CHAPTER SIX
Chapter Six

ANALYSIS AND COMPARISON OF THE PROCEDURES OF INDUSTRIAL PROJECT MANAGEMENT IN SUDAN AND INDIA

This chapter analyses and compares the processes of industrial project management in Sudan and India which were described in the previous chapters. The analysis is carried out within a framework which consists of the following issues:

1. Project planning (formulation and evaluation).
2. Organisational set-up.
3. Project implementation.
4. Coordination.
5. Private sector industrial project evaluation.

6.1 **Project Planning (Formulation and Evaluation)**

Prior to 1976, when the bulk of Government investments were made in Sudan, the President of the State was the authority for initiating ideas of industrial projects of the public sector. The ad hoc committees formed were only formalities and no in-depth preparation followed those ideas. The argument behind the sugar and textile factories set up in Sudan in the 1970s was that they generated backward
linkage with agriculture and were set up in rural areas where poor populace live. This is not a justification, for the objectives of alleviating poverty and generating income should be translated into specific parameters at the project level. Then those are to be used in formulating and evaluating the projects. Only then the project can be linked to the national plan and hence its contribution in achieving the overall objective of the plan can be assessed.

Project ideas discussed in the National Peoples Council of Sudan were chanelled to a pre-feasibility study but the ad hoc committee which performed that job did not make intensive effort to screen project ideas. A feasibility study during this early stage of the project cycle is needed for the following:¹

1. To decide that the investment venture is promising so that the entrepreneur can proceed a step further.
2. To pinpoint critical aspects which need in-depth studies.
3. The information is adequate to decide either to reject the project or to take it for implementation.

The exercises carried out by the ad hoc committees were mere formalities and did not help in making a decision along the purposes mentioned above. Projects automatically proceeded to the next stage. This process, however, was

corrected after the establishment of the PPU in 1976 when project ideas were made to emanate from administrative ministries and were to be in line with the Government policies and priorities. But no guidelines were set out to prescribe as to how to prepare initial studies and what sort of information they should contain.

Unlike project idea generation in Sudan, public sector industrial projects in India emanate from the Five Year Plans. Projects pre-feasibility studies are prepared by the companies in consultation with administrative ministries. Studies of large projects are to be discussed and considered by the PIB. The PIB is empowered to consider pre-feasibility studies for projects which pass the test. This power, however, has not been fully utilised. There is lack of clear focus of decision at the pre-feasibility stage. This leads to long meetings before a decision is reached. Many documents (minutes of meetings, reports, letters etc.) available at the pre-feasibility stage, are not put in one pre-investment report to be considered by one definite forum like the PIB.

Projects identified by Government authorities of Sudan go to the stage of project preparation. For the 1970s projects, all the studies were prepared by foreign contractors. This is still the exercise. However, no guidelines prevailed for selecting and guiding the contractors till 1981 while indigenous agencies were not made counterparts to the foreign
contractors. Therefore, all requirements of the projects were not considered as the contractors were unfamiliar with the socio-economic environment of the country. This state of affairs was exacerbated by the fact that no feasibility study was undertaken for the Government textile projects of the 1970s. These facts resulted in prolonged delays of the projects. For example, electricity for the Port Sudan Spinning Project was envisaged to be supplied from Port Sudan city. But because the city itself lacked, and is lacking, this input, the Port Sudan Spinning Project, completed in 1982, is still awaiting the electricity. Many parts of the project were deteriorated and have to be replaced at a high cost. The Gadow Spinning and Weaving Project in the Northern Region of Sudan (still under implementation) witnessed severe shortages of labour during its early stage of implementation while transport needs were misconceived for the Melut Sugar Project (Chapter Three).

Even today, there are no guidelines for project preparation in Sudan. The PPU relies on the World Bank and UNIDO publications. But specific needs of the country call for specific guidelines to help Government Ministries and organisations prepare sound projects and thus help achieve development objectives. Such specific needs are, to some extent, appreciated in India.

Two guidelines for the preparation of industrial
projects in the public sector were prepared in India in 1966 and 1975 respectively. While the principles underlying them were sound, the guidelines were not strictly followed in practice. According to the PAD Guidelines of 1975, project preparation is to be related to studying imports, substitutes, available local raw material, available technology and skills etc.; but this is hardly followed and no in-depth exercise is carried in practice. The Barauni Fertiliser Project (BFP - Chapter Five) is a glaring example. The Government of India after considering the feasibility study asked the Fertiliser Corporation of India to modify it so that naphtha would be used as feedstock instead of low sulphur heavy stock. The whole exercise was carried out within a fortnight for an identical plant based on naphtha as feedstock. The project authorities only wanted to get the project sanctioned irrespective of what sort of studies preceded it. A Hindustan Fertiliser Corporation* official was quoted saying that the project cost was lower by 40 per cent at that time (initial consideration by the Government of India) and they kept it low intentionally to have it sanctioned for they knew that later on its budget would be raised by the Government authorities.  

* After split of FCI in 1978 to five organisations, Barauni Fertiliser Project came under the purview of HFC.

The projects prepared by foreign contractors in Sudan are also evaluated by them. Again, no guidelines existed for project evaluation. Therefore, the foreign contractors who evaluated the projects, and in most cases implemented them, mainly concentrated on income they could generate from implementation. This is obvious because they would not be held responsible for defects in formulation and/or evaluation. They were, however, controlled through implementation contracts which were signed by them and the Ministry of Industry. But, because of unsound contracts, as will be discussed later in this chapter, they were able to extend implementation dates and/or get more payment.

Nowadays, the experts of the PPU and the indigenous consultancy houses in Sudan participate in the preparation and evaluation of the projects. But the discounting techniques of NPV and IRR are only paid lip-service; they are not seriously considered in accept-reject decisions or used in ranking the projects and selecting from them. Social considerations and environmental aspects are not given due consideration.

It is worth noting that the Department of Statistics of Sudan does not keep up-to-date statistics of the economy and society of Sudan. It is understaffed and lacks sufficient facilities to perform its job. Therefore, projects, in most cases, were prepared and evaluated with inadequate data which
was, in some cases, supplemented by projections and estimates. This kind of planning could only lead to troubles during project implementation and operation.

The May Government of Sudan (1969-1985) argued that the projects setup in the 1970s were carried on social considerations, i.e., improving standards of the rural poor by generating employment, establishing social services and facilities such as schools, hospitals, cooperative societies etc. with the projects. Therefore, about 94 per cent of the projects of the 1970s were located in the different regions other than Khartoum Commissionary.

While such reasoning appears sound, it is not really so. For example, the Six Weaving Projects in Sudan were originally envisaged to be located at Haj Abdalla where the Haj Abdalla Spinning Project would supply the yarn. But, for one reason or the other, they were dispersed in the different regions of Sudan far from the Haj Abdalla Spinning Project. Transporting the yarn to the weaving projects posed a difficult problem to the extent that in every month, the Shendi Weaving Project in the Northern Region had to work two weeks and close for the next fortnight. This, while projects like the Nyala Weaving Project in the western part of Sudan (Darfur Region) and Mangalla Weaving Project in the Southern Region had to stop production completely because of the far distance.

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3 Interview conducted with the General Manager, Shendi Weaving Project, Shendi, June 1982.
and hence, non-availability of fuel, yarn etc. Total production of the Six Weaving Projects, as shown in Appendix 4, reached its peak (7,440 thousand yards) in 1985-86. But even this peak performance is only 11 per cent of the installed capacity of the six projects (66,000 thousand yards). Therefore, these projects could not meet their production costs and had to be heavily subsidised by the Sudan Government. This is also true of the other industrial projects in the public sector. The amount of the subsidies ranged from Ls 1.5 million in 1970 to 11 million in 1980.⁴ Neither the social nor the economic objectives were realised.

But in India, the PAD, which is well aware of the local needs of the projects, is the main evaluator of public sector industrial projects. It uses parameters such as premium on foreign exchange to link project planning to national planning, and hence, to development objectives. However, these parameters are not available to project authority at the time of project preparation. That is to say, there is a communication gap between those who prepare the projects and those who evaluate them. This leads to identification of locations without proper investigation of needs.

While principles of project location were stated on paper they were not followed in practice in India. The Haldia Fertiliser Project which requires raw materials to be

transported by sea from abroad (West Asia, U.S.A., Canada etc.) is located 56 miles away from Calcutta port.\(^5\) Transportation cost is a very important factor in this case which was not taken into consideration.

6.1.1 Decision-making

Decision-making, "the selection from among alternatives of a course of action",\(^6\) is at the core of project planning. The whole exercise of project formulation and evaluation aims at taking sound decisions. In Sudan, no shelf of projects (alternatives) is available to select the one with the highest rank in evaluation. Projects prepared were usually accepted if finance were secured for them. This, while change of project location was not considered to be a serious decision. This is true in the case of Melut Sugar Project; the Committee of Melut Sugar Project Equipments (CMSPE) was formed in January 1987 just to gather the equipments, after three months it was assigned the job of studying a new location for the project.

The CMSPE held many meetings but the Sudan Government did not consider the time element of its assignment. The Minister of Industry intervened in its affairs when he asked the Committee not to deal with the equipments at Port Sudan.

But the Ministry of Industry did not do anything to transport those equipments. As such, no information was made available to the Committee to make estimates and decide on project location.

Information was divided among different committees and Government organisations while this should have been brought under one forum to allow prompt and sound decisions. This is true while a substantial amount of capital has already been blocked in the project and the country has to pay the interest charges thereon. Ironically production cannot be smoothly carried on because of procrastination in making decisions. Without smooth production, cash generation slows down. This upsets the whole project.

Similar snags in pre-feasibility stage of decision-making are found in India also. There is no formal forum like the PIB to collect all project documents and make a prompt decision. There are also similar problems when projects with forward linkages are installed. A case in point is Bombay High in which oil was discovered in 1974.⁷ Gas was associated with the crude oil at Bombay High. The gas was thought to be used as feedstock for the manufacture of nitrogenous fertilisers and petrochemicals.

As oil was produced, gas came out. Therefore, at Bombay

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High the gas, if it was not used, had to be flared. Many committees and working groups were formed to look into the issue and see how to make use of the flared gas. A programme was set by a working group of the Planning Commission of India in 1981 to make use of the flared gas. By 1983 six fertiliser projects were recommended. For all this period (1974-83), the gas associated with the oil had to be flared and missed for ever. No one single committee for such big discovery was formed to tackle the issue and plan for the utilisation of the gas in a wholistic system; thus make use of that huge opportunity. Good decision-making, however, calls for setting up sound organisations.

6.2 Organisational Set-up

The organisational set-up of project management in Government industry in Sudan may be studied in three parts, namely, project formulation, evaluation and implementation. There are six main organisations involved in these three stages. These six organisations are Planning Department, Finance Department, Ministry of Industry, Consultants, Contractors and the Projects Bureau. These organisations play executive and/or advisory roles in project management.

The Planning Department of Sudan and the contractors play executive roles throughout the stages of project management. But due to lack of qualified staff in the Planning
Department the planners rely heavily on the contractors to prepare project studies, evaluate and implement the projects. Even in supervising the studies, the PPU relies on indigenous consultants who were experts from academic and research institutes as its experts are only a small number of economists.  

In Sudan, there were no guidelines to the contractors who prepared and/or evaluated the projects of the 1970s. The PPU itself was established in 1976 after the Five Year Plan investments of the Government industry had already taken place. And even thereafter, till 1981 (i.e., for five years), no guidelines or regulations, as stated earlier, governed the selection of contractors or regulated the design of studies undertaken. The role of the Industrial Sector Wing in the Planning Department during implementation is mostly to approve annual budgets and pass payments of contractors. This was not based on any sound criteria. In some cases, the planners cut project annual budgets by more than 50 per cent on the ground that the PB officers overestimated the need. This was the case of the Khartoum North Fine Spinning Project in 1981-82. The budget of this project in 1981-82 was Ls 2,598 thousand; the Planning Department approved an amount of Ls 100 thousand.  

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8 Interview with Mr. Adam Ibrahim El Imam, Director, PPU, Khartoum, 23.6.1987.
groups and the planners did not apply any systematic criteria in allocating the scarce funds to the projects and other needs of the country. In such dilemma, projects had to be delayed and more costs had to be incurred later.

The Ministry of Industry which selects high priority projects in consultation with the Planning Department deals with implementation as far as contracting, initial approval of payment etc. are concerned. This initial approval of payment has to go for further approval by the Planning Department. Consultants were advisers to the Government of Sudan while the PB was completely off the scene in the formulation and evaluation stages. But it was assigned the major role of supervising implementation. It had no authority over payment of money, the most scarce and critical factor. It approved contractors' proposals which were to be passed to the Ministry of Industry, the Planning Department and finally the Finance Department.

Authority over money was centralised with the Ministry of Industry and the Finance Department of Sudan where main approvals were to take place. The Finance Department did not play any significant role in the formulation and evaluation of the projects, and hence it did not appreciate the urgent needs of the projects. Proposals of project payments were treated equally as any other requirements; this delayed implementation process and demoralised contractors who had to
have money ready to pay workers and suppliers.

The PB took no role in the formulation and evaluation of the Sudan Government projects implemented in the 1970s. It is thus rather difficult to hold it responsible for efficient implementation of a project it did not participate in its initial stages. Added to this, the organisation structure of the PB which underwent many changes since 1973 was not sound enough to achieve its stated objectives. The nature of project tasks carried out by the different agencies necessitated the structure of April 1973 described in chapter two. However, the centralisation of decision-making over money could not help prompt solving problems. A resident engineer representing the PB at project site had no power to take decision on the spot. He could only report them to the headquarters which had to report them to the Minister. This only delayed procedures and hindered the flow of implementation. It lowered the morale among resident engineers and management of the PB. Needless to say that problems arising between indigenous and foreign contractors delayed implementation even further. Added to this, the non-clarity and/or non-mentioning of the authorities of contractors, engineers and project managers in the organisation structure prompted more confusion and the PB could do nothing in most instances because it was unfamiliar with its boundaries of authority.
The subsequent organisational changes which made the PB directly responsible to the Under-Secretary of the Minister of Industry delayed the decision-making process. More levels mean more time to be taken if a report was to be communicated to the Minister who was to take decisions, particularly those concerning money. This certainly limited the powers of the PB to handle situations it was not familiar with and limited its freedom of movement.

A problem concerning the structure which deserves mentioning was that the staff of the PB were not included in the salary structure of the Ministry of Industry. They were only to receive their payments from project budgets. No plan was installed to absorb them in the projects or the Ministry when the projects were completed. This situation made them feeling insecure, and many of them left the PB during implementation mainly because of this reason. Appendix 14 shows employee-turnover at the PB. As it is seen, 25 per cent of the total number of those who left the PB up to 1981, the period when most of the projects were implemented, were engineers while 15 per cents were follow-up officers. This is by all measures a loss of talents and trained cadre which could only be replaced at high cost. New engineers and follow-up officers who filled in the vacant jobs could not deal with project problems because they were new to the environment. Hence more delays in the decision-making process occurred.
The previous lines show that no sound organisational set-up was built to plan for and implement the Government industrial projects in Sudan. No guidelines for foreign contracts were spelt and the PB was not invited early to acquaint it with the project needs and, hence, hold it responsible for successful implementation.

Situation is different in India. Sound organisational set-ups were laid for project management; guidelines were issued by the PAD for project preparation, and project formulation is the responsibility of the executive department supported by the project manager. The Planning Commission of India is only to advise at the pre-investment stage.

The PAD, however, is the main appraiser of the Government industrial projects supported by the executive department that clarifies issues, carries further studies, effects modifications etc. During implementation, the project manager, contractor and suppliers play executive roles while the Ministry of Programme Implementation monitors big projects of the Government sector. Sometimes, projects are executed by many parties or departments, each taking responsibility for executing some activities. Kharbanda and Stallworthy argue that such departmental execution results in defects and problems during trial tests and initial operational stage of the project as the case with Trombay Fertiliser Project -
Phase IV. They attributed the leakages, failure of the rubber lining and carbonate heat exchanger detected at operational stage to the fact that responsibility of execution was divided among many departments. A different argument was given by Ghosh in his experience in implementing Indian Explosives Limited (IEL) fertiliser expansion project. In this project, contractors were selected and the total work in each activity was split in most cases between two contractors. This, according to Ghosh, helped in achieving higher productivity and better supervision. But on further investigation, it was found that this project was successful, not because the work was split between two contractors but mostly, because assignment of work package to each contractor was clear, and hence, he could be held responsible for his assignment. This same argument holds true for Trombay IV Fertiliser Project. Departmental execution which in some cases could not be skipped because of the lack of know-how, scarcity of factors of production etc., can achieve successful implementation if authority and responsibility of each department is clearly defined. This is what was missing in Trombay IV Fertiliser Project.

Added to this, allowing different departments and

organisations of the Government to take part in implementation helps in gaining experience. This is what has happened in the fertiliser industry when the Planning and Development Division (PDD) of the then Fertiliser Corporation of India (FCI) was allowed to take up the job of designing and engineering of Barauni Fertiliser Project (BFP) (Chapter five). Although many defects were detected, modification was needed leading to a long gestation period and consequent cost overrun, the PDD gained experience and it could take over the job thereafter more successfully. Recalling chapter one, the Government fertiliser projects in India had longer gestation periods in the early 1970s but in the late 1970s, because of the experience gained, the gestation periods became shorter.

6.3 Project Implementation

Project implementation in this section is divided into three sub-sections namely, contracting, payment and shortage of funds, and monitoring and control.

6.3.1 Contracting

In the Sudanese experience in the early stages of implementing a public sector industrial project, a contract was signed by the Ministry of Industry/PB and the contractor. Although the legal adviser of the PB, as stated in chapter two, went over the details of the contracts to assure sound terms,
there were many loopholes in the contracts which enabled the contractors to extend implementation dates and to ask for more payment. For example, clause 29 of the Melut Sugar Project contract states that: "All justifiable expenses incurred by the contractor by reason of the contractor being prevented from or delayed in processing with the works by the client or for any other reasons within the client's control or by an insufficiency of fuel, sand, gravel, cement, or labour due to causes outside the control of the contractor, shall be paid by direct payment within 30 days of the submission of a proper application duly certified by the consultant."12

The consequences of this clause could be imagined if one goes over clause 4.2.6 of the same contract which says that the client should finish the following activities within three months of the signing of the contract:

(1) Constructing a feeder road from the river bank of the White Nile to the project site.
(2) Constructing a telephone line to the site.
(3) Erecting a telex or other communicating device.

The Government could not build the feeder road in time because building materials were far away from the site and the road was not negotiable in that season. Therefore, no bidder volunteered to carry the job. The contractor, therefore, as

shown in chapter three, had to apply for extension and more payment. If the contractor, UCMAS of Belgium, was unfamiliar with the environment of the area when he prepared the feasibility study report, the client who signed the contract should have been aware of such defect to cater for successful implementation.

Another loophole may be cited from the Haj Abdalla Spinning Project contract. Clause 13.1.6 reads as follows: "The contract is concluded on the assumption that the bearing capacity of the soil is not less than 1.5 kg per cm² at the maximum depth of 3 metres under the surface and that no sub-soil obstruction exists at the site; should any of these conditions not be met, the contractor may ask for another site and/or an adjustment of the contract."\(^{13}\)

After signing the Haj Abdalla contract, the soil at the site was found not to conform to the specifications in the contract. This led to changes in the specifications which added Ls 1,700 thousand to the original project cost. These pitfalls are attributed to the fact that the projects were not well formulated. For, soil test is a prerequisite of any industrial project and should be carried out in the early stages before preparing the feasibility report.

The above lines show how in Sudan contractors guarded

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against defects and failures by levying penalties on the defaulter. This is non-existent in some Indian practices. Although the legal aspects in contracting were laid by the BPE, contracts were not drawn to ensure successful implementation. Trombay II, a methanol fertiliser project, is a typical case.\textsuperscript{14} The original contractor, Messrs Girdler Corporation of America, was unable to finish his assignment and could escape without any penalty. Performance guarantee tests were made fifteen months after completion of erection instead of the normal four to six months. A reformer catalyst was found not to be of the contracted quality and many defects followed. Because the contract was not clearly drawn to show who is responsible for what, the two parties resorted to an Indian arbitration who awarded in favour of the contractor. The PCI Chairman accused the contractor of having no experience of the type and size of the plant being designed.

6.3.2 Payment and Shortage of Funds

It seems that the public sector manufacturing ventures undertaken in Sudan in the 1970s were too much for the country to meet their currency needs. Some contracts were signed with foreign contractors while sufficient finance for the projects was not secured. The MSP contract with UCMAS (Chapter Three) is a typical example. The contract was

signed in November 1974 so that the project could be handed over in October 1977. But, because there was no sufficient finance available for the project to meet initial obligations, its implementation start-up was delayed. Only in April 1976, the financing contract was signed with Belgian banks to finance the project.

In October 1977, work at the MSP site started. This, however, was the date on which the project was originally planned to start production. The project is yet to be completed. This is so while the payment of the debt, as stated in chapter three, was scheduled to be in fourteen instalments starting in mid-August 1977 with an annual interest of 8.85 per cent to be paid yearly from mid-August 1976. The case of MSP is also true of other projects. The defect in the payment system, as will be shown below, exacerbated the shortage of funds problem.

The flow of payment through the request of payment, as discussed in chapter two, is not a smooth one. Many decision and review centres, coupled with the "come tomorrow" attitude of the organisations in the public sector means delaying implementation. Foreign contractors, however, were able to skip the long decision-making process by following the letter of credit system. But the problem was that only foreign contractors were allowed to be paid through the letter of credit. This gave them advantage over indigenous contractors. Furthermore, any performance appraisal of project
activities carried out by different parties will be biased against indigenous contractors as far as no equal facilities were granted.

Delaying payment to contractors and suppliers affects project implementation whether it is in Sudan or in India. Ramanathan argues that delaying payment to suppliers in India was the most important reason for delays in project implementation.\(^{15}\) Initial payments were usually made in time but subsequent ones for executing different activities were delayed. Such subsequent payments are usually made according to annual budgets of the Government. But annual approval funds are usually inadequate and far less than proposals in the annual budgets.\(^{16}\)

Unlike the discrimination between foreign and indigenous contractors in the payment system in Sudan, all contractors are treated on equal grounds in India. But the problem encountered from time to time is the delay of the Government in the procedure of payment. Referring to the BFP, chapter five, the client delayed opening the letter of credit and issuing amendments for ten months. This cause, along with other causes, as stated in chapter five, resulted in a delay of 48 months in the erection of the compressor, which was the second critical path in the project. That, no doubt, had


chain effects on the whole project because of the difficulty of controlling a critical path.

6.3.3 Project Monitoring and Control

In India, monitoring units at project sites and in the Government fertiliser corporations have access to project status as far as finished activities, delays and costs are concerned. In Sudan, neither at project sites nor in the follow-up section of the PB such information could be obtained. The reasons are discussed below.

In Sudan, the monitoring system installed on the early days of the PB depended mainly on the nine reporting forms explained in chapter two. The success of the system, as it was spelt out, required as a prerequisite, the commitment of the different agencies taking part in implementation. It was also conditional on optimum utilisation of resources and detecting of problems, their causes and proposed solutions. These conditions were not made for, or met, when the system itself was initially installed, let alone when it was put into operation. The different implementing agencies, particularly indigenous contractors and Government organisations, were not brought together to discuss the needs and contributions expected from them. Therefore, no complete schedules could be drawn for the projects. And, although on paper it was supposed to be very frequent and inclusive, only annual reports were regular. The result
was that progress of the different activities could not be monitored.

Although detailed schedules showed only foreign contractors' activities, monthly and annual reports only presented the actual expenses of the local components cost. This means that the schedules of the foreign contractor's activities alone could not be made use of as a standard for comparing costs of activities incurred during the period.* This is so while the local component costs could not be related to a period of time as no detailed time plans were available. Therefore, the reports did not always contain the right information to monitor and evaluate implementation progress.

As far as the system installed and reporting forms are concerned, the activities included in the project activity list were incomplete. Many activities, e.g., resident engineer office preparation, preparation of drawings, port charges procedures, erection of communication devices (e.g., telephone, telex etc.) were not considered in the system. Therefore, it would have been very difficult, if not impossible, that such a system would succeed.

While the conditions of the success of the monitoring system were not met, the employees who were to report on

* Foreign contractors were mainly paid in foreign currency as they supply machinery, plant, raw materials from abroad, in addition to expert payments which is made in foreign currency.
progress were unfamiliar with the modern network analysis techniques. Therefore, instead of reporting progress of work in physical terms on a reporting-by-exception basis, their reports were broad fiscal statements. And all those involved in implementation, who were not brought together and, hence, could not understand and/or appreciate the importance of network analysis techniques, could not acquire a common language to communicate progress of work.

As the monitoring system could not work in Sudan as envisaged, a UNIDO expert was invited to study the matter and recommend modifications. The system he recommended depended on thirteen reporting forms and figures. He, however, put two pre-conditions for the success of the system (see chapter two). The first was that time and cost schedules of project activities (planned and actual) should be made readily available, and the second was that progress of work (time and cost) as well as problems hindering implementation should be properly considered to update the schedules and solve problems in time.

Although project activities included in the new system were split into thirty-six; more than double the number in the previous system, the same previous problems worked against the system. The indigenous agencies participating in implementation only spelt out starting and finishing dates of their assignments which were not useful as standards to
measure progress of activities.

Added to this, the organisation structure of the PB of April 1973, which did not clearly define the authorities and roles of the agencies involved in implementation, could not help build a coherent team which could understand and support the monitoring system.

Monitoring of Government industrial projects in India is given special attention. The Sixth Five Year Plan called for the use of network analysis techniques such as PERT in all projects. Project control techniques of PERT and CPM were emphasised as means of efficient implementation. The BPE issued guidelines in 1970 (see Chapter Four), and the planning Commission of India issues directives from time to time. Therefore, some projects in the public sector use them. Nangal, Panipat and Barauni fertiliser projects, for example, used PERT but enough experience is not yet available. Part of the cost and time overruns of Barauni were attributed to the non-effective use of PERT/CPM.

Professor Tripathy agrees with the argument that the problem of monitoring projects using network analysis


techniques in India is due to the lack of experienced cadre in planning and control techniques. Therefore, the management institutes in India are paying attention to this need to the extent of undertaking special training courses for managers and engineers in both public and private sectors.

While it is good to train managers and engineers in the use of network analysis techniques, it is equally important that the attitude of their bosses towards the use of the techniques and importance of monitoring be changed. This is obvious because the Committee of Public Undertakings found that planning cells for planning and monitoring implementation in most Ministries did not exist.

This argument of attitude and apathy in using PERT/CPM and quantitative monitoring is same in line with Choudhury's who held that time and cost overruns of projects were mainly due to the pre-occupation of engineers with quality and neglecting time and cost objectives. This, he attributed to the training of the engineer and his quality-oriented education. This personal value judgement led project managers

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20 Interview with Professor A. Tripathy, IIM, Ahmedabad, January 1987.
to concentrate on construction drawing rather than on construction schedule, and, hence, vendors and contractors had more commitment towards quality. Problems reported on quality were thus, according to Choudhury, quickly decided upon, while those concerning cost and time overruns were delayed.

It holds true that attitudes affect monitoring of implementation but not to the extent that quality of projects were paid more attention and was well taken care of. This is because the delays in the Government projects in India were, in a number of cases, due to bad quality in the formulation stage and/or in implementation. Trombay II, Trombay III, Barauni and Haldia fertiliser projects provide only examples.

The political and social environment of the country also plays a role in rendering the monitoring system inefficient. In some cases, projects were approved by the Government of India just before elections to secure political leverage. They were even started by directing some funds from other ongoing projects. After elections, because of shortage of funds, both the ongoing and newly started projects run into difficulties.²³

Effective monitoring of implementation in India, therefore, needs suitable environment in which projects are soundly

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formulated, attitude towards monitoring change and training of personnel in the modern network techniques is organised. On the other hand, in Sudan, while training in the use of network analysis techniques in implementation is important, the main cause which rendered the installed monitoring system ineffective was the non-involvement at the formulation stage of the main agencies that were associated with the implementation of the project. So that as and when needed, no schedules and detailed network plans could be drawn. Needless to say that the late involvement of the PB in the project management system could not enable it to understand the nature of projects and their problems, to build a team and to ensure coordination and commitment of all the agencies to project needs and schedules.

6.4 Coordination - The Essence of Project Management

While coordination is considered the essence of management, it is more so in relation to project management. But the procedures of project management in public sector industry in Sudan neglected this aspect so much so that it became the main reason for the delays and cost overruns described in chapter one.

During the era of the 1970s, the public sector manufacturing projects in Sudan were dispersed in all the regions

of the country; an area of 2.5 million square kilometers. This vast area was served by 5,493 kilometers of Sudan Railways, narrow gauge, 1,723 kilometers of river transport and about 10,223 kilometers of road transport (of which only 900 kilometers were paved).  

To solve transport problems and achieve on-schedule implementation of critical activities, the PB allowed contractors to use trucks (road transport) when rail facilities were not available. But not all parts were roadworthy. Thus, the bulk of the parts were to be delayed at Port Sudan (the main port of the country). This raised the problem of priorities in assigning transport facilities. Lack of coordination, as will be discussed below, caused further delays.

With respect to the parts which were accessible by trucks, the transporters could not be paid for shortage of funds. The PB had difficulty in guaranteeing and/or paying indigenous contractors who had to pay truck owners in time. This caused non-availability of trucks on time leading to more delays. There was no system of allocating the scarce funds among the priorities sectors. This resulted in bottlenecks and irrational use of a scarce resource.

Transport planning for all the sectors in general, and for public sector manufacturing industry in particular, lacked

coordination. To cite one example, the transport of equipments of the Six Weaving Projects preceded their implementation schedule while equipments needed by other projects urgently waited their turn. Therefore, the Tonj Kenaf Sacks Project of which contract was signed in November 1973 to start production in April 1978 was delayed because of, among other reasons, the failure to transport the project equipments from the port to the project site on time. Some equipments of the project plantation were left at the port for more than four years. Although the space charges paid to the port authorities were only transfer payments, the equipments themselves were exposed to humidity, damage and theft. More disastrous was that as a consequence of these delays, the contractor stopped work in April 1979 and asked for additional payment and extension of implementation date. The cumulative effect of all these have been that the project is yet to be completed.

While the Sudanese agencies responsible for providing transport facilities were not involved in the planning stage of the projects to secure their help, those responsible for supplying power were also not associated during formulation and evaluation of the projects. Sudan Public Electricity Board (SPEB) was not always invited to plan for supplying

the needed electricity input when the projects were in pipe. Port Sudan Spinning Project was delayed, and is yet to start production, because of bad planning and coordination from the early stages of project management. Although the project was planned to start production in August 1978, only in April 1978 the SPEB was asked to provide the electricity. But because Port Sudan city itself was, and still is, badly in need of more electricity than its available capacity, the project is still in the pre-take-off stage. Some of the sensitive equipments had to be replaced at high cost paid in foreign currency. This is over and above the opportunity cost in terms of postponed production which was planned for export.

Like the SPEB, the Regional Governments of Sudan were also not asked to participate in the initial stages of project management. This resulted in shortages of inputs and construction materials such as petroleum and cement. World petroleum prices increased tremendously twice during the 1970s. These added to project cost. They were uncontrollable factors. But the Commissioners of the different Regions of Sudan did not appreciate the priority need of the projects for petroleum which was scarce. Therefore, they used their authority to direct project quotas for other purposes. This was the case.

of Kadugli Weaving Project in Kordofan Region. Its petroleum quotas were diverted from Dibaibat Railway Junction to Elobied (capital of the Region), and the project had to remain idle for months awaiting another quota. Such attitudes of the Commissioners resulted in more delays and penalties payable by the Government due to violations of terms of contracts as happened in the Tonj Kenaf Sacks Project.  

Cement has been always in short supply. The only two Government cement factories at Atbara and Rabak always operated below their installed capacities because the former could not get the needed electricity input and the latter could not secure the spare parts. Therefore, the public sector manufacturing projects suffered a lot from shortages of cement for construction. The client could not fulfil his commitments and hence was subjected to penalties in terms of extensions of implementation dates and more cost. And, by using their discretionary powers, the Commissioners of the different Regions, as stated earlier, diverted the small quota to other uses. This exacerbated the problem and demoralised project authorities who were, although responsible for supervising implementation, had little authority commensurate with their responsibility. Melut, Haj Abdalla and Tonj projects experienced such problems. Had all the agencies

29 Interview with the Personnel Manager, Kadugli Weaving Project, Kadugli, October, 1980.
30 Interview with the Director, the PB, Khartoum, November, 1985.
been actively involved in the initial planning stage, such problems of coordination would have been minimised if their support was enlisted and some of their ideas on project management utilised. Also the projects would have been implemented earlier and at far less cost.

Coordination in project management of public sector in India is being considered at the policy making level to the extent that the Ministry of Programme Implementation constituted an Advisory Council in April 1986 to study and recommend effective systems for the approval, execution and control of major projects.\textsuperscript{31} The membership of the committee includes private sector managers as a means of harmonising their ideas with the public sector.

The current system in India of harmonising the activities of various agencies responsible for equipment and input supply is through the concerned administrative ministry as well as through the quarterly interministerial reviews.\textsuperscript{32} But mostly, agencies belonging to more than one ministry are involved which calls for an urgent interministerial forum to look into such issues. Needless to say that the involvement of the agencies and allowing for coordination from early stages guards against future implementation problems.

Therefore, as in the case of Port Sudan Spinning Project


with the SPEB, the West Bengal State Electricity Board, which was not actively associated from the early stages of project planning, could not meet the need of the Haldia Fertiliser Project for electricity even for trial runs. Haldia had to obtain its own thermal sets for that purpose which, along with other reasons, delayed the project for more than eight years.  

6.5 Private Sector Industrial Project Evaluation

6.5.1 Licensing Organisations and Project Evaluation

Although the project evaluation procedure for licensing and giving concessions to private industry in Sudan involves many officials and committees, all the licensing Acts vested in the Minister wide unquestionable authority regarding approval, or otherwise, of projects, range of concessions granted, allocation of foreign exchange etc. The Consultative Committee under the 1980 Act has merely an advisory role. All the powers were vested in the Minister of Finance and Economic Planning. In addition, the criteria set out in the Act for approving a project were too general to provide the decision makers with clear bases for selecting deserving projects.

These problems were exaggerated by the absence of good techno-economic feasibility studies to be submitted by the

entrepreneur. It is worth noting that no rules and regulations for professional organisations exist in Sudan for conducting feasibility studies. In addition to this, the evaluators in the SGI were not well trained in economic and financial evaluation of projects. Their concentration on the payback period of the venture reflects their lack of awareness of the time value of money. Discounted Cash Flow Techniques provide more scientific and accepted basis for evaluating the profitability and financial soundness of the project.

Furthermore, Encouragement of Investment Act, 1980 of Sudan authorised the Minister to grant special concessions to projects located in rural areas. It seems that this policy has not been successful. This is borne out by the high concentration of industry in the Khartoum Commissionary and the Central Region, the two most developed regions in Sudan. In 1987, out of 2,473 private factories, Khartoum Commissionary had 1,064 units while the Central Region had 727 units. These are 43 per cent and 29 per cent respectively of the total. That is to say, the share of the two most developed regions was 72 per cent of the total private industry in 1987. Electricity, transport, raw materials and other inputs available in the Central area of the country and the capital city of Khartoum in comparison to those available elsewhere in the

Sudan attracted private industry to this. That is why a high concentration of industry is found in this area.

The 1980 Act of Sudan made the income tax exemption granted to projects to vary directly with the level of capital expenditure. This does not conform to the policy of industrialisation and the objective of employing more people of the rural areas. One argues that this will lead to a capital-intensive industrialisation. In a country which needs to solve employment problem, incentives would better be linked with workers employed or with the utilisation of indigenous raw materials to allow for forward and backward linkages.

While the criteria set out under the 1980 Act of Sudan were too general, the Act provides that a project that satisfies one or more of those criteria will be approved and/or qualified for concessions. One doubts that any project may not satisfy even one of those criteria. Therefore, they are not helpful as specific guides for scrutinising and selecting projects. Furthermore, those broad criteria were not ranked according to their importance so that a project which scores more in the ranking will get more concessions. Equal weights were given to the criteria. Therefore, the actual contribution of a project to the national economy could not be evaluated. Recalling chapter two, according to the selection criteria, a project is liable for licensing and/or concessions if it
satisfies one or more of the following: Increasing national income, achieving development, provision of necessary services, generation of linkages, contribution to self-sufficiency, helping in consolidation of the balance of payments, generation of employment, possession of strategic importance and achievement of economic cooperation with Arab and African countries.

Applications for licensing and concessions in Sudan are processed on first-come-first-served basis. This does not allow to have a group of projects to compete for the scarce resources, and decisions are not related to national objectives. To better allocate the scarce resources, applications could be grouped and processed on quarterly basis.

A last point concerning industrial licensing in Sudan is that the 1980 Act equalised industry with other sectors of the economy, and, therefore, same concessions were to be granted to all types of investments. It is true that private sector entrepreneurs of non-industrial developing countries are risk-averse. Therefore, the industrial sector in Sudan needs special encouragement by incorporating special clauses in the Act.

While the Minister of Finance and Economic Planning of Sudan is given wide unquestionable powers regarding licensing and concessions, the concerned administrative ministries in India are delegated more powers to decide on some issues. But the administrative ministry in most cases referred such
delegated issues upward to the Foreign Investment Board. This only leads to unnecessary interministerial consultation and more delays.

Foreign collaboration licensing in India is the responsibility of the Foreign Agreement Committee, the Foreign Investment Committee and the Negotiating Committee. While the chairmanship of these committees is different, their membership is the same. Therefore, time is lost to tackle every issue individually by the same group of people. Issues of foreign collaboration could be brought under one committee to enhance the decision-making process.

In Sudan, industry is heavily concentrated in the industrial area of Khartoum North. This pollutes the environment. Some leather factories are located in the middle of the capital city of Khartoum. All these pose dangers of pollution to air and water but still not a single clause in the Act is there to provide for pollution control. Contrary to this, the Central Board of Environmental Pollution in India has listed eighteen high pollutant industries including fertiliser, cement, leather etc. Term-lending institutions were instructed to sanction loans to projects only after ensuring that they follow safety and pollution control norms. Pollution clearance, as stated in chapter four, is a prerequisite for getting a licence.

Therefore, in India, a project is evaluated by the licensing organisations to see to it that the environment will remain pollutant-free. Such social aspects are given more weightage in India because of the bulk of industrial projects in the country. However, the concentration of industry in the industrial area of Khartoum North in Sudan should ring the bell for such awareness so that the society is protected from evil effects of unfettered industrialisation.

In India, private sector industrial projects mostly seek long-term finance from term-lending institutions. Therefore, while they undergo an evaluation for licensing, they are also subjected to critical evaluation for term-lending. On the other hand, the licensing system in Sudan, as shown, is poor, although most private sector projects are wholly financed through equity-capital of the entrepreneurs. They do not follow any criteria for evaluation other than those for licensing and/or concessions. The small number of projects which approach term-lending institutions for term-finance are hardly evaluated in the proper sense of the word whether for the economic or social benefits/costs.

6.5.2 Term-Lending Institutions and Project Evaluation

As analysed in the previous section, a licence granted for an industrial project in Sudan does not guarantee its
soundness. The Industrial Bank of Sudan (IBS) and the Sudan Development Corporation (SDC), on the other hand, demand a licence and look into the feasibility study of the project. In evaluating the feasibility study, they concentrate on financial profitability. The social aspect is again ignored here. No priority is given to projects which come up in rural areas and poor regions of Sudan. Although the IBS management claims that they wanted to encourage projects set up in rural and poor areas of the country, their statistics is contrary to their statement. Total loans granted by the IBS in 1984, for instance, were concentrated in four regions. namely, Khartoum Commissionary, the Central Region, the Northern Region and the Eastern Region. Kordofan, Darfur and the Southern Regions, the most backward areas in Sudan, were completely ignored. That is to say, locational factors and development objective were ignored. Worst even, out of the four regions to which the IBS loans were given, Khartoum Commissionary, which is the most developed, got the lion's share (85 per cent) of the total loans.  

37 The SDC which finances all types of projects also gives weightage to their financial aspects. But this itself was not well carried out for all projects. The Six Weaving Projects, as shown in chapter two, were not preceded by any

feasibility study, but were partially financed by the SDC. Political considerations, it seems, played major role as the SDC is owned by the Sudan Government. All the Six Weaving Projects are operating at far below installed capacity and two of them completely ceased production, as stated earlier in this chapter. These problems are attributed to the unsound formulation of the projects. They could have been foreseen had some sort of evaluation been carried out. In this connection, the social aspect should not be undermined.

Entrepreneurial appraisal is also carried out by the IBS and the SDC to see to it that the entrepreneur -- not the project -- is able to pay the debt. But entrepreneurial evaluation in the Murabaha (profit sharing) system, which is followed by these institutions, implies concentration of the appraiser on promoters' initiative and planning abilities, managerial ability, support of social responsibility etc., but not on his ability to pay the debt.

Therefore, the practice of the IBS, the SDC and the licensing institution completely violates the principles of the Murabaha system.

This state of affairs is similar to what is taking place in India. The practice of term-lending institutions of evaluating entrepreneurs for assistance in India and the criteria used (e.g., financial standing, competence over speaking English etc.), as discussed in chapter four, only support
the rich, and not the poor States. This is illustrated in the remaining pages of this chapter.

The Planning Commission of India grouped deserving areas for assistance into three categories, A, B and C, as stated in chapter four. This is to accelerate the achievement of national objectives and to bring along a more balanced development. The term-lending institutions use this grouping to discriminate their lending to industrial undertakings.

The term-lending institutions in India have devised a system of processing and financing industrial projects as examined in the previous chapters. Financing industrial projects is linked to the overall economic policy of the country. The term-lending institutions, for example, operate many finance schemes (project finance scheme, scheme of interest subsidy for encouraging the adoption of indigenous technology, modernisation assistance scheme, etc.). In all these schemes, the institutions discriminate between industrial units set in backward and non-backward areas. The IDBI in its re-finance scheme of industrial loans for small and medium industrial units in Category A districts requires a minimum contribution from promoters which varies between 12.5 per cent and 22.5 per cent.

On the other hand, in the re-finance scheme for rehabilitation of small/medium industries, the IDBI distinguishes,
not only between backward and non-backward areas, but also between the small scale industry and the medium industry. This is for preventing concentration of economic power. And, in general, these measures taken by term-lending institutions following location policy, distinguishing between big units and small ones etc. aim at achieving a balanced economic and social development in India, a highly desirable national objective. The achievement of these objectives, however, can better be judged by having a look into the investment portfolios of the institutions.

The term-lending assistance to industry in India has gone to priority industries. More than one third of the IDBI total assistance in 1984-85, for example, has gone to food, textile, cement and paper industries. But the bulk of that assistance (one third) has gone to the most developed States of Maharashtra, Gujarat, West Bengal and Tamil Nadu. The poor three States of Madhya Pradesh, Uttar Pradesh and Bihar together have received barely 16 per cent of the total assistance in 1983-84. Uttar Pradesh assistance has been sharply raised from 9.1 per cent in 1983-84 to 19.9 per cent in 1984-85 while the increase of assistance to Madhya Pradesh and Bihar has been negligible in comparison to their backwardness.

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39 Ibid., p. 53.
scenario was repeated by the other term-lending institutions.  

This state of affairs is the outcome of the licensing policy of the Government. In the process, big industrial houses are always able to get more industrial licences issued by Government licensing organisations. A major portion of these licences usually goes to advanced States. This fact, along with the concentration of the promoter evaluation on the financial ability of the entrepreneur discussed in previous pages, made it possible for the advanced States to get a large chunk of assistance from term-lending institutions.

6.6 Chapter Summary

The practices of project management in Sudan and India have been analysed within a framework which consists of project planning, organisational set-up, project implementation, coordination and private sector industrial project evaluation. These are summarised below:

(1) While no guidelines were set for project formulation in Sudan, projects in India were formulated according to the Guidelines set by the Planning Commission. But there is lack of

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clear focus of decision-making at pre-feasibility stage in India which has led to long gestation periods. Project cost increased in Sudan as local needs of the projects, which were studied by foreign contractors, were undermined. On the other hand, in India, haste in preparing project studies to get them approved veiled important requirements to be discovered at implementation stage. This led to high cost overruns.

(2) No sound organisational set-up was built in Sudan to plan for and implement the Government industrial projects, no guidelines for foreign contractors were spelt out and the PB was not invited early to acquaint it with project needs and, hence, hold it responsible for successful implementation. Compared to this situation, in India, sound organisational set-ups were laid for project management, guidelines were issued by the PAD for project preparation and project formulation is the responsibility of the executive department supported by the project manager. The PAD is the main appraiser and it is only to advise at pre-investment stage. But the problem is that when sometimes project assignments are implemented on departmental basis and many contractors are involved, authority of each contractor is not clearly defined. This led to unnecessary delays and consequential costs.
(3) In Sudan, many project contracts were signed without taking into consideration some important needs. This led to many loopholes and penalties paid by the Sudan government to the contractors. But in India, many contracts did not guard against defaults to the extent that many defaulters could skip paying penalties to the Indian Government.

Payment of money to contractors in Sudan is a long process and discriminates against indigenous contractors. These, along with non-availability of money to pay contractors in time, led to delays, revisions and high costs. In India, delaying payment to suppliers delayed implementation of fertiliser projects.

The project monitoring system installed by the PB of Sudan could not work because no participatory approach was built from the very beginning. No adequate schedules were planned to measure project activities. In contrast, in India, monitoring is given due consideration and network techniques are used in project control. But an attitude towards reporting on quality rather than on time and cost overruns predominates the operation of the monitoring system in India.

(4) There is lack of coordination in project management and resource allocation in Sudan. No priority is made in the allocation of transport facilities and no efficient allocation of scarce building materials was made. People responsible for
project management at different stages and policy makers, who were in a way or another involved in the projects, were not asked to participate from early stages. Therefore, they refused to help later on and some of them even impeded implementation flow of the projects. But coordination in India is taken care-of at high level of policy-making. However, sometimes, lack of inviting all participants in implementation from early stages resulted in resource shortages.

(5) In Sudan, private sector project evaluation is not directly linked to development needs and the exercise, which is done by non-trained officials, does not properly consider financial profitability and social aspects. Licensing decision and concession granting are highly centralised with the Minister of Finance. These facts have led to high concentration of industry in the most advanced Regions of Sudan. On the other hand, in India, project evaluation is directly linked to development needs and projects are critically examined to determine their viability. However, entrepreneurial appraisal by lending institutions concentrates on the ability of the promoter to pay the money rather than on his ability to manage the project. Industrial houses are always able to get more industrial licences, the majority of which goes to advanced States.