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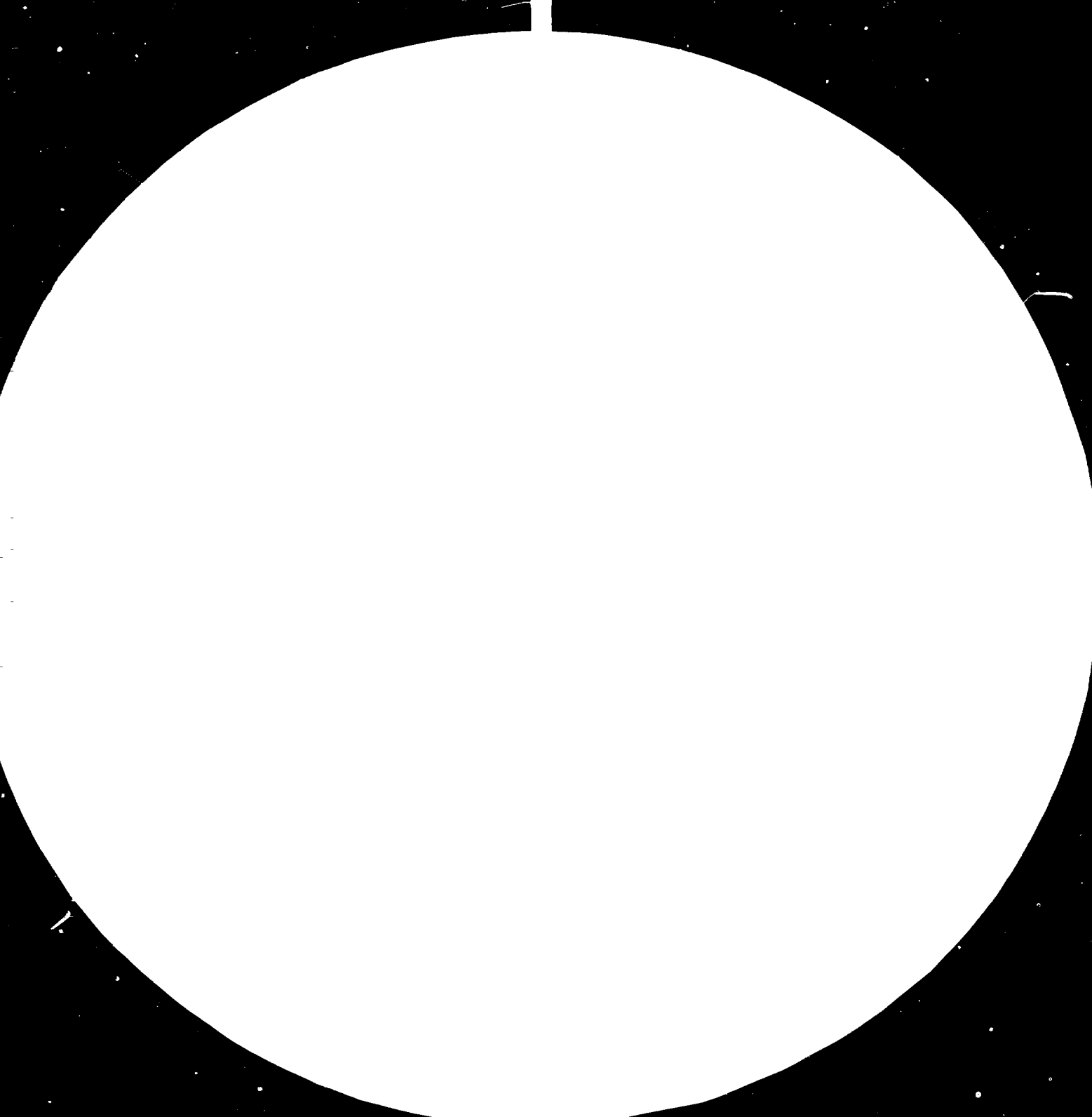
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Resolution Test Chart

Resolution Test Chart



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A UNIDO Case Study
on the application of the logical framework concept
to the design of institution-building projects*

Prepared by Evaluation Unit
Division of Policy Co-ordination

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INTRODUCTION AND PURPOSE

1. Guidelines and instructions on project design have been issued by both the UNDP and UNIDO which incorporate the "logical framework" concept both in the design and subsequent evaluation of technical co-operation projects. The purpose of this "case study" is to illustrate the application of this concept to an actual UNIDO-executed project.
2. Please refer to: (a) UNDP Policies and Procedures Manual, Chapter 3400, the Project Cycle; (b) UNDP Guidelines on Project Formulation (G3400-2); and (c) DPC Guidelines on Technical Co-operation Project Appraisal, dated 31 May 1976. This case study was developed on the basis of these guidelines which are still in effect.
3. Assistance in the application of these guidelines to specific project proposals is available from the Programme Development Branch and the Evaluation Unit of the DPC.

Raymond E. Kitchell
Senior Evaluation Officer

An Example of a Project Design Using the Logical Framework
(based on an actual project)

A PROPOSED FRAMEWORK FOR SASMIRA

PROJECT REDESIGN*

PROBLEM:

In reviewing the project files and in discussions with the Chemical Industries Section, the Office of the Resident Representative, the SIDFA and the Director of SASMIRA, it has been concluded that the function or purpose of the project, i.e., institution-building, has not been sufficiently clarified in the original project (design) documentation resulting in the means (establishment of a demonstration or pilot plant) being confused with the end (establishment of a new Fibres Division). If the design is not corrected accordingly, it can lead to future difficulties concerning scheduling of inputs, appropriate work programmes, and indicators of successful project completion (i.e., the expected end-results of project activity) agreed to by all the parties concerned, namely, the Indian Government, UNDP, FRG, and UNIDO.

PURPOSE:

The framework provided below is an accurate description of the situation in terms of the setting, major design elements and causal logic but illustrative insofar as specific targets, work programmes (activities) and inputs are concerned. It also conforms with the UNDP policies and procedures included in Chapter 3400, the "New Dimensions" emphasis on outputs and their intended impact, and the project formulation, appraisal and design guidelines issued by UNIDO on 31 May 1976.**

If the framework is accepted by all parties as a reasonable representation, and it only represents a more accurate design, not a change in project purpose or concept, the detail is readily available and the prodoc need not be amended until necessary for other reasons. At that time, the new design can be formally introduced and include, in addition to a new statements of the development objective and the immediate objective of the project,

* Developed during field mission to India in 1976 as part of the joint UNDP/UNIDO evaluation study of textile industry projects.

** As supplemented by memorandum of 6 December 1977.

summarized statements of the outputs with sufficient detail to make them meaningful. In the meantime, the informal design can be used for project management and control purposes.

SUGGESTED FRAMEWORK:

Development Objective

The Government of India is committed to a plan for the expansion of existing synthesis fibre plants and the establishment of new ones, increasing installed capacity to over 50,000 tons per year for nylon tire cord and other industrial yarns and over 66,000 tons per year for polyester staple fibre and polyester filament. This strategic goal is an important element in the attempt of the Fifth Plan to attain economic self-reliance with backward integration through petrochemical intermediates to crude oil. In brief, GOI is encouraging the use of nylon, polyester and acrylic as textile fibres in order to reduce its dependence on imported raw cotton and introduce a multi-fabric policy.

Development Hypothesis or Causal Relationship of Project to Above*

A review of the synthetic fibre industry, which employs a sophisticated technology, shows that most of the existing plants in India were established using imported technology but they soon become dependent upon their own resources, often insufficient, for generating or procuring technical information. New plants to be established are like to be in the same category, starting with up-to-date facilities but lacking sufficient resources to keep pace with advancing technologies. Therefore the Government has decided to encourage indigenous research, development and technical services as one element in a comprehensive government programme of policy and other interventions designed to achieve the above stated development objective. Examples of such actions, which are not directly related to the SASMIRA project but are strategic or critical to achievement of the development objective, include adequate tariff protection from synthetic fibre imports, similar activity on acrylic and polypropylene fibres where the production processes are fundamentally different, investment promotion and protection, etc.

The Council of Scientific and Industrial Research (CSIR) which assisted in the establishment and continues to support 50% of its net annual

* The raison d'être for the project.

operating expenditures, considers SASMIRA the most suitable organization to provide assistance to the synthetic fibre industry in applied research, training and supporting technical services which are deemed necessary to support the expansion and continued viability of the synthetic fibre industry. By supporting SASMIRA, UNDP, UNIDO, and the FRG share the Government's proposition that the achievement of the immediate objective of this project (i.e., creation of a Fibres Division) will have a significant and continuous impact on the problems facing the industry and will contribute substantially to the achievement of the development objective. (NOTE - a direct, quantifiable causal relationship to the development objective, because of the many variables involved, will not be possible but an evaluation of SASMIRA's performance of its mission and services rendered to its targeted clients will be possible after project completion).

Immediate Objective (or project purpose)

To establish a Fibres Division in SASMIRA which will provide a range of research, technical and training services to the synthetic fibre industry (nylon and polyester) designed to help it expand (Function - institution building).

(NOTE - The amplification of this statement will be, in effect, the functional activities to be carried out by SASMIRA in this area. In evaluating the successful achievement of the immediate objective, however, it will be necessary to assess such factors as utilization rates, industry linkages, placement of graduates, commercialization of research results, impact of training on plant management or production, etc. This should be done by the Indian Government, presumably CSIR, some years after the project has been completed (i.e., project outputs produced). UNDP and/or UNIDO could assist but only if requested and resources are available. It should, however, be privy to the results of such an evaluation).

Project Hypothesis

The project aims to establish a service, oriented towards the interests of the textile industry as a whole, which can carry out systematic programmes of experimental work and training: collect and disseminate technical information; provide consultant services upon request; act as a non-partisan consultant or arbitrator; and provide an impartial communications system between fibre producers, textile mills, the textile trade and consumers.

If the outputs provided below, which are oriented around the establishment of a demonstration plant for the production of synthetic fibres, are produced the immediate objective will be successfully achieved, i.e., sufficient capacity will be created or strengthened to meet the projected demand for functional activities (services). However, to some extent this is dependent upon the following critical assumptions which are outside the control of project management, namely, that CSIR and industry support continues at least the same scale as in 1976, GOI policy towards the industry remains facilitative; synthetics remain comparably competitive with cotton on the domestic market.

Outputs

(NOTE - the expected end-results of project activity can be grouped in a variety of ways, (e.g., by organizational unit, type of client, function) and should be categorized in whatever manner makes the clearest presentation for communication, presentation, and management control purposes. The following functional categorization of outputs is provided for illustrative purposes.* However, to the extent possible, data has been extracted from the existing Prodoc and SASMIRA publications).

1. A training and education capacity for synthetic fibres established and functioning by 1979

a. Planned Programme (projected demand)

(1) Operator level courses in polymerization and production, melt spinning and yarn engineering, utility engineering. Each training course to last six months with 10 participants. The three courses will be given in sequence so that each course will be repeated every 18 months.

(2) Supervisory/superintendent level

Diploma course in man-made fibre production. Six semesters duration, 15 students, with new course annually. Three semesters in fundamental theory followed by three semesters specialization in plant operation.

Certificate course in man-made fibre production. Two year evening course, 15 participants, with new course starting annually.

* Usually termed "activity modules". For further guidance on developing output statements, refer to UNDP programme note on Industrial Research and Service Institutes (IRSIs).

Post-graduate diploma course in man-made fibre technology.
Full-time 2 semester course designed for university graduates in chemical engineering as a specialization course to replace training abroad. Ten students per year.

- (3) Management level - ad hoc, specialized courses, lasting from one to 10 days and covering contemporary topics (more specification needed for planning purposes).

b. Existing and available capacity (baseline data)

(illustrative of detail required)

(1) Operator level

(a) Staff:

| skill composition: | <u>man-days</u> |
|--------------------|-----------------|
| engineering | XX |
| production control | XX |
| chemical etc. | XX |
| | <hr/> |
| Total by skill | XXX |

(b) Physical facilities:

| | |
|-----------------------|---------------------|
| class room space | XX sq.ft. and hours |
| access to pilot plant | XX hours/course |
| laboratory | XX hours/course |
| other | XX ? |

(c) Teaching materials:

Curricula (polymerization and chip production
(melt spinning and yarn engineering
(utility engineering
Textbooks and training material
Other

(d) Administrative support

(2) Supervisory/superintendent level

(a) Staff:

| skill composition | <u>man-days</u> |
|----------------------|-----------------|
| production theory | XX |
| plant operations | XX |
| chemical engineering | XX |
| etc. | XX |
| | <hr/> |
| Total by skill | XXX |

| | |
|---------------------------------|----------------------|
| (b) <u>Physical facilities:</u> | <u>man-days</u> |
| class room space | XX sq. ft. and hours |
| access to pilot plant | XX hours/course |
| laboratory | XX hours/course |
| other | XX ? |

(c) Teaching materials:
curricula
diploma course
certificate course
post-graduate course
textbooks and training materials
other

(d) Administrative support

(3) Management level

| | |
|------------------------|-----------------|
| (a) <u>Staff:</u> | |
| skill composition: | <u>man-days</u> |
| economics | XX |
| marketing | XX |
| industrial engineering | XX |
| pollution control | XX |
| cost accounting | XX |
| Total | XXX |

(b) Physical facilities:
(same as above)

(c) Teaching materials:
curricula
marketing
feasibility studies
pollution control
cost control
work scheduling
etc.

c. Output targets (difference between a. and b.)

Targets

The time-phased targets (also called objectivity verifiable indicators of outputs and major events) are obtained, within the scheduling requirements and resource constraints given, simply by subtracting the baseline capacity (that which is now in existence) from the capacity needed to carry out the planned programme. These targets then become the results expected from the project work-programme, i.e., a series of activities specifically designed to convert inputs into outputs or, at a lower level of aggregation, targets.

For example, when the staff requirements are totalled for all levels of training, a picture such as the following might emerge:

| <u>skill/ position</u> | <u>required man-days</u> | <u>available man-days</u> | <u>target (1980)</u> |
|--------------------------------|------------------------------|-------------------------------|--------------------------|
| Division chief (plant manager) | 55 | 0 | 55 |
| Production engineering | 100 | 25 | 75 |
| Training Officer | 150 | 50 | 100 |
| Textile Technologist | 75 | 0 | 75 |
| Mechanical Engineering | 100 | 100 | 0 |
| Chemical Engineering | 75 | 25 | 50 |

The above should be worked out in detail for each programme level and sub-category and then summarized by skills and man-hours. To the extent useful, a similar exercise should be undertaken for targets pertaining to physical facilities (but see statement on output No. 4). teaching materials and administrative support.

Work Programme

Having established the targets for the institutional training output/capacity required, the next step is to develop a work programme to fulfill these targets. Instead of meaningless statements such as "training abroad" and "implementation of training programmes", the descriptions should show how the required inputs will be converted into outputs. For example, it should include descriptions of the following:

- how and when staff will be acquired, e.g., recruitment from industry, universities, etc.
- how and when staff will be trained to carry out their duties,

including training abroad, on-the-job training, exchange with industry, apprenticeship with skilled personnel (local and foreign), exchange with similar institutions, etc.

- how they will be used to develop curricula, teaching materials, etc.
- how the physical facilities, particularly the pilot plant, will be used to train the staff itself.

Inputs

Having now developed the work programme, one has a logical and retracable basis to detail and justify the required resources and the necessary scheduling to meet target completion dates. Again, the detail should be worked out at each programme level before being summarized.

It is at this point where a determination can be made as to what resources can be provided by SASMIRA, what assistance is required of the Government and the industry itself, and what outside (UNDP, UNIDO and FRG) assistance is required and, equally important, how each will contribute to reaching the targets and producing the training output. One will also be able to explain clearly what affect the delay or reduction of input deliveries will have on the work programme, schedules, and targeted achievements.

The above descriptions have been given to explain and illustrate the methodology involved in project design. It will not be repeated for the remaining outputs which are included here only in summarized form, i.e., without detailed targets, to complete the logical framework. (NOTE: there are alternate ways to describe and group outputs).

2. A capacity for research, development, experimental and pilot runs established by 1981

Under this output would be included the initial planning of a basic and applied research programme, establishment of appropriate industry linkages, use of the plant for trial runs and scale-ups, etc.

3. A capacity established to provide direct technical services to the industry by 1980

Here we would include such services (functional activities) as problem-solving and consulting activities, feasibility studies, standards, quality control, testing, and other "activity modules".

4. A demonstration and pilot plant installed and fully operative by 1978

While this output will serve and be served by other outputs, it is programatically convenient to list it separately so that the physical facilities, equipment, and operation and maintenance staff may be specifically planned for and reported separately.*

5. A capacity for technology transfer and adaptation established by 1978

Here can be included such programmes as information collection and dissemination, staff and data exchange, linkages with technological centers (domestic and international), industry seminars and conferences, publications, library, etc.)

PROJECT MANAGEMENT:

Project Design and Project Document

The development objective(s), problem analysis, development hypothesis and probable impact, and justification for the project should be extracted and summarized from the data suggested in the model and included in the prodoc when next revised [for other reasons].

The immediate objective and project hypothesis should also be included. Output statements in sufficient detail to judge their credibility should also be included. Summarized workplans and input schedules, specifically related to each output, should also be included to illustrate the approach to be taken. Detailed supporting data, (i.e., targets, verifiable indicators, means of verification, workplans, and input specifications) should be prepared as backup but not included in the prodoc so that operational flexibility is provided. Such data should be used, however, in subsequent monitoring, reporting and evaluation exercises.

Critical assumptions such as necessary GOI actions at each design level should also be included and end-of-project-status-indicators suggested.

Implementation

The major focus on project reporting and UNIDO/UNDP monitoring should be on progress in producing the specified capacity-oriented outputs and not, per se, the services rendered to industry by SASMIRA and project staff, or the simple delivery of inputs. An annual tripartite review of progress and problems should take place using the data as detailed above.

* The plant itself is being provided by a contribution from the FRG.

Evaluation

It is important to distinguish between the project levels and type of evaluations. On-going projects are evaluated at strategic times to review project design and relevance, check on the delivery of inputs by all participating parties, and determine if satisficatory progress is being made in producing the targeted outputs, i.e., performance. Funds should be included in the project for UNIDO participation when such evaluations are expected to lead to major decisions.

At completion of project operations, evaluation can determine if the planned outputs have been produced accordingly to pre-determined end-of-project-indicators.

Evaluating whether the immediate objective or purpose has been achieved, i.e., creation of a viable Fibre Division serving the textile industry, may take three or more years after project completion and will utilize provision of adequate budgets or other income sources, use of graduates quality of services, industry linkages, peer recognition as center of excellence, etc. The assessment of the success of a project in those terms is, in most cases, perhaps best left to the government and industry.

Evaluating the impact or causal relationship between the increased capacity within SASMIRA and SASMIRA's impact on the targeted industry will be a long-term proposition and subjective at best and again should be left to GOI planners and administrators.

In summary, UNIDO and UNDP will be involved in on-going (performance) and terminal evaluations which should be included in the work plans and the prodoc. Participation in any subsequent evaluation for verification of achievement of the immediate objective of the project should be undertaken only at the invitation of the GOI.

