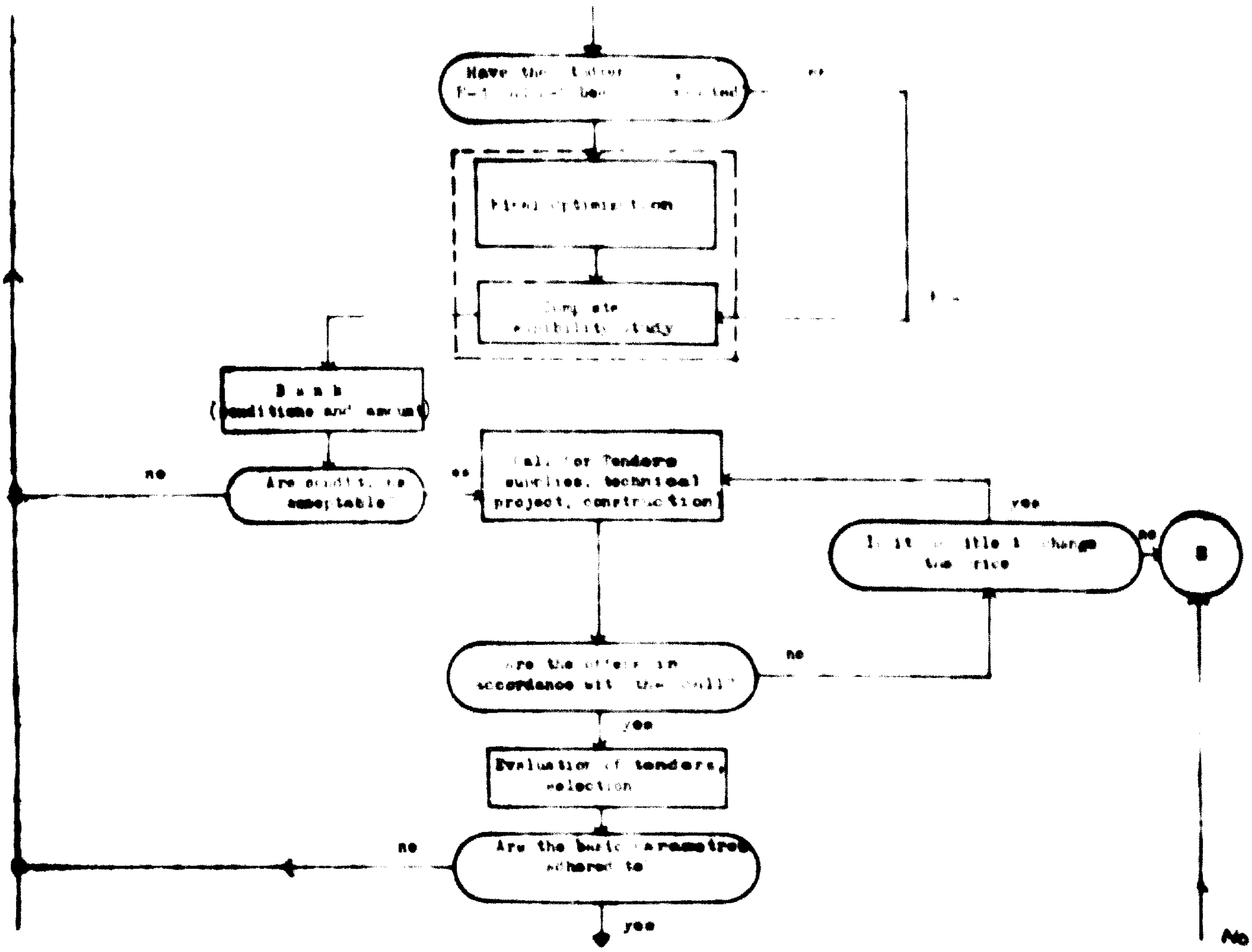

Initiative
Shadow Investor 1
(Promoter
yes
Initiative 1
no
yes
Is there a guideline as to resources to be utilised or demand saturated?
Initiative 2
no
No guidelines?
Evaluation of existing documents, undertaking OP-1, OP-2, OP-3, OP-4, OP-5, OP-6
see Scheme No. 2
Opportunity Study
Opportunity Study

No.1

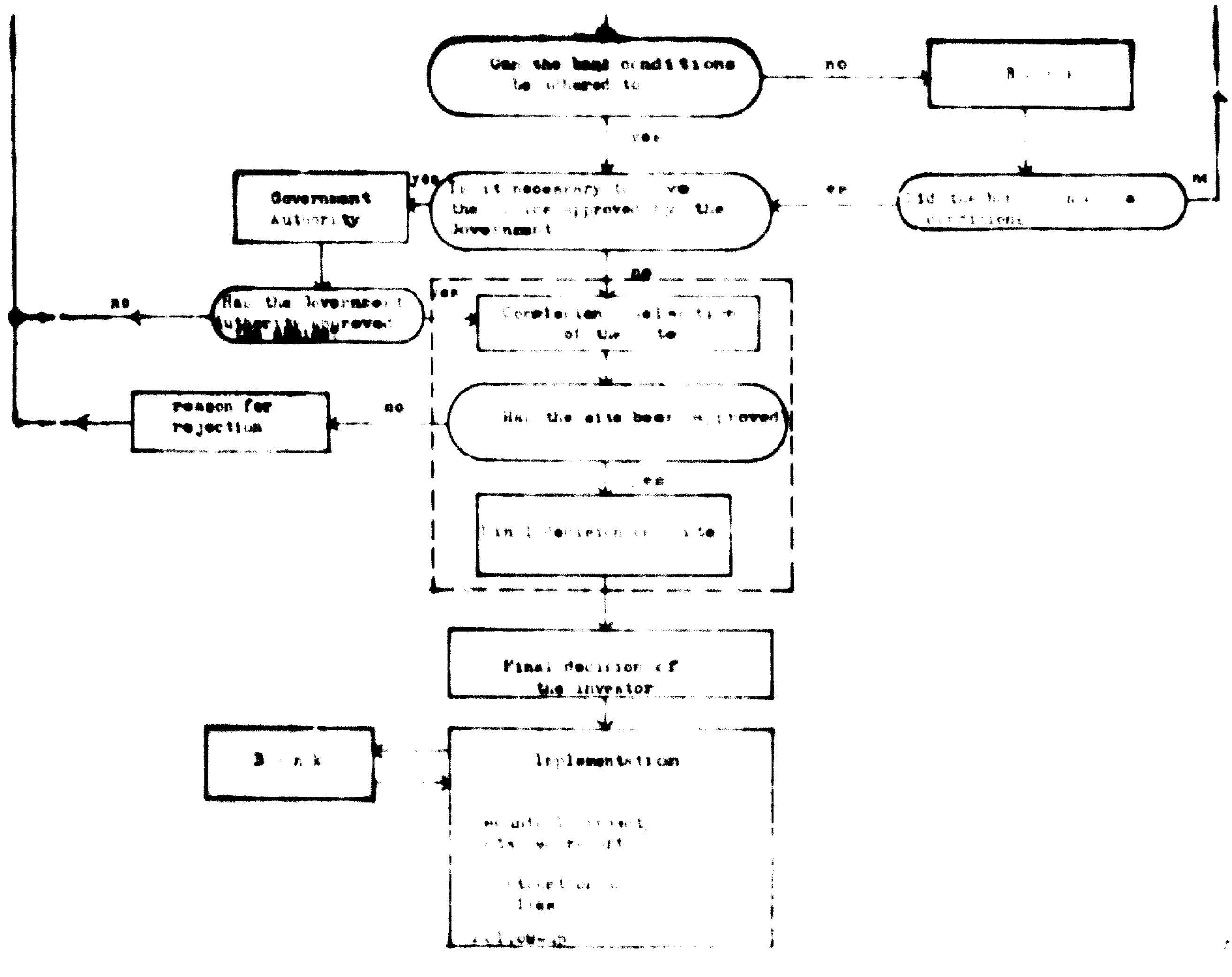

Does the idea deserve further study?
no
yes
Is there an actual investor?
no
yes
Bank general conditions
Investment Intention
Call for Tenders
Appeal
Shadow Investor 2
(Consultants)
no
yes
no
yes
Is the idea negated?
Follow by n+1 step
n + 1
no
Market Research
Should the production programme
no
yes
no

No.2

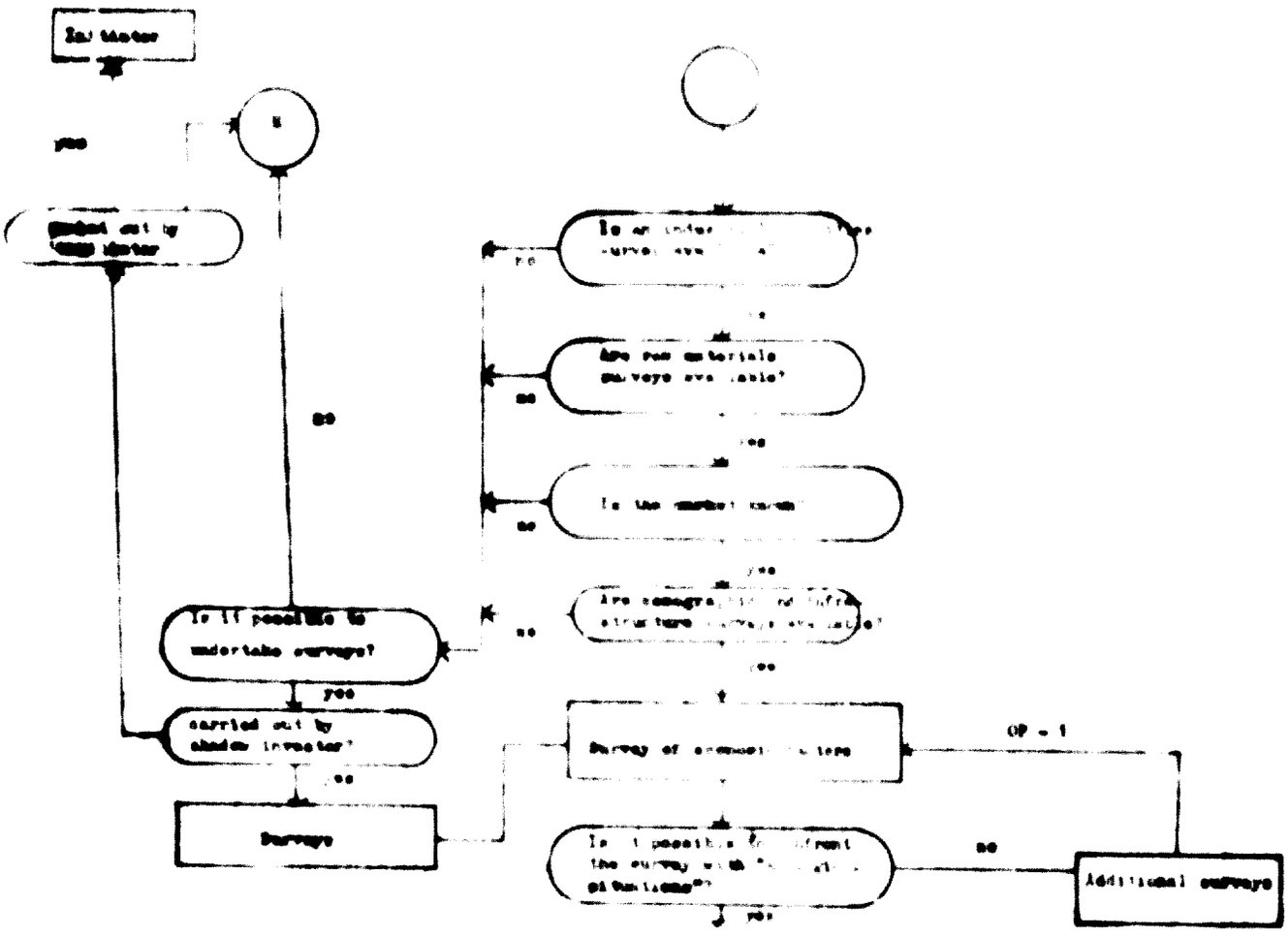

Laboratory Tests
Techno-economic Solution
P - 3
no
yes
no
yes
Regional Economic Study
P - 4
yes
Location Study
(evaluation of area, evaluation of urbanistic effects, investment generated)
P - 5
Local Authority
yes
final evaluation of variants


Bank
(conditions and amount)
no
Are conditions acceptable
Call for Tenders
supplies, technical
project, construction
yes
B
no
yes
Evaluation of tenders,
selection
no
Are the basic parametres
adhered to
yes

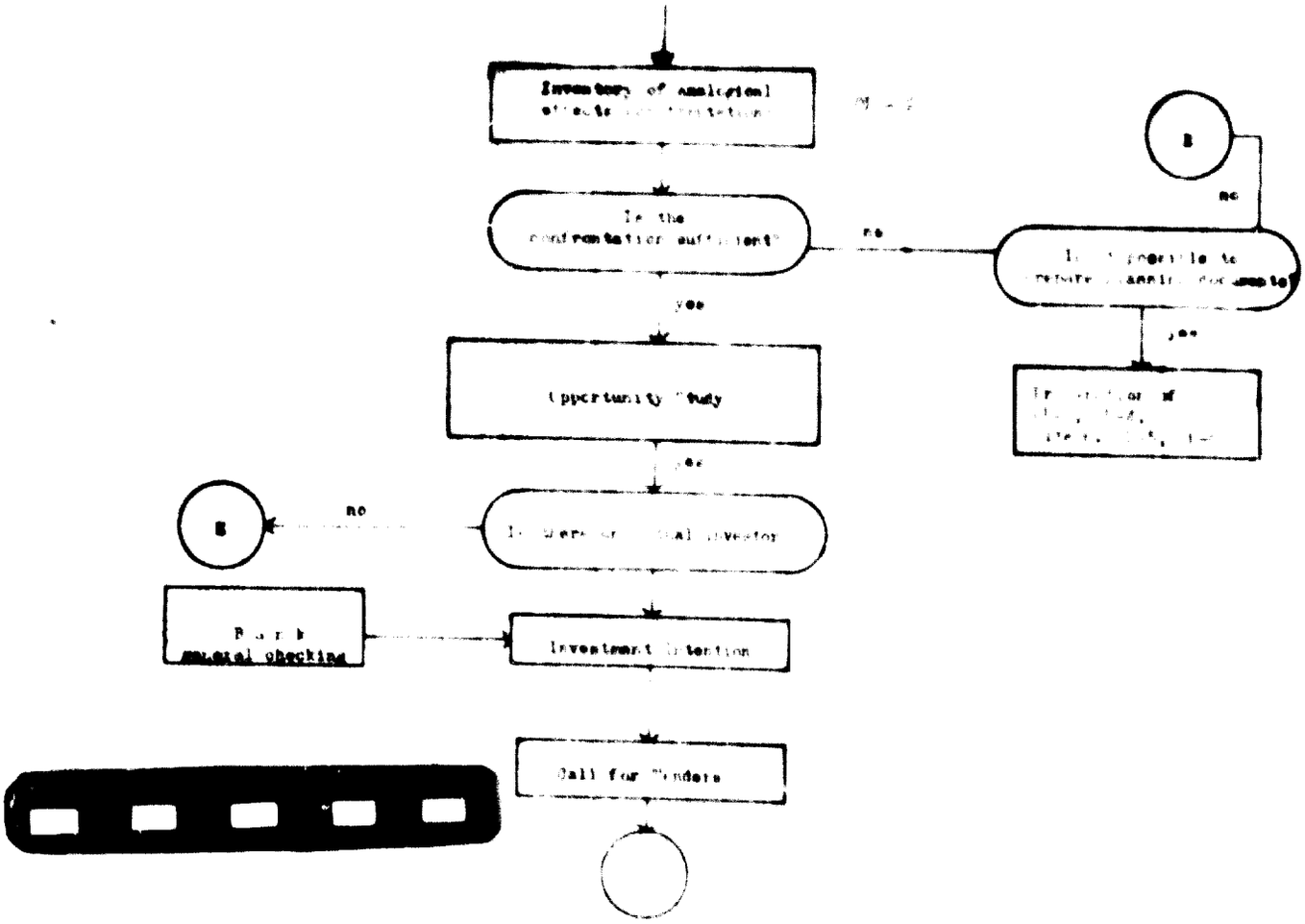
No 5


Can the bank conditions
be adhered to
no
yes
Government
Authority
yes
no
reason for
rejection
no
Has the site been approved
Final decision of
the investor
Bank
Implementation

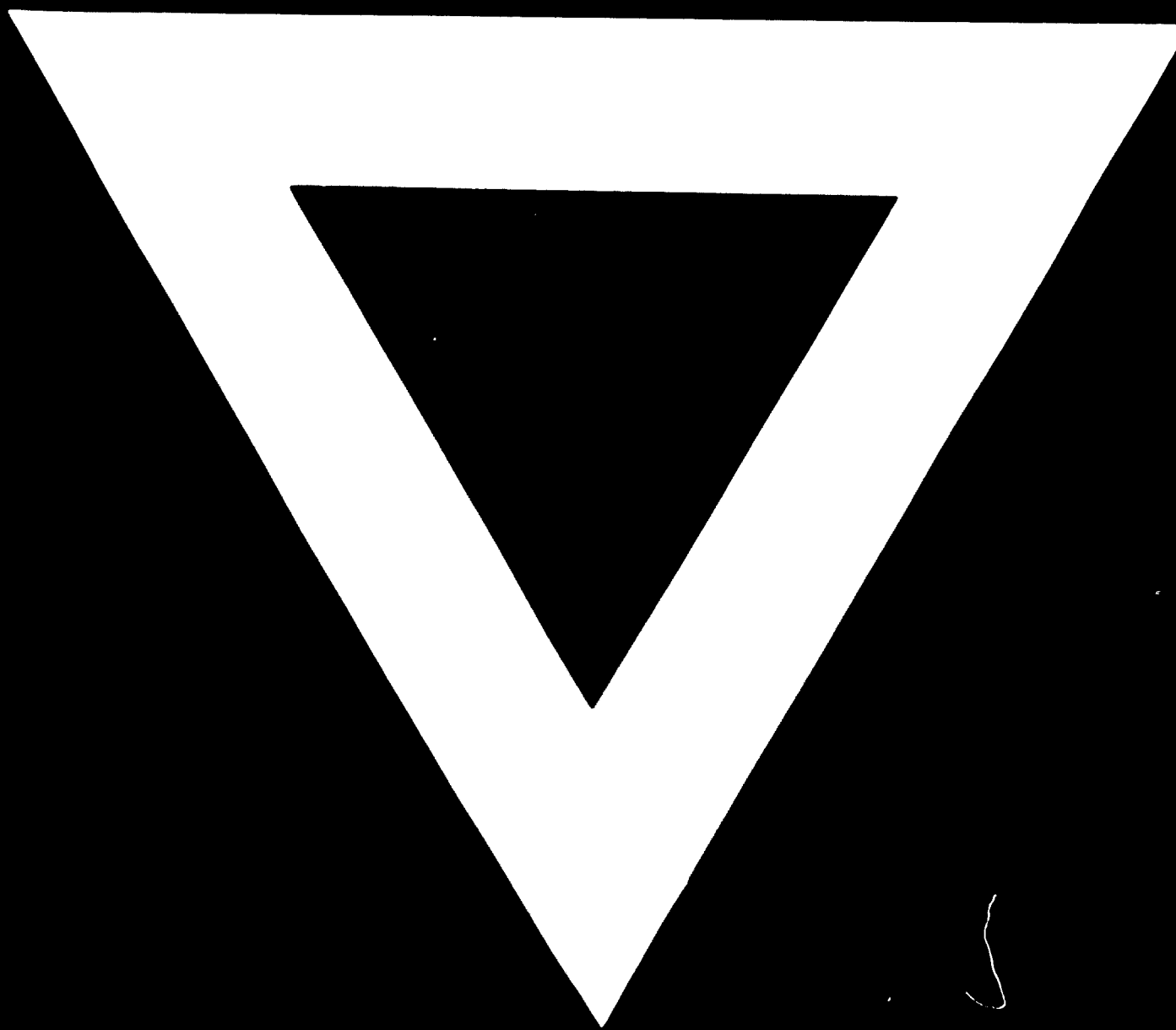
No 6


yes
no
yes
no
yes
no
yes
no
yes
Is it possible to undertake surveys?
yes
Carried out by
Surveys
Survey of
OP = 1
Additional surveys
no
yes

No 1


Inventory of
Is the
no
yes
Opportunity Study
yes
no
Bank
Investment intention
Call for Tenders

No 2



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