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INDUSTRIAL DEVELOPMENT SUPPORT SERVICES

DP/SAU/89/022

SAUDI ARABIA

Report of the evaluation mission*

Prepared in cooperation with
the Kingdom of Saudi Arabia,
the United Nations Development Programme, and
the United Nations Industrial Development Organization

* This document has not been edited.

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IN-DEPTH PROJECT EVALUATION

<u>Project Number:</u>	SAU/89/022
<u>Project Title:</u>	Industrial Development Support Services
<u>Executing Agency:</u>	UNIDO
<u>Total Budget:</u>	US\$ 1,839,389 (as of 28/7/93 of which US\$400,000 is IPF and the remainder Government cost sharing.) The project had an additional Government cost contribution component of US\$1,444,370 as of 28/7/93.
<u>Government Implementing Agency:</u>	Industrial Affairs Agency, Ministry of Industry and Electricity
<u>Date Operations Started:</u>	1 July 1990
<u>Date Project Approved:</u>	24 June 1990
<u>Dates of Evaluation:</u>	3-10 October 1993
<u>Members of Evaluation Team:</u>	Mr H.D. Shutt, on behalf of UNDP (Team Leader) Mr O. Gonzalez Hernandez, on behalf of UNIDO Mr M.S. Al-Jarboa, on behalf of the Saudi Government

I. SUMMARY

Project Concept and Design

The basic concept of the project was sound and in line with needs. Yet although the specific objectives and outputs defined in the project document were consistent with the basic concept, it is felt that because of (a) a lack of sufficient government input into the preparation of the document, (b) a deficient reporting structure within the Industrial Affairs Agency (IAA) of the Ministry of Industry and Electricity (MIE), which hampered communications with the project and (c) the lack of a full-time national project coordinator, many objectives subsequently proved not to be implementable.

Project Implementation

In addition to the constraints inherent in the design the project was adversely affected during implementation by unrealistic planning of the activities of project experts, with the result that too much time was spent on ad hoc assignments on top of the outputs specified in the project document. This also limited the effectiveness of on-the-job training, as did the restricted availability of national counterparts. Yet the main problem experienced in implementation surrounded the computerised integrated information system (IIS), where repeated failure by the sub-contracted firm responsible to meet its commitments prevented this component from producing any results at all. An important factor contributing to the failure to deal with this problem effectively has been the lack of unified backstopping support from UNIDO and the failure to address it in PPERs and TPRs even when the extent of the problem was already quite well known.

Project results

Only 4 of the 14 outputs specified in the project document have been completed and the only area where there appears to have been a significant impact on policy is that of foreign trade. The quality of the inputs provided by the project is judged to be satisfactory. The achievements in respect of training are a clear advance over those of the preceding project, even though the precise impact of this component is hard to measure. However, it cannot be said that the aim of enabling the IAA to carry out independently the functions described under Immediate Objective 1 in the project document by the end of the project has been achieved to more than a very limited extent. One reason for this, apart from the constraints to availability of counterparts for on-the-job training, is the failure to carry out the study of management and organisational procedures in the IAA (Output 2.3).

Findings

The most important conclusions arising from the evaluation are:-

1. Implementation was severely hampered by the lack of a full-time national project director;
2. Partly as a consequence of 1 there was a failure on the part of the national authorities to consider the project as "theirs" rather than a UNIDO project;
3. Supervision and control of the IIS component were inadequate both on the part of the Government, the CTA and of UNIDO backstopping staff in Vienna;
4. While the training of staff appears to have been much more effective than under the preceding project, the long-term benefits in terms of institution building are limited by the lack of a clear policy relating to manpower development and career structures within the IAA.

Recommendations.

For the remainder of the present project. The main task should be to ensure the completion, to the maximum extent possible, of the IIS, in line with the corrective measures set out in Annex III.

Improvements to the structure of a new project. The principal requirements are as follows:-

- Greater involvement of the MIE from the outset in the preparation of the project document.
- The project should be managed by a National Project Director reporting to the Deputy Minister rather than under the direct control of the Deputy Minister himself.
- The institution-building component should include an element of short local training courses (carried out by experienced trainers) on specific topics to supplement the on-the-job training received at present.
- The benefits of on-the-job training would be increased if more departmental officials (below the level of Department director) could be involved in certain aspects of direct support - e.g. assisting the project experts in data collection and analysis. This would also make possible the more cost-effective use of project experts' time.

Lessons Learned

- It is important for a project to be felt from the design phase on by the counterpart institution as "their own". If there is an international CTA, a full time counterpart should be provided with a view to his assuring continuity and an independent capability within the recipient organisation at the end of the project.
- Human resource development within any organisation can only be successful where both (a) the internal organisation structure is appropriate and (b) there is a satisfactory career structure and manpower development policy.
- TPRs and PPERs should be used as effective instruments of project monitoring and not only as an administrative formality.
- When a project experiences serious problems, an in-depth evaluation should be called for immediately and not postponed until a stage where problems become unmanageable.

II. PROJECT CONCEPT AND DESIGN

A. Context of the project

The project document was clearly drawn up bearing in mind the economic and sectoral priorities laid down in the Fifth 5-Year Development Plan (1990-94). As such it took account of (a) the importance given to the manufacturing sector within the macroeconomic growth strategy and (b) the particular emphasis given to certain sub-sectors such as chemicals and food processing. It can therefore be said that the project concept was precisely in line with announced policy objectives relating to the manufacturing sector at the time it was formulated (1989-90).

Equally the institutional arrangements were in principle entirely appropriate, given that the designated implementing agency for the project - the Ministry of Industry and Electricity (MIE) - has responsibility, within the Saudi government structure, for development of the manufacturing sector and that within the MIE the Industrial Affairs Agency (IAA) is responsible for the coordination and execution of policies relating to the sector.

B. Project document

Government involvement in drafting. As far as can be determined, although the project document was discussed with government representatives at an early stage, it was mainly drafted by the CTA (already in post under the preceding projects) in consultation with UNIDO and UNDP. Subsequently (in June 1991) a revision was made at the behest of the government, whereby the content of outputs 1.2 and 1.3 were adjusted and it was determined that these would be carried out through the participation of short-term consultants rather than (as provided for in the project document) of resident experts.

Main problem addressed by the project. Section B (Project Justification) of the project document clearly indicates that the "limitation in institutional capacity" in the IAA is the main shortcoming the project is intended to address, and that this is to be done by means of 1) institution building and 2) direct support, which are defined as the Immediate Objectives of the project.

Identification of users of outputs. It is quite clear that the defined outputs are mainly intended for internal use within the MIE itself, with a view to improving the effectiveness of its planning and policy making capabilities. However, it is also indicated in the project document that a significant proportion of the information to be generated (such as project profiles and statistical data) is expected to be useful both to other government departments (e.g. Ministry of Commerce) and to industrial corporations in both the public and private sectors (including prospective foreign investors).

Work plan. No work plan was included in the project document. Instead annual work plans were prepared and approved at the beginning of each year's operations (in line with the recommendations of the evaluation of the preceding project). It is notable that, whereas the first such work plan (covering the 1990-91 period) linked each proposed action to a specific output defined in the project document, subsequent work plans had only a partial connection with it.

Institutional factors. Arguably the central weakness in the design of the project was the lack of a National Project Director within the IAA acting as full-time counterpart to the UNIDO CTA. The project document assigns the role of senior counterpart to the Assistant Deputy Minister, while it also specifies that each of the international staff should in addition be assigned one to two counterparts. In fact, the organisational structure of the Ministry, with each departmental director reporting direct to the Deputy Minister, was quite unsatisfactory in relation to the need for effective coordination and flexibility in the execution of the project, while both the Assistant Deputy Minister and the Deputy Minister himself (who has effectively been acting as counterpart himself since the former was transferred to another post) were at too high a level and burdened with too many other responsibilities to be able to fulfil this role adequately.

Specific Objectives and Outputs. For the most part the objectives and outputs (as set out in the project document) are well formulated and in line with the objectives of the IAA. However, as will be shown in Section III, they have not proved to be entirely consonant with the IAA's actual needs, reflecting both the lack of sufficient MIE involvement in the project design (see above) and the changing policy environment.

With regard to strengthening the capacity of the IAA (Immediate Objective 1) there was seemingly an imprecise and unrealistic perception of the extent to which on-the-job training could be programmed to produce specific results, bearing in mind the unpredictable availability of counterpart staff and the need in practice to maintain flexibility in the use of project staff in providing direct support to the Minister and senior officials on an ad hoc basis.

At the same time, it is inherently difficult to translate on-the-job training targets into a measurable output. (Even in the case of more formal methods of training the results are open to question where they are presented merely in the form of numbers who have attended courses without there necessarily being any way of determining the extent to which the beneficiaries' skills may thereby have been enhanced). It should be noted that this weakness was fully recognized during the preceding project (SAU/86/004) and highlighted in the report of the evaluation mission (DP/ID/SER.C/23), but that no effective steps have been taken to address it in the present project. In principle the drawing up of an annual Training Plan (Output 1.1) was supposed to help overcome this problem, although the plans produced failed to define any measurable targets and it is hard to see how they could have done so. This approach was none the less an improvement over that under the preceding project.

Another potential obstacle to the achievement of the institution building objective is the evident lack of a clearly defined career structure or manpower development policy within the MIE. This deficiency clearly increases the risk that staff, once their own skills have been enhanced through training under the project, will leave the Ministry for positions elsewhere which they perceive to be more rewarding and with greater prospects.

III. PROJECT IMPLEMENTATION

A. Activities

The implementation of activities foreseen under the project was hampered by three main factors:

- Poor coordination of project activities;
- The amount of ad hoc work requested from the experts overexpanded in relation to the activities specified in the original work plan;
- Inadequate supervision and control of the IIS component.

The activities related to the installation of the computerized UNISYS U5095 system (IIS) were executed, mostly under sub-contract with the CCFI consulting firm, but also with the support a number of NPPPs (while additionally IAA staff benefited from related training courses and fellowships). At the end of December 1991, the Review Committee, which was supposed to coordinate and monitor the installation of the system, ceased to exist. This committee was also to ensure the coordination of inputs from end users (i.e. other departments) to the exercise. Furthermore, a NPPP was *"appointed to coordinate, oversee and supervise the (computer) project and the work of the subcontractor CCFI"*. This NPPP served the project until mid February 1993.

Based on documentation obtained by the mission, it is apparent that the CTA was excluded from the Review Committee of the IIS segment of the project, as of early 1992 which he indicated to the national project coordinator in the following terms in a memo dated 29 February 1992: *"I or Mr. Nolan cannot take any responsibility for the computer programme work"*. However, from then on, as the CTA, he was still required to certify a number of documents needed by the executing agency in connection with this programme. In fact the delineation of responsibility for this programme became unclear particularly since during 1992 the CTA and the Industrial Policy Expert were restored to membership of the Committee (document No 37/22/18/7/92). This situation was exacerbated by amendments to the original contract with CCFI resulting from reconciliation of disputes between CCFI and the Ministry, which invariably resulted in additional payments to the sub-contractor. In fact, whereas the amount foreseen in the original contract of SR 318,250 to date total payment of SR 871,855 has been authorised, despite which the system is not operational at the time of the present evaluation. The second visit of the backstopping officer responsible for this segment of the project precipitated further tensions. Details of the various actions undertaken in relation to the IIS component are set out in Annex 1.

With regard to the activities not directly related to the IIS implementation was more straightforward, although, as indicated later in this report, (IV.C) a number of specified outputs were not produced both because of defective design of the project and due inadequate coordination and mismatch between objectives and resources. Thus while activities were mainly in line with the project document, a number were not completed because of lack of response from the main counterpart(s) or when it

became clear that the output was no longer required or the necessary funds had been diverted to another purpose. As a consequence, the cost effectiveness of activities was generally low.

The level of commitment to the project by the responsible government institution (IAA) diminished considerably from the start of operations. From the outset (design phase) the project would have benefited from a stronger national participation, which could have been demonstrated, *inter alia*, by the full-time assignment to the project of counterpart staff. Apart from the failure to utilise allocated funds for the specified purposes the project was managed administratively and financially well. There were no institutional changes nor major national staff turnover during its implementation.

The expertise provided by the project was adequate. However, in view of the importance of the computer segment, it is remarkable that the need for international expertise on this subject was not foreseen at the outset. Experts 11-01 and 11-02 got involved in the subject, which was outside their substantive terms of reference. Only when the problems with the IIS became visibly serious was international expertise on the subject included in the project - only to be soon afterwards deleted. The evaluation mission, as indicated under recommendations, suggests that this expertise is still needed and should urgently be provided.

The equipment provided to the project (UNISYS) was indeed received under the previous project (ref. terminal report DP/ID/SER.B/693). The delays on the part of the sub-contractor in developing the information system (due to failure to meet the schedules under the ORACLE VER.5) have been so long that in the meantime the mainframe (UNISYS) no longer represents the present state of the art, and difficulties arise in using modern software. These difficulties can be solved by upgrading the hardware as indicated in the recommendations.

As explained more fully under IV.G, transfer of expertise was only partially achieved. While the achievements in this respect have clearly been more concrete than under the preceding project, it cannot be said that the IAA has been endowed with an independent capability in any of the fields covered by the project' capacity building component.

B. Quality of monitoring and backstopping

Backstopping of this project by UNIDO is split. The main responsibility rests with the Feasibility Studies Branch, while the computer segment is the responsibility of the Industrial Statistics and Sectoral Surveys Branch (PPD/IIP/STAT). Strictly speaking, the main responsibility is not correctly allocated, since the project would better fit the terms of reference of the Industrial Strategies and Policies Branch (IO/IIS/ISP). However, this has not constituted a major problem. The technical competence of the backstopping officers is not questioned by the evaluation. The reports received from the field (PPERs in particular) did not stress enough the problems experienced by the project, particularly the computer segment.

The most serious cause for concern is that tripartite reviews (TPRs) were not adequately used as the main decision-making mechanism of the project. In particular, the last meeting of 14 December 1992, at a time where the project was already

experiencing problems and after the Assistant Deputy Minister had complained to UNDP on these problems, only concluded that *"the Ministry of Industry was generally satisfied with the overall progress of the project"*.

Although this TPR would have been an appropriate forum in which to raise the problems experienced by the project and decide on measures to overcome these, unfortunately the three parties did not use this opportunity. Once it had become apparent that there were serious problems an in-depth evaluation should have taken place immediately. However, although the TPR decided to undertake such an evaluation, this exercise was repeatedly postponed until October 1993, whereas an earlier evaluation could have pinpointed the problems and recommended solutions much sooner and thus reduced some of the loss in time, if not in resources, which has occurred.

IV. PROJECT RESULTS

A. Relevance

The purpose, approach, modality of execution and the recipient institution (IAA) are still broadly valid under the current economic context, although, as will be made clear later in this report, improvements are needed in the approach to capacity building. The project used the comparative advantage of the UN system in terms of objectivity and knowledge of local conditions and it responded to the perceived needs of the IAA. An increased involvement of the IAA management and personnel would, however, been highly desirable, as would contacts with the private sector (Chambers of Commerce and Industry) by the project.

B. Efficiency

The following matrix has been drawn up to rate performance.

		DESCRIPTION	STATUS
PERSONNEL	Appropriateness	Personnel supplied by the project (both international and national) were skilled. However, expertise on computerisation supplied by the project was not adequate. Experts arrived on time but were only able to partially transfer skills.	Partial/high
	Use	Although experts were capable, their efficiency was hampered by working in areas outside their terms of reference and were not fully occupied in view of changing requirements and lack of full-time counterparts.	Partial
	Composition	Good mix of national/international experts. Too much long-term rather than short-term expertise. Lack of adequate computer expertise in international team.	Partial
	Training	Training abroad was of high quality as well as in the country. On-the-job training was only partial. There was a very low turnover of trainees.	Partial
	Equipment	The equipment (hardware) was delivered during the previous project. Was adequate at the time of delivery. Since then, however, it has become obsolete. The computerised IIS is not operational, and considerable problems and delays have appeared.	Low
	Management	Division of responsibility between CTA and national counterparts, in particular on the computer segment, was not clear. Backstopping was moderate but monitoring was poor.	Low
	Government contribution	No problem with delivery of inputs and cost-sharing, but participation of counterparts starting with design phase was only partial.	Partial

The overall conclusion regarding efficiency is that it was partial.

C. Outputs

Based on information made available to the Evaluation Mission only 4 of the 14 specific outputs defined in the project document have been definitely completed as of October 1993 (Nos. 1.7, 1.8, 2.4, 2.5), although output No. 1.4 is understood to be virtually complete so that it can be assumed it will have been delivered within the (extended) duration of the project.

The reasons for the failure to deliver or complete the other outputs were various, namely:

- External contractors/consultants failed to abide by their commitments (output No. 1.5).
- Necessary data were not available (partly due to failure to implement output No. 1.5).
- Owing to the increasing preoccupation with the non-implementation of Output No 1.5 progressively greater priority was given to trying to deal with this problem at the expense of the completion of other outputs, some of which (e.g. 2.3) were in any case to be linked to implementation of output 1.5.
- Needed financial resources for consultancies were allocated for other purposes.

In respect of each of the broad areas of policy/institution building referred to in the terms of reference (development of a computerised information system; identification of investment opportunities and promotion of foreign investment; development of trade policy; improving quality of industrial statistics and their usage; training of Saudi nationals in the MIE; shifting from direct support to capacity building) the only one where the project seems to have made a substantial impact is that of trade policy development. It can also be said that the achievements in the area of training represent an advance on those under the preceding project, although in the absence of adequate manpower development policy or career structures within the MIE this cannot necessarily be expected to have a lasting impact in building the Ministry's capacity.

As far as could be determined in the limited time available to the evaluation mission, the quality of the completed outputs was of a perfectly adequate standard. As for their timeliness it is not known whether any have had a direct bearing on policy or investment decisions which were pending at the time the work was carried out.

D. Immediate objectives

Institution building (Immediate Objective 1). As has already been indicated, the extent to which this objective may have been attained is bound to be hard to measure given the lack of reliable yardsticks of performance. All that can be said is that the approach to developing the capacity of MIE personnel has been more structured than under the preceding project and has therefore almost certainly been more productive. What remains in doubt, however, is whether the beneficiaries can now be considered

able to exercise independently those skills and functions specified in the project document (identification and promotion of investment opportunities; monitoring of sub-sector performance; production of statistical reports; analysis of foreign trade data and development of policy on trade agreements). Moreover, given the uncertainty arising from the lack of a career structure within the MIE, it cannot be presumed that even if such independent capability has been imparted to certain individuals this will not be lost should they leave the Ministry.

Direct support (Immediate Objective 2). Since this relates to ongoing functions of policy making and planning it is by definition an objective which could never be completely achieved. All that can be said is that support has indeed been provided - whether in fulfilment of outputs defined in the project document or on an ad hoc basis - under all but one of the headings specified in the project document (industrial strategy analysis and development; trade policy development; environmental protection requirements; monitoring the performance of public sector industrial companies; preparation of documentation for international conferences relating to the industrial sector). The one exception is the task of reviewing management and organisational procedures within the IAA, which has been excluded from all work plans at the behest of the Deputy Minister, although its omission has not been the subject of any formal revision of the project document. It is particularly regrettable that it has not been carried out, since it might well have provided the basis for designing more cost effective projects of support services in future, bearing in mind the observed failure of the existing organisational arrangements to permit the IAA to make optimal use of the project.

E. Development objectives

To the extent that the capacity of the IAA of the MIE to develop and implement policies in support of industrial investment, production and export market growth has been enhanced by the project, its potential impact on the economic development of the country as a whole is obvious. For in contributing to the development of the manufacturing sector on a sound and sustainable basis it will have served the central policy goal, succinctly described in the project document, of diversifying the structure of the economy and reducing its dependence on the oil and gas sector.

F. Effectiveness

An increased participation of the national counterpart starting at the design phase would have enabled the project to be regarded as more "national" rather than a predominantly external effort. A National Project Director paid by the project or full time main counterpart would have gone a long way to help in this connection. The computer segment of the project, for the reasons explained in this report, has been a failure. As a conclusion, it can be stated that the overall cost of used resources is too high with regard to results obtained (please see also under 'Outputs').

G. Capacity building

The most important respect in which the project was intended to improve the **enabling environment** was the creation of the computerised Integrated Information System (IIS). For reasons explained elsewhere (see III. A and Annex 2) this

component has not been implemented to the point where it can be said to have led to any enhancement of the IAA's capacity whatsoever.

Any scope for **institutional development** under the project has been precluded by the decision in the course of the project to drop consideration of management and organisational procedures (Output 2.3) from the scope of work.

Human resources development. As already noted (II.B), it is inherently difficult to measure the results of on-the-job training programmes, while even the results of more formal training are hard to define in terms of a permanent enhancement of the skills of those affected. For this reason the evaluation mission can only record the information made available to it by project staff as to the extent and nature of training recorded as having been given. This comprises:-

(i) On-the-job training

<u>Department/Committee</u>	<u>Subject</u>
Investment promotion	Preparation of investment brochure Preparation of investment promotion presentations
Industrial statistics	Preparation of world competitiveness survey Development of new industrial survey Preparation of unit measure coding system
6th Development Plan	Preparation of industrial sector plan
Sectoral studies	Preparation of sectoral studies and investment profiles
Export	Preparation of reports on industrial export performance Appraisal of bilateral trade agreements Appraisal of benefits of Saudi membership of GATT etc Study of plastics export potential Preparation for negotiations between GCC and other trading blocs
International Relations	Bilateral economic cooperation and trade agreements
Encouragement & Protection	Anti-dumping measures

In most cases there has only been one beneficiary among IAA staff from each of these exercises (usually the head of the department concerned, although in the case of the training affecting the Export and International Relations departments 3-4 people were involved in each case.

(ii) Courses / fellowships

Approximately 10 members of the Computer department staff have undergone short courses in computer-related subjects and English language either in Saudi Arabia or other Gulf countries. One of the beneficiaries has subsequently left the MIE.

Some 10-12 IAA staff have undergone fellowship training courses of 3-6 months in the USA and UK. These fellowships have covered economics, finance, marketing, foreign trade, project evaluation, investment promotion, project management, environment. many have also included an English language component.

Summary. Even though the results of this training are difficult to measure it may be concluded that this component was much more structured, and therefore more effective, than under the preceding project.

H. Impact and Sustainability

The following matrix analyses in detail the impact and sustainability of the project.

		DESCRIPTION	CONCLUSION
IMPACT ON	Target groups	Although mention is made in the project document to contacts outside the IAA, de facto the project was not required to have such contacts. Therefore, even if contacts with target groups were desirable, these were not applicable in the context of the project.	Not applicable
	Direct beneficiaries	The direct beneficiaries of the project are the personnel of the IAA. Impact on the personnel of the computer department was modest, in the others, its range from modest to successful. The problems with the computer department have dimmed the positive impact of the project in other areas.	Partially successful
	Environment	The project's intervention on environmental matters was quite limited according to the project document. However, it prepared guidelines on environmental consideration for licensing of projects. These were found adequate and are now under study for incorporation in the licensing procedures.	Successful, where applicable

SUSTAINABILITY	Government commitment	The government interest in the project is evident. They are interested in advice, capacity building and in the installation of the m.i.s. However, this interest was demonstrated in an ambiguous manner, i.e. non-availability of full time counterpart personnel and consideration of the project as a "foreign" effort.	Partially successful
	Socio-economic factors	Despite a certain flattening of industrial activity in the country, long-term prospects in the Kingdom for industrial development are good. However, the economy will increasingly be more market oriented with less public direction and intervention. The role of the IAA will have to be defined under this changing context.	Positive and significant
	Management	Management and backstopping was adequate although not assertive enough. Monitoring was weak and did not address the problems properly.	Mixed
	Finance	The counterpart is the IAA which is financed from the budget.	Not applicable
	Technology	The project is essentially dealing with economics. Industrial technology matters are only marginally covered.	Not applicable

As a general conclusion, it can be stated that impact and sustainability were only partially satisfactory.

J. Follow-up

Improvements to the structure of a new project. Drawing on the lessons of the present project, the following are considered vital modifications to the design of any successor project:-

- Greater input is needed from the MIE at an early stage in the preparation of the project document in order to ensure that there is as much concordance as possible between the predefined outputs of the project and the policy objectives and requirements of the Ministry.
- The project should be managed by a National Project Director reporting to the Deputy Ministry rather than under the direct control of the Deputy Minister himself. This should facilitate far more effective coordination of the work of the experts and more beneficial interaction between the latter and counterparts.
- In order to facilitate more effective monitoring of project implementation the CTA should be required to produce an annual report indicating (a) the extent of work actually carried out (in relation both to the current work plan and the outputs specified in the project document) and (b) the reasons for any failure to meet the objectives set.
- The institution-building component should include an element of short local training courses (carried out by experienced trainers) on specific topics to supplement the on-the-job training received at present. (The CTA has in fact proposed - following the TPR of December 1992 - to undertake intensified training of selected officers along these lines during the remainder of the present project, although apparently no progress has been made to date in implementing this proposal). This would be designed to minimize the risk that certain counterparts may suffer because experts fail to impart their expertise either because of workload conflicts or because of communication problems.
- The benefits of on-the-job training would be increased if more departmental officials (below the level of department director) could be involved in certain aspects of direct support, e.g. assisting the project experts in data collection and analysis. This would also make possible the more cost-effective use of project experts' time.
- The benefits of training and transfer of expertise to be gained from a project of this kind would be much more lasting if there were a proper career structure and manpower development policy in place, thus reducing the risk of the most able staff leaving for more rewarding prospects elsewhere.

Proposed activities for inclusion in a new project. These would comprise direct support/institution building activities, including:-

- Use of PCs for management reports and information use with the related development of specific PC software.
- The preparation of the Ministry's Industrial Plan, which will be part of the Kingdom's Sixth Development Plan.
- The improvement of the ability to respond to requests from IAA management and the business community for industrial data.
- The integration of new industrial survey data forthcoming from SCH.
- Improving the quality of historical data available in the various departments.
- The integration of the harmonized system of commodity coding with the ISIC system of industrial coding.
- Further training in the use of COMFAR and introduction of the PROSPIN methodology to screen project proposals.
- The development of good quality industrial profiles.
- Preparation of project promotion events for foreign and national potential investors.
- Continuation of analysis and advice on the cost benefit of the various potential trade agreements (such as GATT).
- The continued provision of advice on (a) preparation of country profiles, (b) industrial export promotion, and (c) joint commission meetings.
- Negotiation and acquisition of technology.
- The preparation and launching of a sub-contracting exchange.
- The strengthening of the ministerial capabilities on environmental control and monitoring particularly in the industries cities, which started under the present project.

V. FINDINGS

The most important conclusions arising from the evaluation are:-

1. Implementation was severely hampered by the lack of a full-time national project director;
2. Partly as a consequence of 1 there was a failure on the part of the national authorities to consider the project as "theirs" rather than a UNIDO project;
3. Supervision and control of the IIS component were inadequate both on the part of the Government, the CTA and of UNIDO backstopping staff in Vienna;
4. While the training of staff appears to have been much more effective than under the preceding project, the long-term benefits in terms of institution building are limited by the lack of a clear policy relating to manpower development and career structures within the IAA.

The following are the conclusions of the evaluation mission regarding other points which are identified in the terms of reference as being of particular concern.

Quality of direct support services provided. This appears to have been largely satisfactory, particularly in respect of trade policy development. However, in a number of cases (see IV.C) either no response was received or else, because of changed priorities, the work programme was aborted before it could be brought to fruition.

Positive and negative influences. The main reason for the relative success in the area of trade policy development is that (a) this is a more or less discrete activity within one department (Export Promotion) which could be carried on independently of data or other inputs from other departments, (b) the expert concerned is Arabic-speaking and has been less called on to undertake Ad Hoc support services outside the department and (c) was not involved in the activities of the project regarding computerisation.

The negative factors leading to non-fulfilment of objectives and outputs - both those inherent in the design of the project and those relating to defective coordination of its execution - have already been indicated.

Responsiveness of project management to changed priorities. The ability of management to respond to changing conditions has been severely constrained by the lack of an adequate Management Structure for the project (see above - 1.1). This has resulted in substantial amounts of experts' time being devoted to the execution of outputs which subsequently turned out not to be in line with policy priorities and therefore were not completed. None the less it is also true that, at least in relation to the IIS Computer component (output No. 1.5), the CTA failed - partly owing to faulty technical advice - to respond quickly enough to the continuing failure of the contractors to meet their commitments.

Relations with the private sector. Since the project had few, if any, linkages with the private sector, no direct contribution to this sector could be identified by the mission. It was not supposed to liaise directly with Chambers and Trade institutions and therefore such linkages did not take place. Such liaison is assured by the participation of high level Ministry officials in the Governing bodies of such institutions. The adequacy of this arrangement is an issue which should be addressed in a possible future follow-up project.

Impact on planning, policy formulation and investment support. Through the different direct support/training activities the project definitely contributed to an improvement in the ability of the IAA to formulate plans and policies although full sustainability has not been met.

Although some staff of the concerned departments of the Ministry underwent a COMFAR course this is not used regularly since it is only applicable to large industrial projects. It is recommended the PROPSIN system be introduced in the Ministry since this tool is easier to use and more adapted to smaller industrial projects.

The licensing and evaluation department is involved in follow-up of investments from the award of the licence to start-up of operations. However, the project did not participate in such exercises. Further the follow-up role of the Ministry includes the collection of data stored in the statistics Department. The project worked in particularly close collaboration with this department who confirmed the good advice and training in this respect perceived by the project.

Counterpart availability. The availability of counterparts to the project was one of the factors which created difficulties during its implementation and impeded the desirable institution building. Starting at the top level, the National Project coordinator was the Deputy Assistant Minister; after July 1993, the Deputy Minister. Both were at a too high level to assure these functions. As a consequence the project was perceived as a "UNIDO project" and not as a project of the Ministry, as should have been the case. Moreover as far as the project is concerned there is a void between the Deputy Minister and the department directors which has made communication between the project and the Ministry departments difficult to achieve. In fact in August 1992 the Assistant Deputy Minister emphasized that "the experts should not undertake any work (other than those in the approved work plan) requested by any departments or officers unless it had been requested through H.E. Assistant Deputy Minister or H.E. Deputy Minister".

Furthermore the lack of clear demarcation of responsibilities regarding the management of the project, particularly the computer segment, introduced difficulties in relations between the international project personnel and counterparts. At the same time, as repeatedly stated in this report, the lack of full time counterparts introduced difficulties throughout the project and hampered institution building and sustainability of the project. A freeze on recruitment by the IAA also hampered staff availability in relation to the project.

These shortcomings regarding counterparts should be minimized during an eventual follow-up project in the manner indicated in section of this report.

Delays in recruitment. Although there were delays in the recruitment of the Industrial Policy and Computer Advisers (the latter post being subsequently deleted) these did not contribute in significant measure to delaying the production of outputs.

Intra-and-inter-ministerial coordination mechanisms. These were not clearly indicated in the project document. The fact that the principal counterpart was at too high level delayed intra-Ministerial flows. The activities of the project were mostly directed at specific departments and little inter-departmental work as carried out. Again here the presence of a full time NPD would have facilitated more integrated results. Inter-Ministerial coordination mechanisms were not clearly defined in the project document and hence related activities were notably absent in implementation.

UNIDO support. This was not provided in an integrated manner (see III.B). While implementation was split between two sections, (Feasibility Studies Branch and the Industrial Statistics and Sectoral Surveys Branch, the former with the main backstopping responsibility), during the last two years the concentration of activities on the computer segment of the project made the STAS Section much more involved in the implementation of the project than the main backstopping section. Moreover, the several changes of backstopping Officer and the late involvement of know-how on computerised information systems created difficulties and disruptions between planning and implementation. There was furthermore no clear demarcation of responsibilities between the MIE, Project Personnel, UNDP and UNIDO in the project coordination and management arrangements. This created imprecisions on "whose project it was" and who was to decide on important landmark events of the project.

Counterpart staff. Although a significant number of IAA staff have been associated with the project, few have committed sufficient time to it. Certain capabilities have been upgraded, mainly on foreign trade, bilateral and multilateral economic agreements and foreign investment. Although an improvement in this regard has been noticed, it has been below expectations.

Contacts with private sector. There has been virtually no contact by the project with private sector organizations - something which the mission considers a shortcoming. The same can be said for relations with other organizations and government bodies.

Institution building. As amply discussed in this Evaluation Report, the project did not achieve its institution building objective in a satisfactory manner. In order to meet the institution building requirements of the Ministry it is necessary that the project be felt as theirs and not as simply a UNDP/UNIDO Project. For that purpose it is suggested that for an eventual successor project a National Project Coordinator paid by project funds be available full time to the project and be in charge of the coordination - with the Ministry and vis-a-vis the Executing Agency - of the project's implementation. Within the Ministry he should report directly to the Deputy Minister for Foreign Affairs. Upon completion of the project he should assume a high level function in the Ministry to ensure utilization of know-how gained during the project implementation.

VI. RECOMMENDATIONS

Actions to be undertaken for the remainder of the project. Until the termination of this project, the three parties involved and particularly UNIDO, have to make efforts to ensure the completion of the computerized integrated information system as indicated below (section 5). Further development of the system, and subsequently introduction of more advanced hardware to keep pace with rapid technology change, may be required and could be accommodated under an extension or a new project. The mission recommends a number of actions (indicated below) to make the computerised system operational. These actions should start under the present project but will necessarily spill over into an extension or a new project. Once this evaluation report is analysed by the three parties concerned, a TPR meeting should be urgently convened to decide on the proposed actions. In addition a work plan for the remainder of the contracts of the three international experts should be prepared and agreed upon at the same TPR.

Actions needed to rectify the computerised information system As explained in detail in Annex 2 to this report, corrective action in relation to the computerised IIS would involve the following tasks:-

1. A definition (master plan) of all present and future Information Systems needs - in terms of hardware, configuration, systems and human resources - for the next 5 years. This task would take around 3 man/months. (A report on the conceptual integrated information system, prepared by CCFI in 1989, was analysed by the mission and judged well prepared and still valid).
2. Immediate operation of available sub-systems in the computer department and in other departments of the IAA. For this purpose one hardware upgrade and Oracle 6.0 has been ordered already and can be implemented by the computer department within 2 months.
3. Enhancement of computer resources following the indications of the master plan. However, at this stage it can be stated that the system should be based on a modular distributed configuration, making maximum use of existing hardware and allowing the addition of clusters of users built around either other minicomputers or preferably PC-based servers to be linked together through a common backbone.
4. Development of the Integrated Information System. The base of the system is the conceptual report on integrated information system initially developed by CCFI and assigned to the same subcontractor. In order to implement the system it will be necessary to undertake:
 - Modification and compilation of data bases
 - Development of Application System

In terms of human resources needed to accomplish the above the two existing programmers (NPPP's) should continue and 2 systems analysts and 2 additional programmes (also NPPP's) are needed.

An expert (or an outside firm) would be required to undertake task no. 1 and to backstop/advise the other tasks.

It is expected that these tasks would extend beyond the scope of this project. If a future project of technical cooperation is required and is to include part of the tasks above - as well as other DS/IB activities an improved system of project management functions would be needed. This would include a steering committee to meet regularly (but not too frequently) headed by the Deputy Minister with the participation of all departments of IAA to plan and control performance during the implementation of the project. In addition a National Project Coordinator, nominated by the IAA, but paid by the project would guide and control, on a full time basis the implementation of the project.

Improvements to the structure of a new project. Drawing on the lessons of the present project, the following are considered vital modifications to the design of any successor project:-

- Much greater input is needed from the IIE at an early stage in the preparation of the project document in order to ensure that there is as much concordance as possible between the pre-defined outputs of the project and the policy objectives and requirements of the Ministry.
- The project should be managed by a National Project Director reporting to the Deputy Minister rather than under the direct control of the Deputy Minister himself. This should facilitate far more effective coordination of the work of the experts and more beneficial interaction between the latter and counterparts.
- The institution-building component should include an element of short local training courses (carried out by experienced trainers) on specific topics to supplement the on-the-job training received at present. This would be designed to minimise the risk that certain counterparts may suffer because experts fail to impart their expertise either because of workload conflicts or because of communication problems.
- The benefits of on-the-job training would be increased if more departmental officials (below the level of Department director) could be involved in certain aspects of direct support - e.g. assisting the project experts in data collection and analysis. This would also make possible the more cost-effective use of project experts' time.

Proposed activities for inclusion in a new project. These would comprise direct support/institution building activities, including:-

- Use of PCs for management reports and information use with the related development of specific PC software.
- The preparation of the Ministry's Industrial Plan which will be part of the Kingdom's 6th Development Plan.
- The improvement of the ability to respond to requests from IAA management and the business community for industrial data.
- The integration of new industrial survey data forthcoming from Saudi Consulting House (SCH).
- Improving the quality of historical data available in the various departments.
- The integration of the harmonized system of commodity coding with the ISIC system of industrial coding.
- Further training in the use of COMFAR and introduction of the PROPSPIN methodology to screen project proposals.
- The development of good quality industrial profiles.
- Preparation of project promotion events for foreign and national potential investors.
- Continuation of analysis and advise on the cost benefit of the various potential trade agreements (such as GATT).
- The continued provision of advice on (a) preparation of country profiles, (b) industrial export promotion and (c) joint commission meetings.
- Negotiation and acquisition of technology .
- The preparation and launching of a sub-contracting exchange.
- The strengthening of the Ministerial capabilities on environmental control and monitoring particularly in the industrial cities, which started under the present project.

VII. LESSONS LEARNED

Because of the distinctive features of this particular project, it is difficult to derive from this evaluation lessons of a specific nature that can be applied to other projects. However, some lessons of a general nature stand out:

- It is important for a project to be felt from the design phase on by the counterpart institution as "their own". If there is an international CTA, a full time counterpart should be provided with a view to his assuring continuity and an independent capability within the recipient organisation at the end of the project.
- Human resource development within any organisation can only be successful where both (a) the internal organisation structure is appropriate and (b) there is a satisfactory career structure and manpower development policy.
- TPRs and PPERs should be used as effective instruments of project monitoring and not only as an administrative formality.
- When a project experiences serious problems, an in-depth evaluation should be called for immediately and not postponed until a stage where problems become unmanageable.

**DEVELOPMENT OF AN INTEGRATED INFORMATION SYSTEM
UNDER SAU/86/004 AND SAU/89/022**

A. SAU/86/004

<u>Date</u>	<u>Activity</u>	<u>Remarks/problems</u>
07/88-09/88	Budget Rev D to have GCCC budget of SR 2.9 million for H&S and consultancy contract.	Completed
09/88-12/88	Manager Computer Dept appointed. Planning work for project. Preparation of RFP with UNIDO Contracts Division.	Completed satisfactorily
12/88	Issue RFP for turnkey project to ten companies	---
01/89	UNIDO decision to separate into Phase I and II on basis of request of bidders. RFP now for Phase I.	As bidders unable to quote fixed price.
02/89	Phase I contract awarded to CCFI.	Cost SR 318,250 (\$84,666)
03/89 onwards	Phase I work. Five outputs including H&S specifications.	Work proceeding satisfactorily. Outputs reviewed by Comp Dept and CTA.
05/89-06/89	Prep H&S specs and bid docs for H&S purchase by CCFI and MIE Committee.	Satisfactory
07/89	UNIDO approve bid documents for H&S, and bids invited.	Bids received from nine suppliers of H&S systems.
09/89-11/89	Evaluation of H&S bids by consultant (CCFI) and MIE Committee.	Al-Tassan recruited for technical support.
11/89	Purchase contract of H&S awarded to UNISYS/ARDICO.	At cost of SR 1,795,852.
12/89-06/90	Supply and installation of H&S system by UNISYS/ARDICO.	Under supervision of consultant/MIE.
11/89-01/90	As H&S system decided preparation of TOR for Phase II	MIE/UNIDO Committee.

Entire payment for UNISYS H & S system Sr 1,795,852 and four payments SR 286,425 (i.e. 90%) of Phase I and one payment SR 68,500 (i.e. 7%) of Phase II from SAU/86/004.

<u>Date</u>	<u>Activity</u>	<u>Remarks/problems</u>
01/90	Issue RFP for Phase II to original bidders of Phase I.	Proposals evaluated by MIE.
04/90	Award of Phase II contract to CCFI.	At cost of SR 685,000 (\$ 182,666).
05/90	Phase II work commenced. MIE/UNIDO Review Committee set up with Tassan main technical person. Appointed 3/90.	Progress satisfactory.
0 5 / 9 0 onwards	Training for Comp Dept staff under H & S contract.	By ARDICO.

B. SAU/89/022

Commenced 7/90. Included savings and activities not completed from SAU/89/004.

<u>Date</u>	<u>Activity</u>	<u>Remarks/problems</u>
0 7 / 9 0 onwards	Phase II work continued.	Gulf crisis from 08/90.
11/90	UNISYS H & S installed and acceptance report by CCFI under Phase I. Warranty period up to 11/91.	Apart from delay in supply, some software not problems.
01/91 - 03/91	Phase II work affected due to Gulf war.	----
03/91 - 09/91	System specification (based on which system design) accepted.	<u>Problem:</u> MIE took time to review and numerous changes CCFI paid extra.
05/91 - 07/91	Data collection by MIE and later by CCFI at extra cost.	<u>Problem:</u> MIE did not provide all required data.
04/91	Abdul Latif leaves as Manager of Comp Dept. Al-Kadi takes over as Acting Manager.	----
09/91 - 11/91	System design completed and accepted.	<u>Problem:</u> Difference with Comp Dept on design. Review Committee wanted to see total system working.
11/91 - 11/92	Maintenance contract for H & S system with ARDICO.	Contract as per earlier draft.
01/92	Review Committee discontinued.	<u>Problem:</u> Tassan (national expert) leaves.

01/92	Additional user requests.	<u>Problem:</u> Delays and extra costs.
02/92	Abu Theera appointed as part time consultant in place of Tassan.	<u>Problem:</u> CTA informs MIE that he and Nolan not participating.
02/92	CCFI project manager left at request of Comp Dept and new PM appointed.	<u>Problem:</u> New PM good programmer but not for PM.
04/92	First amendment to contract to cover earlier MIE approved additional work.	Extra payment of SR 265,000.
02/92 - 09/92	Preparation of technical documentation. Preparation of software programme.	<u>Problem:</u> Comp Dept complains work not acceptable. CCFI corrects.
08/92	Post computer systems expert 6 m/m created on Bremer's recommendation.	<u>Problem:</u> Not yet filled.
09/92 - 10/92	Complaints on performance to CCFI President by Asst Dep Min and reply.	<u>Problem:</u> Major differences.
11/92	MIE Asst Dep Min makes complaint on CCFI performance to UNDP.	<u>Problem:</u> UNDP submits to UNIDO.
11/92 - 05/93	CCFI President has meeting with Asst Dep Min and working Committee of Abu Theera and CCFI set up to resolve problems.	Agreement reached between CCFI and MIE and MOU drafted.
12/92	Extension of maintenance contract.	<u>Problem:</u> MIE delay in approval of payment.
01/93 - 05/93	Memorandum of Understanding (MOU) containing above decisions signed between MIE and CCFI.	UNIDO issues second amendment on this MOU with additional of SR 170,250.
05/93	Abu Theera does not continue.	---
08/93 - 02/94	MIE not satisfied with progress of CCFI work after MOU and system not functioning satisfactorily.	<u>Problem:</u> Dep Min conveys this to Res Rep.
06/93	Maintenance contract not extended.	<u>Problem:</u> MIE wants new bids and terms.
07/93 - 20/08/93	MIE negotiated and entrusted maintenance to ARDICO in view delay.	<u>Problem:</u> UNIDO should formalize this contract and make payments.

13 - 17/06/93	Mission of Dr M. Kaddah on computer segment.	---
17/06/93	Dr Kaddah report sent to MIE.	---
20/08/93	Receipt of above report in UNIDO.	---

Nomenclature

H & S	Hard- and software
GCCC	Government cost contribution component
RFP	Request for proposals
MIE	Ministry of Industry and Energy
ARDICO	Arab Digital Computer Company Limited
CCFI	The Consulting Centre for Finance and Investment

REPORTS OF THE CONSULTANT ON COMPUTER SYSTEMS

These reports were prepared by Dr Mu'tassim Billah M. Kaddah, who was engaged by UNDP to evaluate the IIS component of the project. His preliminary report was produced in June 1993, the second in October 1993 at the time of the visit of the Evaluation Mission, which relied on his findings in reaching their conclusions and recommendations in respect of this component. Both reports, which need to be read together, are included in unedited form.

Notes to The In-Depth Evaluation Committee Computer System Evaluation

As part of the in-depth evaluation and as a follow up of the mission carried out last June, this report summarizes the main findings related to the computer component of the Project .

The objective of this section of the evaluation is

- To determine the status of the Computer systems and identify the obstacles that have led to the delays in implementation.
- Propose corrective measures needed to accomplish the predefined objectives.

1. Status of computer system:

As planned in the Project document, an integrated Industrial Information System was to be implemented in the ministry of Industry and electricity (MIE). This objective has not been accomplished due to deficiencies in the Hardware, System Software, Application Software and data.

Hardware: the installed system allows only a limited number of users to run the existing programs with an unacceptable performance. It cannot be upgraded any further since it has reached its maximum limit of expansion and besides this model has been discontinued. The evolution of technology and its reliance on modular distributed topologies renders this solution very expensive and restrictive.

System Software: the system runs an old version of UNIX 3.0 (?) and Oracle version 5.0 which have been replaced with more performing new versions not compatible with existing hardware.

Application Software: The applications developed by CCFI are not operational. The programs delivered are full of errors. The evaluation carried out last June in cooperation with computer department and CCFI staff were not able, in 3 days, to accomplish a complete or even a partial test of the programs.

Data : The data entered to the system is limited, erroneous and completely unreliable. Special purpose short programs have been used to create individual data tables with no consistent validation nor check. Afterwards, attempts were done to create relations between these tables as defined by data model, this led to discrepancies in data elements (e.g. survey data and license data) and many dummy links were inserted in order to clear the deficiencies and built a completely distorted database

According to contract, the complete database creation (collection, preparation, coding, and entry) is the responsibility of the contractor. Relying on a document presented by the CTA and used earlier during bid negotiation with bidders, but not included in final contract documents, this responsibility have been "relaxed", enabling the contractor to increase cost as he pleases and rendering the contract a "NON-FIXED" cost contract

2. Main Problems and probable sources:

The failure to implement information system is due to a number of factors that can be summarized as follows:

- i- Discrepancies in Contractual Procedures
- ii- Technical discrepancies
- iii- Project management and Monitoring procedures.
- iv- Human resources and transfer of expertise.

These factors have been dealt with in details in the June 1993 report.

3. A proposal for Corrective Action

The MIE can no more rely on the initial contractor CCFI. The completion of system implementation may be achieved by either the MIE staff or by a new contractor. Under any circumstances, a number of guidelines have to be strictly followed in order to avoid any further delays and to secure a successful achievement of MIE Top Management requirements.

- 3.1 Defining MIE Information Systems Master Plan:
- 3.2 Using available resources and immediate operation of some of the available subsystems.
- 3.3 Enhancement of Computer Resources.
- 3.4 Development of Industrial Information System (Applications, Data, Human resources)

3.1 Defining MIE Information Systems Master Plan:

In order to secure a stable and expandable Information Systems a detailed study of the MIE future needs must be carried out by a consultant or a consulting firm.

The output of this study shall be the MIE Information systems Conceptual Framework identifying a Master Plan that would secure all present and future (e.g. next 5 years) Information Systems needs (Hardware, configuration, Systems, Human resources). This plan must be modular and configured in such a manner as to allow an incremental consistent implementation based on resources availability.

This task must be initiated immediately and it would be expected to last about 3 months.

3.2 Immediate operation of available subsystems.

A number of subsystems are actually available in the computer department:

- The Foreign trade database, developed locally by Computer department
- The Correspondence system, under development locally by Computer department
- The Finance and Administration System acquired from City of Riyadh and already in use by a number of government authorities

The first two systems have been tested by the computer dept. staff and a number of users have been trained on the Trade system. The two systems use the available UNISYS and could be used within 2 weeks as stated by computer dept. acting manager.

The Finance and Administration system have been developed on Oracle 6.0. Its implementation necessitates a hardware upgrade and the acquisition of Oracle 6.0. According to Computer dept. manager, the upgrade has been ordered and the system can be implemented within 8 weeks.

The Hardware upgrade is basically a PC-based Oracle server, that could be linked to the existing UNISYS, operate Oracle 6.0 with the acquired application and use the existing communication setup. (I assume this configuration has been validated with UNISYS Vendor, ARDICO). This configuration is in line with the modular, distributed proposed configuration and can be easily accommodated in the Master Plan.

3.3 Enhancement of Computer Resources.

The Master Plan shall identify the approach to adopt in order to reach the full configuration covering the MIE needs. However, at this stages a number of guidelines can be expressed:

- System must be based on a modular distributed configuration, making use of existing hardware and allowing the addition of clusters of users built around either other minicomputers or preferably PC-based servers to be linked together through a common backbone. This secures full system connectivity while maintaining minimum communications load and maximum expansion capability

As conceived and proposed by Computer dept , action has been taken to acquire a PC-based server and Oracle 6.0. This would allow in the shortest possible time to operate the Finance and admin. system using existing UNYSIS and its communication channels and cables

Further system expansion, shall be proposed subject to availability of financing and according to defined Master Plan

3.4 Development of Industrial Information System

The base of MIE Information system is the Integrated Industrial Information System, initially assigned to CCFI. In order to implement this system, the following activities have to be performed:

a- Modification and Compilation of databases:

- The data Model, already defined during previous phases, may be used after revision and eventual minor modifications.
- The Data previously entered shall be discarded.
- A task force formed from representatives of individual departments shall start data preparation (collection of data sheets, coding of data using standard forms) based on previously used forms.
- Design and development of Data entry modules, securing a full data validation and building exact relations expressed in the data model (as opposed to dummy routines used by CCFI that resulted in a non reliable compilation of data).
- Data entry and validation by task force from departments.

b- Development of Application System:

The System developed by CCFI is fully unreliable. The Experience gained by computer dept. Staff and their full understanding of system peculiarities may be used during this phase. A full redesign of system must be considered.

This shall be carried out either by computer dept. staff with full interaction with other departments or by an independent subcontractor.

An independent subcontractor solution will be more expensive and would result in some delays at the beginning, until the staff can comprehend the system functions.

The computer Dept. option will be less expensive, work can be initiated immediately and staff will gain experience that can secure future maintenance and enhancement of system.

4. Corrective Action Implementation Needs:

In order to avoid problems encountered during previous phases, certain measures have to be secured and followed up.

i. Set up of project management functions

- to fill gap between top management and beneficiaries (head of departments), a steering committee and a National Project Coordinator
- to strictly plan and control performance through continuous monitoring.
- to secure proactive beneficiaries participation in the implementation.

ii. Plan and secure needed resources

To Immediately conduct a Study that would identify the conceptual framework and master plan for MIE, is a must.

Based on Master Plan, MIE management shall set up a time schedule that would reflect the availability of financial and human resources.

Corrective action includes modification of Hardware, additional staff in computer department specially if work is to be carried out by department and extensive training of all MIE employees.

The MIE management shall be fully supportive of all corrective efforts. This will facilitate the implementation of corrective action. Their continuous involvement and monitoring of activities is a must for a successful achievement of objectives.

The MIE employees in individual departments, in spite of all previous problems, are motivated. They have shown willingness to enhance working procedures and a complete understanding of their needs. Minor efforts could lead to a positive mobilization of efforts and consequently the needed interaction to implement MIE Information System.

FREE TRANSLATION

**PRELIMINARY REPORT
ON
STATUS EVALUATION MISSION
ESTABLISHMENT OF INDUSTRY INFORMATION
SYSTEM (IIS) PROJECT AT THE
MINISTRY OF INDUSTRY AND ELECTRICITY
(MIE) - KINGDOM OF SAUDI ARABIA**

**PREPARED BY
DR. MU'TASSIM BILLAH M. KEDDAH
JUNE 1993**

I. INTRODUCTION

Upon UNDP request, the Regional Information Technology and Software Engineering Centre (RITSEC) fielded Dr. Mu'tassim Billah M. Kaddah to evaluate implementation status of the project "Establishment of Industry Information System (IIS)" at the Ministry of Industry and Electricity (MIE) which is being implemented in coordination with both UNDP and UNIDO.

The mission took place from 13 to 17 June 1993 with the following objectives:

- 1- Evaluation of project status, and identification of impediments and problems affected the achievement of planned objectives.
- 2- Propose the framework of an operational workplan for the accomplishment of construction works related to (IIS).

During the above limited period of time, an intensive effort was made by all concerned parties in MIE, UN and the executing firm. Consequently, a proposed plan was identified and discussed to be initially used for accelerating work procedures with a view to accomplishing the setting up and operation of (IIS). At a later stage the proposed plan could be used for the development of an integrated information central system, and for enhancing decision making in a way that would commensurate with the volume of work required through the latest techniques and technology.

To this end, an intensive work programme was developed on the basis of which the following were achieved:

- a- Identification of all project components.
- b- Review of documents available at UN, Ministry, UNIDO experts and the executing firm. These documents include: the contract and its different revisions, correspondences, reports, proceedings of the technical committee meetings, system documents: analysis, design, softwares, reports and work directories.
- c- Convening of intensive meetings with all concerned parties individually or collectively.
- d- Study for the automation system in question as regards: design, softwares and reports - information and data bases.

As a result of the above programme, most important parts of the problem have been identified and possible solutions - through which the efforts of all concerned parties could be mobilized to ensure the achievement of eventual results - were discussed with the concerned parties. Within the available period of time and as

an initial stage, this report was prepared summarizing the most important conclusions. Another report covering details of all aspects of the subject matter will be prepared as soon as possible.

II - BASIC PROBLEMS:

The basic problems that hindered programme implementation and conduced to all subsequent developments, were due to negligence and various mistakes that will be mentioned in brief here and elaborated later in the detailed report.

1- Shortcomings in Contractual Procedures

- a - Contracting with the Consulting Centre designated for the first stage to implement the second stage (present), and the absence for any consulting body responsible for the second stage.
- b - Lack of clarity and accuracy in defining some of the activities related to data (preparation, entry and review) and the required level of efficiency.
- c - Necessary penalty conditions, delivery procedures and testing.
- d - Repeated delay in the implementation and the approval of extending the execution period without giving adequate guarantees that would cover the Ministry .
- e - Lack of committment to the conditions of the contract as regards the company technical staff and the importance of not replacing them.

2- Technical Shortcomings

- a - Softwares and System Design through its first contract, the executing firm prepared a good broadline for the information system. However, the design and programming carried out within this contract included many shortcomings mainly:
 - Frequent replacement of staff without abiding by the conditions included in the contract.
 - Detailed design was inadequate even though some modern methods "Case Tools" were formally used.
 - Continual programming and development methods without following the proper methods in addition to the replacement of programmers. This resulted into more than a copy of the softwares and thus effecting the integrity of the system.

- b - Establishment of data bases collection, preparation, entry and review of data were improperly carried out and thus contributed to serious mistakes in the data included in the system's reports. The reason for this is attributed to shortcomings in the contractual procedures and basic concepts (the meaning of the words "data preparation" and "coding") followed by improper follow up resulted into an unacceptable increase in the cost of data base preparation as well as the loss and distribution of responsibilities towards different activities. Besides, the executing firm pursued improper method in data entry through a package of external softwares and not through the designed system. These softwares did not include adequate verification procedures, and did not allow establishing Relational Model between different files according to the data base, design.

3 - Project Management and Formal Follow up Procedures

- Although there is a project manager and a great number of experts joined the project in addition to the availability of follow-up committee for project activities, there were many exceedings that eventually contributed to the delay in the project implementation, while irrationally encouraging the executing firm either by means of contract loopholes or through the decisions made by the project management as regards the hand-over of works from the company, the authorization of payments or the increase of the contract value.

- The actual users of the system in various departments did not adequately participate in the implementation procedures, or take part in the hand-over and evaluation committees.

- Experts and consultants carried out many tasks that might not fall into their terms of reference. However, these tasks might appear as great achievements while neglecting the component of experience transfer and national capacity building so as to take over responsibility from the experts and to eventually replace them.

- 4 - Disregard human development factor and capacity building of the Ministry's staff at different levels.

III - RECOMMENDATIONS

1 - Immediate - Short-term Plan

a) Preparation and operation of the computer system. Despite of the above, and since significant amounts were spent to develop the computer system, available components should be used in order to:

- Train personnel of various departments and familiarize them with the computer system.
- Identify users' needs and develop the initial design completed during this stage.
- Assess data and develop necessary methods and procedures to ensure continual flow of data.

The proposed plan should include the following activities:

- Intensive training programme for the personnel of different departments - in accordance with the contract (3 weeks).
- Review of primary acceptance of applied programmes with the representatives of the procuring firm, during a period not exceeding 3 weeks (training period) so as to avoid interruption of activities experienced many times by the project before. Primary acceptance here means to make sure that all functions operate through a complete cycle in the system without errors (walk through).
- Comprehensive and precise review of data by the personnel of the departments upon the completion of training programme and under the supervision of the computer. The present data as they are, can not be relied upon.
- Carry out the mandatory maintenance activities for 3 months as stipulated in the contract while emphasizing on the precise definition of maintenance as agreed upon namely, "follow--up operation procedures and correct all mistakes at the programmes or data bases levels without jeopardizing the integrity of programmes and data bases and without allowing for any changes to be made to the system design"
- Upon the completion of the above activities, the final delivery of the system can take place.

b) Maintenance of Equipment

An immediate tender for the maintenance of the equipment should be launched by inviting a number of interested companies to carry out the maintenance works even if they do not officially represent UNYSIS company. Adequate guarantees and penalty conditions should be considered in the maintenance contract. The Computer Department at the Ministry has proposed a contract that could be used after being reviewed and verified by UNIDO.

2 - Long-term Plan - A general integrated framework

Based on the study undertaken during the previous stages, a general framework for information system for the ministry was proposed. Through this framework and within the period of conducting the study, a number of components were identified. These components could be depended upon and developed and some uncompleted ones could also be finalized i.e:

a) Complete network of computers build upon decentralized modern technologies with indefinite possible expansion.

b) Review and development of the present design of the automation system while taking the following into consideration:

* Actual and positive participation of beneficiary departments that should have the responsibility particularly as far as data are concerned.

* Identify a clear and precise method for data collection and computerization and identify responsibility for the implementation of each procedure either during the establishment of the data base or during the permanent actual application of the system when finalized.

* Accomplishment of components for data and reports either at personnel or top management levels through an integrated system to support decision makers by satisfying all their needs in terms of information, analysis, techniques and support the decision making process.

* Inclusion of office automation for all levels of users and maximum utilization of equipment to obtain the confidence of the users and thus they would participate and actually support the project and also share its success.

c) Project Steering Committee

Clear and constant identification of the project steering committee responsible for the management of the project and follow-up actions. The Computer Department should undertake a central role in this committee while emphasizing the need for effective participation of representatives of different departments. As the case in this study, the assistance of a consulting firm could be sought e.g. RITSEC to contribute in developing the executive plan and periodical field follow-up.

d) Human resources development and building up national capabilities:

Notwithstanding the availability of a great number of international organizations, experts and consultants for long periods, national staff at different levels have not been trained and developed.

To implement this plan, the following should be considered:

- The existing equipment do not meet the requirements of the integrated system and do not allow expansion or development. Further, their manufacture is no longer existing, a matter which may lead to maintenance problems.
- Due to the limited efficiency of the equipment and problems attributed to the use of the present automation system, the number of allowable users to operate the existing equipment, can not exceed 12. Thus, the capacity of the equipment should be increased to allow the planned number (62) of users to operate the automation system.
- A number of methods could be followed to upgrade the capacity of these equipment:
 - * Use the same existing equipment, and this is considered as a rational solution. However, the biggest equipment requires redesigning and rewriting of all programmes. Thus, it will lose the only preference aspect, besides, the equipment producing company, suffers some problems and reliability risks might take place in this regard.

* Use of other equipment that depend on modern technologies, operating systems and development either minicomputers or microcomputers. Initial cost, development of programmes, operation cost, possibility for expansion, and addition of users in future, should be taken into consideration in selecting these equipment.

- Significant role of the consulting firm when:

- * undertaking preliminary studies, set up frameworks;
- * presenting specifications, making solutions and contracting procedures;
- * developing executive plans and undertaking implementation follow-up;
- * hand over, and evaluating the efficiency; and
- * solving application and dispute problems once occur.

The role of each party involved in the project:

Ministry of Industry and Electricity:

- To formulate the steering committee and prepare its terms of reference.
- To identify participants in the project from different departments.
- To develop the Computer Department and its mandates.
- To review the position and tasks of UNIDO experts.
- To originate the detailed plan for the development of the integrated system.
- To undertake coordination and follow-up with UN organizations.

UNDP:

- To undertake general supervision of the project and follow-up the implementation of the existing agreements.
- To coordinate with UNIDO and follow-up the efficiency of recruited experts.

- To undertake an arbitrational role either directly or through other authorities e.g RITSEC.

UNIDO:

- To review the experts' terms of reference and ensure that their qualifications and practical experience commensurate with the required tasks.
- To prepare contracts and follow-up their implementation.
- To implement activities included in the project document with emphasis on capability building and transfer of experience.

Executing Firm:

- To provide qualified and competent staff to finalize project activities connected with the initial delivery stage, training, maintenance and final delivery, with clear identification of their terms of reference and periods of stay.
- To implement users' training programme.
- To ensure that all amendments or maintenance activities are documented and are in accordance with proper technical methods in a way that it would not affect the integration and stability of the system as it happened during the previous stage.
- To participate in data review and verification since the contract and its amendments indicate that the firm is fully responsible once the normal files are received from the users.
- To submit periodical follow-up reports and coordinate with the Computer Department.