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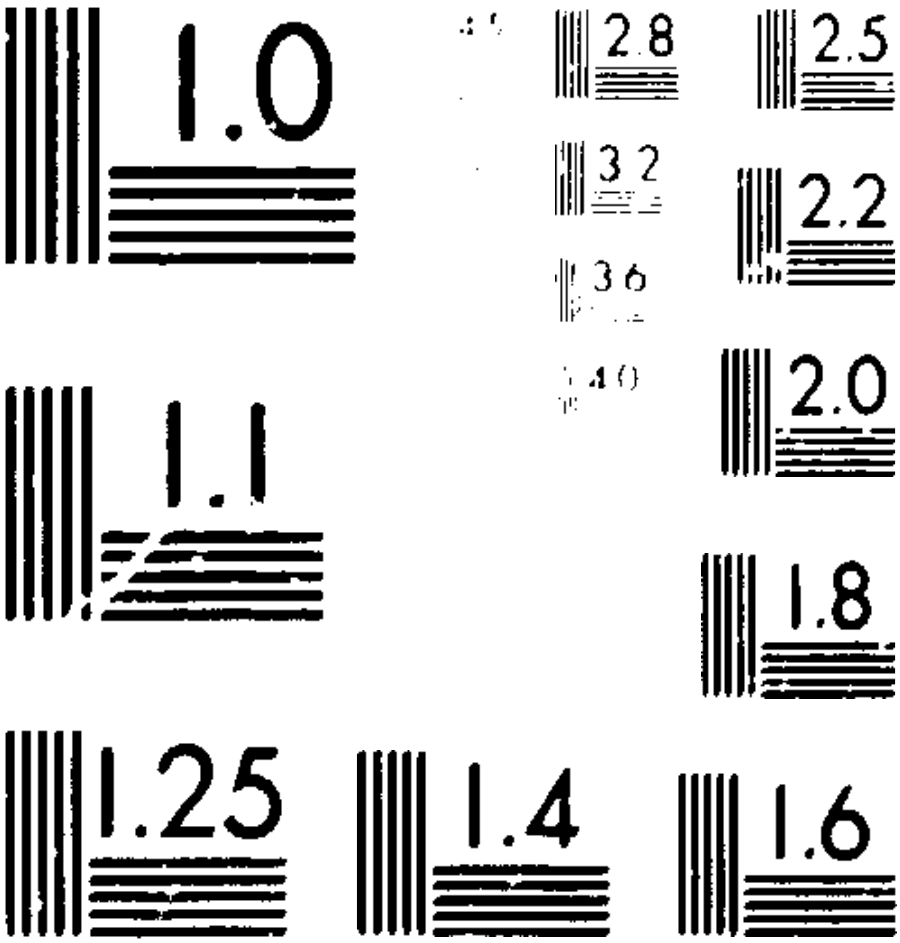

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

DEMOCRATIC REPUBLIC OF THE SUDAN

THE DOMESTIC CONSTRUCTION INDUSTRY A SURVEY AND PROJECT IDENTIFICATION REPORT*

D.W.J. Miles

WORLD BANK/UNIDO
CO-OPERATIVE PROGRAMME

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PREFACE

The attached report analyzes the need and potential for developing the domestic construction industry in the Democratic Republic of the Sudan. It reviews historical output figures and current and future demand for construction and relates the resources and achievements of domestic contractors to the general organization of the construction industry. The description of policies, institutions and performance constraints leads to the identification of a project that would strengthen the domestic construction industry through the provision of foreign exchange for import of equipment and spare parts allied to a technical assistance and training component. The first phase of the project would focus on the Khartoum metropolitan area and would have a three year duration.

The report was prepared by the World Bank/UNIDO Co-operative Programme. Consultants employed for the Mission were D.W.J. Miles (Team Leader and principal author of the report), W.H. Barkley, J. Eijgelaar and W.C. Whitesell. The team visited the Sudan between 14 March and 7 April 1981, at which time information was gathered with the co-operation and assistance of the Government of the Sudan and the UNDP field office. Co-ordination of the Mission's work in the Sudan was achieved through the Ministry of National Planning. The Mission wishes to express its appreciation for the wide measure of assistance and co-operation given by Ministers, officials and staff members of UNDP.

CURRENCY EQUIVALENTS

Currency Unit	Sudanese Pound (LSd)
Official Rate	US$ 2.00 = LSd 1.00
Parallel Market Rate	US$ 1.25 = LSd 1.00

ABBREVIATIONS

AAAID	Arab Authority for Agricultural Investment and Development
BCCI	Bank of Commerce and Credit International S.A.
BMC	Building Materials Corporation
BRRI	Building and Road Research Institute, University of Khartoum
EEC	European Economic Community
ILO	International Labour Office
IRCI	Industrial Research and Consultancy Institute
MCPW	Ministry of Construction and Public Works
MDC	Management Development Centre
MNP	Ministry of National Planning
PCBC	The Public Corporation for Building and Construction
PCIE	The Public Corporation for Irrigation Works and Earthmoving
RBPC	The Roads and Bridges Public Corporation
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Programme

FISCAL YEAR

1 July - 30 June

SUMMARY

i. The construction industry reflects the fulfillment of a basic human need and is also of crucial economic importance, since it impinges on all other sectors in a national economy. An increasing number of developing countries are becoming conscious of the importance of fostering their domestic construction industries within the context of overall economic planning.

ii. The objective of the present study is to analyze the need and potential for developing the domestic construction industry in the Democratic Republic of the Sudan, with the aim of enabling it to participate effectively in gaining an appropriate share of the market for civil engineering and building construction. The report commences by reviewing historical output figures, and then relates the resources and achievements of domestic contractors to the general organization of the construction industry. A description of policies, institutions and performance constraints leads to the identification of a project that would strengthen the domestic construction industry through the provision of foreign exchange for import of equipment and spare parts allied to a technical assistance and training component aimed at improving managerial capacity and performance.

iii. The first three year phase would focus on the Khartoum metropolitan area and would cost US$ 17,157,000, of which the US$ foreign costs might be financed from external sources and the remaining LSd 4,390,000 local costs from participating domestic contractors and Government funds (arising from counterpart receipts). The full time technical assistance team would consist of five experts (two construction management specialists, one equipment specialist, one financial specialist and one general crafts supervisor) who would be expected to concentrate on on-the-job consulting advice, but also on design and on the running of practical training courses as necessary. In addition the team would co-ordinate with the Bank of Sudan to establish operating guidelines for the state-owned commercial banks (through which the applications for financing would be channelled) and information systems for monitoring project disbursements. Future phases of the project could be employed to broaden its scope and/or spread the benefits to other parts of the Sudan.

iv. It is envisaged that the project should result in improvements in the capacity and effectiveness of domestic contractors, and in their relationships with government and financial institutions. These effects, together with improvements in the policy framework affecting domestic contractors, should result in an increased market share for domestic contractors vis-à-vis foreign competitors leading to foreign exchange savings for the Sudan. Additional foreign exchange may be saved by more effective utilization of building materials on job sites. Other results could be increased competition among domestic contractors and better quality of completed projects - in other words, better value for money for employers of the services of domestic contractors. It would not be realistic to attempt an accurate quantification of these expected benefits.

v. The Mission also proposes eight supporting actions aimed at strengthening the domestic construction industry. Whilst the impact of these recommendations would be relatively limited, they could be implemented in advance of the proposed project and would contribute to improving the prospects for its success.

1. Road Building

A strategy of encouraging private domestic contractors to engage in road building, so that the Roads and Bridges Public Corporation (RBPC) will eventually concentrate on general project management plus maintenance of the growing highway network and construction of feeder roads in the less accessible parts of the country.

2. Union of Sudanese Construction Contractors

Efforts should be made to strengthen the Union as a local institution and make it more representative, so that it could provide training and other assistance to member firms, including acting as a clearing house for inter-contractor equipment hire or exchange. It is envisaged that the Union could eventually serve as a channel through which the proposed technical assistance team could deliver effective support to domestic contractors.

3. Payment Procedures

A review of public sector contract payment procedures should be undertaken with a view to improving cash flow implications for domestic contractors by ensuring prompt settlement of certified payments and (subject to reasonable financial prudence) relaxing cash guarantee requirements and making appropriate mobilization advances.

4. Investment Act Incentives

Contracting companies should be considered as "projects" under the provisions of the Encouragement of Investment Act of 1980, and therefore become eligible for at least duty free import of equipment (although not duty free import of building materials) and possibly a period of exemption from business profits taxes for appropriate new firms.

5. Revision of General Conditions of Contract

The Government should seek short term technical assistance to advise and assist the MCPW and the Union of Sudanese Construction Contractors on detailed modifications to the General Conditions of Contract and Specifications, and also advise MCPW on procedures for setting up cost indexes and other aspects of implementation.

6. Contract Procedures

MCPW and other public sector clients should, whenever possible, simplify designs and bidding procedures and "slice and package" large contracts into smaller units for bidding purposes, so that domestic contractors are enabled to compete effectively for more substantial and technically demanding projects.

7. Classification of Contractors

MCPW should follow up its proposed initiative in registering contractors by working towards a full system of classification (based on regular inspection and monitoring) as a means of regulating the industry and thereby gradually improving standards.

8. Design and Specifications

Designers should be required to specify local materials and components whenever feasible, in order to improve market prospects for domestic manufacturers and economize on scarce foreign exchange.

I. INTRODUCTION

1. The construction industry impingnes on all other sectors in a national economy, and the substantial proportionate share of costs attributable to construction activities in overall investment in the range of economic and social facilities for which governments are responsible is a matter of increasing concern. Thus no nation can afford to ignore constraints on the effective performance of its construction industry if it seeks to turn economic plans into reality, and attention must be given to their alleviation or removal. In recognition of the above, the governments of a number of developing countries have adopted policies aimed at strengthening their domestic construction industries. UNIDO and the World Bank Group have responded with programmes of financial and technical assistance to the sector. Examples of financial assistance are the provision of loan funds for contractors through the facilities of local development banks and the financing of materials testing and research laboratories. Examples of technical assistance are training programmes, recommendations for modifying existing government procedures and institutions, and research into building technology and design suited to local conditions.

2. The Democratic Republic of the Sudan, in accordance with its goals of economic growth and self reliance, has taken the initiative in requesting UNIDO and the World Bank Group to explore ways to assist in the development of its domestic construction industry. The Terms of Reference (Annex 1) required the Mission to analyze the need and potential for developing the domestic construction industry, with the aim of enabling it to participate effectively in gaining an appropriate share of the market for civil engineering and building construction. Following extensive interviews and discussions with Ministers, officials and others (see Annex 2 for a list of contacts), the Mission was successful in identifying a project that would improve the capacity and effectiveness of domestic contractors (see Chapter V).

3. The Sudan covers 2,505,800 square kilometres or 8.3 per cent of the total area of the African continent. The climate varies widely from the rainy equatorial south to the desert of the north, and temperatures are high throughout the year, ranging from 27°C to 45°C. The population is 17.4 million (mid-1978 estimate), concentrated along the Nile and around Khartoum, with a rate of growth around 2.9 per cent. However, population density is less than 7 per sq. km., the lowest in Africa. Over the past decade the Government has embarked upon an ambitious development programme, which aimed at removing severe infrastructural bottlenecks, attaining self-sufficiency in a number of consumer goods, and expanding agricultural exports. This massive programme of capital formation resulted in rapid expansion of demand for construction which, partly due to its erratic pattern, severely overstrained local capacity.

4. The likely outcome was already becoming clear in 1976, when the ILO Comprehensive Employment Strategy Mission commented: 1/

> "The general picture is of an industry which is already fully stretched, lacking managerial, technical and craft skills, often operating with antiquated or inappropriate equipment, suffering from drastic shortages of key building materials and, in the private sector, often underfinanced and lacking the confidence to plan and pursue a steady programme of investment and development."

1/ *Growth, Employment and Equity. A Comprehensive Strategy for the Sudan.* International Labour Office, Geneva, 1976.

5. In spite of these difficulties, and in the absence of external support, it is encouraging that a number of domestic contractors have been successful in penetrating the market for building contracts and have secured annual levels of turnover in the LSd 1-5 million range. It is also encouraging that a group of domestic enterprises has taken the initiative in forming a Union of Sudanese Construction Contractors to assist in the formulation and implementation of a realistic policy to establish the industry more firmly. It became clear that there is a growing climate of opinion in the Sudan favouring assistance to private productive industry. The need for international agencies to become more involved in strengthening indigenous entrepreneurial capacity was eloquently expressed at the recent UNIDO-sponsored Solidarity Conference in Khartoum (held during the period of the Mission's visit) by the Secretary General of the Sudanese Employers' Federation, who is himself a director of a prominent domestic contracting company. This concern was echoed by senior government officials, and the Mission was therefore encouraged that the orientation of the Terms of Reference towards upgrading the capacity and performance of Sudanese domestic contractors was timely and appropriate.

II. CONSTRUCTION DEMAND AND ECONOMIC CONTRIBUTION

A. Historical Output Figures

6. Definitive statistics on the historical output of the construction industry in the Sudan are not available, and an accurate assessment of private sector building is particularly difficult to obtain. The National Income Accounts Section of the Department of Statistics (Ministry of National Planning) has attempted estimates of total output and value-added, distinguishing between the modern and traditional sectors of the construction industry.

7. The output of the modern sector was established based on the value of imported building materials and local cement production. A sample of construction projects in 1977/78 indicated that these materials represent about 44 per cent of the total value of construction projects. This relationship yielded the following statistics for total construction output in the modern sector (at current prices): LSd 93 million in 1975/76, LSd 66 million in 1976/77, and LSd 95 million in 1977/78. These are almost certainly significant underestimates, since a table on gross capital formation indicated construction output (buildings and civil works) by the public sector alone of LSd 77 million in 1975/76, LSd 74 million in 1976/77, and LSd 92 million in 1977/78.1/

8. The estimates of traditional construction output appear to be equally misleading. This sector comprises only the building of traditional houses using local materials. Estimates of new construction are based on population growth estimates (and historical figures for average family size). New construction is then assumed equal to 22 per cent of the total output of traditional construction. The derived estimates are LSd 82 million for 1975/76, LSd 158 million for 1976/77, and LSd 162 million for 1977/78. These appear to be gross overestimates (by one account, they imply complete rebuilding of all rural homes every year). The error may be caused by ignoring emigration of Sudanese, or by the high (nearly 4:1) ratio of repairs to new construction, or other factors. The Department of Statistics should be advised to correct these estimating errors.

9. Since traditional output is overestimated and modern output is probably underestimated, these two errors offset each other to some extent. It is thought that the private sector now accounts for more than half of total investment in the economy (perhaps 60 per cent). This relationship probably does not hold in the construction sector, due to large public expenditures on roads and other civil works. However, if we apply it to modern building construction alone, we would arrive at a figure for modern construction output of some LSd 140 million for 1977/78, rather than the LSd 95 million reported in the National Income Accounts (LSd 92 million in the public sector alone). However, the total output of the construction sector, including traditional building, is still probably overestimated by the official figure of LSd 257 million for 1977/78.

B. Analysis of Modern Construction Demand

10. According to the data on gross fixed capital formation, construction represents nearly half of total public sector investments. A breakdown of government construction spending for the three most recent years available is given in the following:

1/ Based on budgetary analysis and questionnaires submitted to governmental entities by the Department of Statistics.

	Per cent of Total Public Construction Spending		
	1975/76	1976/77	1977/78
Residential buildings	5	8	7
Non-residential buildings	22	30	33
Building repairs	neg.	2	1
Sub-total	27	40	41
Roads, bridges, canals	33	48	57
Repairs of roads, etc.	neg.	2	1
Sub-total	33	50	58
Other new construction	39	5	neg.
Other repairs (mainly ports, airports)	1	5	1
TOTAL	100	100	100
Total in LSd million	77	74	92

It is clear that road building has come to take an increasing share of public construction spending, reaching nearly 60 per cent in 1977/78. Office and industrial buildings have the second largest share (about one third), while housing is about 7 per cent.

11. Private construction activity is concentrated on housing, with some office and industrial building. The figure indicated by the Department of Statistics for gross fixed capital formation is merely the estimate derived for new traditional houses (LSd 32 million for 1977/78). In fact, modern building construction by the private sector probably exceeds this figure (see paragraph 9).

C. Contribution to the Economy

12. Despite the unreliability of official statistics, it is likely to be true that construction is the most important industry in Sudan in terms of employment, value added, growth rate, capacity utilization and profitability. This is understandable given the important traditional (or informal) construction sub-sector, the enormous level of development investments Sudan has made over the last decade, the lack of satisfactory returns as yet from large industrial investments in sugar processing and textiles, and the very low capacity utilization (less than 50 per cent) in even traditional industries like vegetable oil milling (the petroleum refinery in Port Sudan is a modest exception).

13. The National Income Accounts indicate Sudan's GDP (at factor cost) to be LSd 2.6 billion for 1977/78, of which all manufacturing accounts for only 5.7 per cent[1/], while construction and public works account for fully 4.6 per cent (again, this is probably on overestimate). While GDP price deflators are unavailable, it is thought the economy as a whole grew at about a 6 per cent

1/ Excluding forestry and fishing which aggregate to 1.9 per cent of GDP, and mining (0.06 per cent).

per year rate in the mid 1970s. The construction sector grew even faster, increasing its share of GDP from 3.5 per cent in 1972/73, while manufacturing industries declined from an 8.9 per cent share in 1972/73.

D. Future Demand for Construction

14. Previous forecasts of the demand for construction have relied on the Government's Six Year Plan (1977/78 - 1982/83). For instance, the Battelle report (prepared for the EEC)[1] forecasts an average of 7.8 million m2 per year of building over the Plan period (of which 5.8 million m2 is housing). At current prices of about LSd 200 per m2, that would amount to some LSd 1.56 billion annually, more than half of the total GDP for 1977/78. Obviously, this level of building is not taking place. The Government itself intended to construct more than a third of the housing indicated in the Plan, but has not had the funds to provide for more than a fraction of the sites and services alone. Road construction has been somewhat better, but still far below Plan estimates. Of some 6,400 km to be constructed over the Plan period, less than 700 km had been completed in the three years ending June 1980.

15. Thus, given the weaknesses of historical statistics, the complete lack of supply data and the Government's inability to finance planned projects, it is extremely difficult to forecast construction demand. Sudan's economy has not grown in real terms in the last two and a half years, while its inflation rate has exceeded 50 per cent annually. If we apply the inflation rate alone to our 1977/78 estimate of modern construction output (LSd 140 million)[2] the sector's current output would be indicated at about LSd 300 million. This may be slightly high as an estimate, since public investment has probably declined in real terms (the total development budget for central financing was only LSd 330 million for 1980/81). However, it is unlikely to be very far off, since three public corporations and only 18 large private contractors interviewed by the Mission in Khartoum reported an aggregate turnover of about LSd 125 million. There may be 1,000 contractors in the country as a whole, though most are much smaller than those interviewed by the Mission.

16. As for future road construction, the Government had commitments for LSd 120 million of financing for construction of 765 km of asphalt roads and 300 km of gravel roads. Detailed engineering had been completed on another 700 km of asphalt roads and 611 km of feeder road, while economic studies were completed on another 650 km of asphalt roads. These would represent substantial new investments if financing becomes available.

17. The Department of Housing of the Ministry of Construction and Public Works (MCPW) believes there is now a backlog of need for some 150,000 housing units in the main towns of Sudan, and new urban needs are likely to exceed 50,000 units per year (about two thirds of the Battelle report forecasts). Whether these needs are translated into effective demand depends on the Government's limited capacity to provide sites and services. (In some cases, lack of services has not deterred private home builders; an estimated 2,000 units were constructed in the Khartoum area in the last three years despite a lack of roads, sewage or public water supply). Housing investment is very popular in Sudan; many Sudanese living abroad are reported to be constructing housing for rental until they return to the country. Real estate is also the primary collateral security demanded by banks for any type of lending. However, since November 1979, local banks have been prohibited from lending for real estate projects, as part of the Bank of Sudan's general tightening of credit. Also, the Estates Bank

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1/ Study of Measures to Improve Efficiency of Building Techniques and Utilization of Local Materials. Battelle Institute, Frankfurt, 1980

2/ Paragraph 9.

(whose purpose is to finance housing construction) has been short of funds and has made no new loans since 1978.

18. One positive development for private investment in Sudan has been a relaxation (in 1980) of the country's foreign exchange controls. This has opened up a supply of hard currency for needed industrial imports and could help spur new private investments. It has helped alleviate shortages of essential spare parts and also of imported building materials. However, the cost of purchasing foreign exchange on the open market (LSd 1 = US$ 1 approximately compared to LSd 1 = US$ 2 official rate and LSd 1 = US$ 1.25 parallel rate) makes this a costly proposition for domestic contractors.

19. A few relatively new Arab investment companies will take an important share of new construction demand in the near future. The largest is the Arab Authority for Agricultural Investment and Development (AAAID), owned by 12 Arab governments. It is about to start construction on four large projects (dairy, poultry, vegetable production, and starch and glucose), with costs aggregating nearly LSd 180 million. Construction of three other projects (aggregating to LSd 135 million for rehabilitating a state farm and government oil mills, and establishing a feed mill plant) could start in early 1982. AAAID intends to approve new investments of up to LSd 300 million annually in the years to come. The Emirates and Sudan Investment Company has a smaller amount of funds available (some US$ 50 million of capital), but the construction component of its projects is proportionately larger (warehouses, cold storage, hotels).

20. In summary, in the last few years the demand for construction in the modern sector may have declined somewhat in real terms, due to a lack of financing for many government projects. The financial constraints on the Government are likely to continue for the next few years at least. Private investment in real estate and industry has taken a larger than expected share of construction demand, though it is difficult to quantify. Financing of private construction projects has become tighter recently, but the new currency exchange regime is helping relieve shortages of imported building materials, and may help encourage new investment in the future.

III. ORGANIZATION OF THE CONSTRUCTION INDUSTRY

A. Market Share

21. A large proportion (see paragraph 8) of construction work in Sudan is accounted for by traditional building works undertaken directly by home owners. This includes houses of mud, mud brick, straw and tin, primarily in rural areas, though many simple, one-storey urban dwellings are also owner-constructed.

22. In the modern sector, major civil works projects (mainly roads, but also irrigation projects, port and airport repair) account for perhaps half the output. This segment of the market is dominated by foreign firms, except for a small share undertaken by parastatal corporations. On the other hand, residential building is dominated by local firms, while non-residential building (offices, factories, warehouses, etc.) is divided among foreign and local firms. No reliable market share data is available but, as a first approximation, the Mission gathered that 60 to 70 per cent of the main contracts in Sudan (by value) are won by foreign firms, 10 to 15 per cent by parastatals, and about 25 per cent by local private firms. The actual work performed by local private firms may be closer to one third or more of total output, due to subcontracting with foreign firms.

B. Public Sector Contractors

23. In the early 1970s a number of state-owned corporations were formed to engage in a wide variety of industrial and commercial activities, three of which relate directly to the construction sector:

1. The Public Corporation for Building and Construction (PCBC);
2. The Roads and Bridges Public Corporation (RBPC); and
3. The Public Corporation for Irrigation Works and Earthmoving (PCIE).

Although these Corporations were all established during this period (PCBC and RBPC in 1973, PCIE in 1975), execution of construction works in the Sudan by state-owned institutions is not in fact a recent development. Even before the country achieved full independence in 1964, a substantial proportion of public sector building and road construction was carried out directly by the Ministry of Works (now the Ministry of Construction and Public Works) and irrigation and earthmoving projects for public sector agricultural schemes were undertaken on force account by the Ministry of Irrigation.

24. When the Corporations were formally established, workshops, staff, plant and equipment were transferred from the respective parent minis and control of operations was vested in independent Boards of Direct The chairman of each Board reports directly to the respective Minist (Minister of Construction and Public Works for the PCBC, Minister of Transport for the RBPC, and Minister of Irrigation for the PCIE). At the time the Corporations were formed, the domestic contracting industry as a whole was still in its infancy (transition period between domination of the private sector by foreign firms and the establishment of, mostly small-scale, domestic contractors). The Corporations then had distinct operational advantages over the private contractors due to their long experience coupled with superior physical and financial resources. In particular, the technical and craft skills of their personnel were clearly superior due to the training made available through the parent ministries and access to graduates from higher institutes of education (University of Khartoum, Khartoum Technical Institute and others). On the other hand, they also inherited rigid and overstaffed administrative structures and equipment inventories were not standardized (due to acquisition from a wide variety of sources), aging and often inadquately maintained. In recent years

the staffing advantage vis-à-vis the private sector has also declined as public sector salary scales have become uncompetitive, leading to loss of skilled staff either to the private sector or, more frequently, through emigration to Saudi Arabia and the Gulf states. The PCBC and the RBPC report that up to 80 per cent of their graduate staff leave after completing two years compulsory service.

25. While the effectiveness of public sector contractors has declined, the private sector has developed rapidly and a significant number of private domestic contractors now employ well qualified technical staff and have sufficient equipment and financial resources to compete effectively for medium- and even large-scale building projects. Private domestic contractors have, however, only achieved limited penetration of the market for civil construction, mainly due to their lack of experience and managerial capacity, coupled with the difficulties they have faced in acquiring heavy plant and equipment, but also as a result of Government policies which implicitly favour foreign contractors. Although the public sector contractors originally provided the sole opportunity for Sudanese participation in the construction process, their justification must now rest on either general policy grounds or achievement of a cost and pricing structure that offers a more favourable implementation of projects. An alternative strategy would be to introduce deliberate policies to support the growth of the private domestic contractors as the main agents for indigenization of the industry. In order to evaluate these alternatives, the Mission interviewed senior management of the three Corporations (see Annex 3) with a view to evaluating their present contributions and suggesting future priorities.

1. The Public Corporation for Building and Construction (PCBC)

Workload: LSd 3 million
Employees: 2,000

26. The Corporation specializes in building projects, and executes over 50 per cent (by value) of the building work commissioned by the Ministry of Construction and Public Works (MCPW).[1/] The PCBC controls substantial physical, manpower and financial resources. Its equipment inventory is estimated to be worth over LSd 1 million, it employs about 2,000 people and its working capital was raised in 1980 from LSd 500,000 to LSd 1 million. In addition the Corporation owns a complete tile factory (capacity 60 - 80 sq. m per day), a stone quarry with crushers (capacity 120 cubic m per day) and a mechanized brick factory (not in operation). Most of the Corporation's work is obtained by negotiation with its public sector clients (the most important being MCPW Projects Division, Khartoum), so it is difficult to obtain a direct comparison of its levels of efficiency and profitability vis-à-vis the private sector building contractors. However, officers of the MCPW Projects Division, Khartoum stated that prices quoted by the PCBC are generally higher than those offered by private contractors. Up to about two to three years ago this cost disadvantage was offset as works executed by the less experienced private contractors put a heavy strain on the limited supervisory capacity of the Projects Division and the quality standards achieved by PCBC were distinctly better. However, these compensating factors are now less valid as the managerial and technical abilities of the PCBC have declined due to loss of experienced staff by emigration and to the private sector, while the capacity and competence of private domestic contractors has improved.

1/ The MCPW still operates a Direct Labour Section for small-scale works and general maintenance as an integral part of the Ministry's establishment.

27. The future role of the Corporation is unclear. It remains very heavily staffed for the limited turnover, and the ratio of value of equipment to turnover is also much higher than that relating to the private sector. Whilst the management has attempted to improve levels of productivity, it has less freedom of action than the private sector in that wages and salaries are linked to Government scales, access to bank finance is denied, acquisition of spare parts is difficult and the contractual link with its clients is more constrained than for private contractors who can choose a marketing strategy to suit changing circumstances. One possibility would be to allow the Corporation more latitude as an independent public sector enterprise, although it would probably require additional working capital if it were to seek work in open tender and levels of financial discipline and profit motivation are unlikely to match those in the private sector. Another possibility would be for the PCBC to seek contracts in joint venture with private firms (already permissible within its terms of reference), so that its technical and equipment resources could be matched with the more commercial approach of the private sector. The main drawback to the latter strategy is that most private contractors have firmly stated that they would only be prepared to participate in a joint venture with the public sector if they had a majority shareholding and full management control.

2. The Roads and Bridges Public Corporation (RBPC)

Workload: LSd 44 million (including projects executed by contractors)
Employees: 1,700 (plus up to 15,000 casual labour)

28. The RBPC is a highway agency with overall responsibility for implementation of the Government road programme, including design, construction and maintenance. However, design work on major projects is mainly undertaken on the Corporation's behalf by foreign consultants and the only large force account new construction carried out by the RBPC is the 217 km Wad Medani - Sennar - Kosti road on which management and supervision is provided by the British consultancy firm of Roughton and Partners. Participation by domestic contractors in road building has so far been minimal, mainly due to the lack of qualified technical staff and difficulties in obtaining and maintaining specialized plant and equipment, and most new construction is still undertaken by foreign contractors (usually on a one-off, contract-by-contract basis). In terms of gross annual turnover, this Corporation is by far the largest of the three public sector contractors (actual value of works 1980/81 budgeted at LSd 44 million, as compared with PCBC's present workload of about LSd 3 million and PCIE's 1978/79 turnover of LSd 12 million and 1979/80 estimated turnover of LSd 22 million), although its actual share of the market is much lower since the above figure includes work executed by foreign contractors and supervised by foreign consultants under the general direction of the RBPC. The Corporation employs a permanent staff of about 1,700 (payroll LSd 3.4 million), supplemented by up to 15,000 casual workers (varying according to season and work requirements). An estimate of the current value of equipment was not available, but it is probably considerably in excess of LSd 1 million.

29. Several private domestic contractors with experience in earthmoving works and general concrete structures are confident that they could gradually penetrate the market for road building, providing that the necessary heavy equipment could be made available to them. It is likely that the larger projects will continue to be the preserve of foreign contractors for the foreseeable future, although local firms could be helped to obtain specialist sub-contractors for haulage, earthmoving and minor structures. The Mission recommends a strategy of encouraging private domestic contractors to engage in road building, so that the RBPC will eventually be free to concentrate on general project management plus maintenance of the growing highway network and construction of feeder roads in the less accessible parts of the country.

Road maintenance has so far been generally neglected in the Sudan, and the Mission recommends that it should receive considerably greater emphasis in future investment programmes. It is therefore encouraging that the RBPC expects to be awarded a major contract for the reconstruction and maintenance of town roads and streets in the Greater Khartoum area in 1982.

3. The Public Corporation for Irrigation Works and Earthmoving (PCIE)

Workload: LSd 22 million
Employees: 4,600 (plus up to 2,500 casual labour)

30. This Corporation is the Government-owned contractor for irrigation works, comprising two separate specialized branches, namely:

- The Irrigation Works Branch, with its headquarters in Wad Medani, and
- The Earthmoving Branch, with headquarters in the Corporation's headquarters building in Khartoum.

The two branches can be regarded as specialized contractors in their own right, forming part of a group (the Corporation). The Earthmoving Branch constructs and maintains irrigation canals, whereas the Irrigation Works Branch concentrates on civil engineering and general building work. Like the other two Public Corporations, the PCIE originated as a direct labour organization in its parent ministry (Ministry of Irrigation). Since its inception in 1975 it has operated more independently than the other two Corporations, but the chairman of the Board of Directors again reports directly to the Minister of Irrigation. The Minister of Irrigation is the main client, but this Corporation also executes work for other ministries and non-government clients (agricultural schemes in the private sector).

31. The Earthmoving Branch has an impressive inventory of specialized earthmoving equipment (cost LSd 14 million) for construction and maintenance (desilting) of canals, and has fully equipped and well staffed workshops for maintenance, overhaul and repair of its equipment at Wad Medani. The total labour force is about 3,500 (of whom 122 are engineers). The volume of maintenance work (mainly silt dredging) has risen rapidly, up from 3 million cubic metres in 1975/76 to 11 million cubic metres in 1980/81, and keeps about 50 per cent of the draglines continuously occupied. For new works the workload is more erratic and the Corporation is even considering tendering for contracts abroad in order to keep staff and equipment occupied during slack periods in the Sudan.

32. The work undertaken by the Irrigation Works Branch is more varied and embraces general civil engineering and building works. It is also well equipped (value in excess of LSd 1 million), although 30 per cent of the inventory is currently not in working order due to scarcity of foreign exchange for spares. The permanent labour force is about 1,100 (including 80 engineers), and up to 2,500 casual workers are employed according to contract requirements.

33. The PCIE is generally felt to be the most dynamic and productive of the three public sector contractors, and clients regard the technical quality of its work as satisfactory (although productivity levels could be improved). The Earthmoving Branch occupies a particularly strong competitive position thanks to its extensive experience in its specialized field coupled with a substantial plant inventory and impressive workshop facilities. Although the general contracting operations undertaken by the Irrigation Works Branch are less specialized, the ability of the Branch to undertake large projects outside the Greater Khartoum area (within which most of the more substantial existing domestic contractors operate) is a national asset. Thus the PCIE is generally the most highly regarded (or least criticized) of the three

construction parastatals, and is likely to continue to fulfil a useful function in the development of the agricultural infrastructure of the country. A recent example of PCIE's initiative is a proposed joint venture with an Austrian pump manufacturer to set up a factory at Wad Medani to roll pipes and manufacture regulators, penstocks, tanks, etc.

C. Foreign Contractors and Joint Ventures

34. In view of the logistical difficulties coupled with a decision to limit the first phase of any proposed project to the Khartoum area, the interviews and site visits conducted by the Mission were concentrated on contractors with offices and operations in Khartoum, Omdurman and surrounding area. By concentrating its efforts in this way, the Mission was able to secure extensive interviews with four foreign, two joint venture and fourteen local contractors, plus a building materials manufacturer (see Annex 4).

1. Foreign Contractors

35. With the growth of the construction industry during the 1970s, foreign contractors were attracted by prospects in the Sudan, although only a few of them thought it worthwhile to establish a permanent presence with the attendant heavy overhead during less productive periods. Most foreign contractors continue to work on a project-by-project basis, often managing the occasional contracts that they obtain in the Sudan through a main branch office in a neighbouring Arab country. Projects undertaken by foreign contractors are usually supervised by expatriate personnel; however the skilled and unskilled manual labour force is predominantly Sudanese. Some of the Sudanese employees on these projects obtain useful on-the-job training in craft skills and as plant and heavy equipment operators. The foreign contractors generally specialize in large civil works, technically complex projects and multi-storey buildings. In view of their high overheads, these companies are rarely able to compete effectively on contracts of less than US$ 2 million, so do not pose a serious threat to the market sector in which most Sudanese contractors currently operate. The foreign contractors indicated a willingness and desire to engage local firms as sub-contractors, although this happens only to a limited extent at present. If this practice could be further developed it would be desirable as a means of providing useful experience to local firms, although safeguards would be needed to ensure a real transfer of skills took place. It is certainly true that most of the projects currently undertaken by foreign contractors are beyond the skills and resources of the majority of the established local contractors. A point to remember is that foreign contractors enjoy certain contractual and financial advantages which are not effectively available to local firms. The most serious of these is that projects executed by foreign contractors are usually internationally funded and are tax exempt. Thus, the contractor is usually able to import materials and equipment duty free at an advantageous rate of exchange. Taking advantage of this concession, foreign contractors generally purchase almost all their materials, other than sand and aggregate, on the international market, partly in order to purchase products that will comply with international specifications and partly for price reasons and perhaps most importantly to maintain an uninterrupted delivery schedule which cannot be guaranteed when shortages develop on the local market.

36. Of the firms interviewed, the most firmly established is the Egyptian contractor Misr Concrete Development Company, which specializes in large-scale concrete frame structures. Misr maintains an inventory of approximately LSd 5 million of plant, tools and equipment in the Sudan to service its contracts, and its Khartoum office is backed up with specialist services from the Cairo head office. The management expressed concern about the future prospects for a continuous flow of major projects that is required to cover the overheads of the local office and, despite operating its own training programme, suffers from a severe shortage of the highly skilled labour required on its specialist projects. Reading and Bates Construction Company is a major United States contractor highly specialized in servicing the petroleum industry. Its operations are equipment-intensive and all of the firm's engineers, managers, supervisors and plant operators are expatriates. Strabag-Bau A.G. is a roadworks specialist which completed the 210 km road to Port Sudan over the period 1974-1980, but it is currently operating on a care and maintenance pending the award of a further contract. Sir Alfred McAlpine and Son Limited is a highly experienced British roadworks and civil engineering contractor, which recently suffered losses of £ 10 million on a single £ 17.5 million contract to construct a network of spine and feeder roads for the Rahad Corporation. These losses stemmed essentially from inadequate plant and equipment, insufficiently experienced transport staff, difficulties in locating suitable materials, delays in payment, and problems in agreeing claims (see Annex 4, Interview 1). The unexpected difficulties encountered by this very reputable and generally well managed British group are indicative of the special problems of contracting in the Sudan. The company is currently working on a foundations sub-contract, and is reviewing its presence in the Sudan in view of the level of competition and the difficulty in securing a steady and remunerative workload.

2. Joint Ventures

37. The Mission interviewed two joint venture contracting firms. Both are partnerships between well established international contractors and Sudanese participants, with the capability to compete for substantial projects in civil engineering as well as building. In both cases the foreign firm contributed most of the technical and managerial skills while the local partner contributed a knowledge of the local market. Both John Mowlem and Company/Africa Construct and Sudan Korean Construction and Contracting Company are managed by expatriates. In 1980 John Mowlem formed a partnership with Africa Construct, a local building company established in the early 1950s. In this case the local partner is a successful builder and has some influence on the technical policy pursued by the company. It was initially intended that the General Manager, Chief Estimator, Quantity Surveyor, Accountants and Senior Site Managers should all be expatriates, although the company is implementing a programme for training Sudanese so they may eventually assume a more responsible role in management and operations. In 1980 the company had an annual turnover of LSd 1.5 million, but projected earnings for 1981 are LSd 5-6 million, and this growth is expected to continue through 1983. The company has a large inventory of heavy equipment in Sudan, so they are able to pre-qualify for tendering on any major project. John Mowlem has made a substantial commitment to assure the joint venture's continued success in the Sudan.

38. Sudan Korean Construction was established in 1977 and the ownership is divided equally between Sudanese investors and the large Korean group of Daewoo Industries. The General Manager is a Korean national, but all other senior positions are staffed by Sudanese. There is thus a good chance that a transfer of managerial and supervisory knowledge and skills will occur. The company has an excellent inventory of first-class equipment for the construction of all types of buildings. When necessary, the local company can call on the Korean partner Daewoo Industries for additional advice and specialist resources.

D. Domestic Contractors

Introduction

39. The availability of statistics and records relating to the operations of domestic contractors in the Sudan is very limited. The Mission thus faced formidable difficulties in assessing their share of the market, their current capacity and their scope for an increased range of operations if current constraints were eased. No national classified list of contractors is available, although the MCPW is currently proposing to introduce a system of registration. Of an estimated total of 1,000 businesses associated with contracting in the Sudan, perhaps 300 have demonstrated some serious commitment to the industry and would be likely to apply for registration. In view of the paucity of information, the Mission sampled a wide range of informed opinion regarding the problems facing domestic contractors, including interviews with clients and their professional advisers, officers of the recently formed Union of Sudanese Construction Contractors, and 14 of the more prominent local firms (see Annex 4). Most of the firms interviewed are currently achieving levels of turnover in the range of LSd 1 to 5 million, which represents a useful starting point for future development providing that they can begin to install the more formal planning, operational and control procedures that are necessary to cope with multiple contracts of a more complex nature. Although these firms have managed to successfully overcome formidable difficulties to reach these levels of turnover with little or no outside assistance, the future transition from informal to more formal management styles is less likely to be achieved unaided. A significant indicator of the growing maturity of the domestic contracting industry was the formation in 1979 of the Union of Sudanese Construction Contractors.

The Union of Sudanese Construction Contractors

40. The Union has been successful in recruiting a total of 51 member firms (see Annex 5), 41 based in the Khartoum area and 10 in Shendi and Port Sudan. Its formation has provided a useful focus for the efforts of domestic contractors to improve their share of the construction market and make proposals to the Government, clients and other interested parties on behalf of the industry. As an example of the Union's initiative, it recently submitted a list of proposed revisions to the General Conditions of Contract and Specifications, which is currently under consideration by the MCPW. The Union is also endeavouring to compile a detailed list of the equipment owned by its members, with a view to formulating a standard hiring agreement which would assure equipment owners a fair return on their investment while permitting other contracting members to apply for pre-qualification on the basis of a capacity to draw on the pool of resources. The Union has also discussed the possibility of instituting training schemes for the staff of its members, in order to overcome the shortage of skilled labour. Despite these initiatives, the Union remains as yet a rather weak institution and some of the more prominent domestic contractors have not chosen to apply for membership. However, it is possible that the membership will be substantially augmented if, as has been mooted, the MCPW makes membership of the Union a condition for registration. The Mission was impressed with the initial approach of the Union's officers, and therefore recommends that efforts be made to strengthen the Union as a local institution and make it more representative, so that it could provide training and other assistance to member firms, including acting as a "clearing house" for inter-contractor equipment hire or exchange. It is envisaged that the Union could eventually serve as a channel through which the proposed technical assistance team could deliver effective support to domestic contractors.

Management and Operating Procedures

41. The organizational framework of domestic contractors generally falls into one of two broad categories:

1. Enterprises set up from the start with some kind of formal organization structure and reporting system. These firms are usually formed by people with previous administrative or commercial experience, such as engineers or businessmen with financial resources available from other activities who are attracted by the potential returns in contracting; or

2. Enterprises which originated as one man firms and which are run more informally, although not necessarily less efficiently (providing that the enterprise is content to limit itself to simple projects and the owner/manager is experienced, shrewd and hardworking).

The first category of firms inevitably has a higher level of overheads and is therefore vulnerable to the "feast and famine" fluctuations in construction demand in the Sudan. On the other hand, there is the important advantage that their systems can be developed steadily to cope with the transition to mature contracting enterprises handling multiple, dispersed and technologically complex projects. In the second category the owner/manager usually prepares estimates and tenders personally, negotiates with material and equipment suppliers, acts as site agent and general factotum, leaving only the day-to-day supervision of the labour force to his site foreman. Records and accounts are usually sketchy and the owner's pick-up also serves as the contractor's office. Cost records will, at best, separate income and expenditure on a job-by-job basis but will not measure the profitability of individual activities. The disadvantages of such an informal management style become apparent as these enterprises reach the threshold of transition to mature contractors as defined above, and the introduction of specialist staff, detailed documentation and reporting procedures can be difficult to achieve without friction, discontinuity and misunderstandings.

42. Despite the differences in organizational frameworks among domestic contractors, operating procedures are generally inadequate and will need to be strengthened if the domestic contracting sector is to increase its share of the market on the basis of improving efficiency. These weaknesses are in two main areas:

1. Pricing and Costing: Tendering is usually based on bills of quantities, although contractors complain that these are often inaccurate and the discrepancies between stated quantities and measured work executed in accordance with the drawings can be as much as 20 per cent. The calculation of unit rates is seldom based on factual studies of work done on previous projects and detailed cost analysis is rarely practised. If the eventual overall result on a job proves disappointing, the contractor is unable to pinpoint unrealistic unit rates and will only be able to modify future rates on a personal impression of those items which gave rise to excessive costs. Foreign (and joint venture) firms usually operate precise analytical estimating and costing systems and are able to reconcile costs and financial returns at each monthly measurement, and are therefore able to provide site management with information in time to modify working practices and bring operations back within budgeted figures. A similar emphasis on integrated estimating and costing systems will become increasingly important as the complexity of domestic contractors' operations grows.

2. Planning and Control: Project scheduling techniques are usually limited to the preparation of a simple bar chart, and labour scheduling or network planning methods are not used by domestic contractors. Even when a bar chart has been prepared it may not be used effectively for monitoring and control, with the result that projects frequently overrun their contract periods. It must be accepted that erratic material supplies make forecasting difficult, but there will be an increasing need for acceptance and operation of formal planning and control procedures as the businesses of domestic contractors grow and they take on increasingly complex projects.

Design and Technology

43. Most of the conventional building designs in the Sudan can be constructed using a fairly simple building technology, and mechanical equipment is only employed on a limited scale by domestic contractors. These simple technologies are often very appropriate to the current socio-economic and physical environment, and are considered by the Mission to be generally cost-effective. Technical skills required for most of the current building operations are also not particularly demanding. Thus the technical training priorities for employees of domestic contractors should be directed to basic skills upgrading and improved productivity. Selective introduction of mechanical equipment would also contribute to improving levels of productivity, and would thereby permit domestic contractors to produce more competitive bids. Thus the project identified by the Mission focusses on contractors' financial and equipment needs.

44. Foundations can be simple strip foundations, reinforced concrete strips or inverted reinforced concrete T beams, reinforced concrete rafts or drilled piles depending on loading and ground conditions. Deep layers of black cotton soil (a highly expansive clay) present serious problems in certain areas.

45. Walls are generally constructed from burnt clay bricks in cement mortar (Khartoum area) or from concrete blocks in areas where bricks are not manufactured (e.g. Port Sudan). Brick quality is generally poor (low strength, irregular size and shape), but this is not a critical factor since climatic conditions (dry and hot during the day, cooler at night) favour the use of thick walls. Low rise buildings are generally constructed with load-bearing walls (outer walls 1 1/2 brick or 0.35 m thick, load-bearing partitions 1 brick or 0.23 m thick). Selected bricks are available (at 2-3 times the price of the standard product) for use as facings on walls that are not to be rendered, although plastering both inside and out remains a common practice.

46. Roofs (and floors of multistorey buildings) are commonly of reinforced concrete slab construction. The roofs are waterproofed with either bituminous felt laid in hot bitumen or bituminous emulsion with glassfibre mats, applied over a cement-sand screen laid to the required falls.

47. Concrete frame structures are popular for multistorey buildings and industrial structures. Although the buildings are usually structurally sound, the quality of finish is frequently poor due to inadequate timber formwork and it is common practice to plaster all concrete work rather than leave a fairface finish.

48. Floors are usually of locally manufactured cement-sand or terrazzo tiles.

49. Joinery work is frequently of a poor standard, due to the use of low-grade timber and/or the emigration of skilled carpenters.

50. Plumbing and electrical work is of variable quality due both to difficulties in acquiring standard fittings and the shortage of skilled tradesmen.

Manpower Resources

51. The recruitment of casual unskilled labour is seldom a problem, except occasionally during periods of peak agricultural demand. Skilled labour is much harder to recruit, and the scarcity has intensified as the attractive wage rates available in Saudi Arabia, Libya and the Gulf States have drawn not only experienced craftsmen but also younger men leaving institutions such as the Khartoum Polytechnic and Vocational Training Centres. The shortage has enhanced the job security prospects for skilled workers, since the more established contractors now try to maintain a permanent core of skilled workers even during slack periods in order to avoid a hiatus when new work is awarded. One domestic contractor operating in the north prefers to recruit and train labourers from the south because they are less attracted by the lure of emigration. One effect of the growth of emigration among skilled construction workers has been to make domestic contractors suspicious of institutional training courses which provide some form of certificate, and thereby improve the emigration prospects of their employees. Most contractors would prefer to see on-the-job training programmes, possibly supplemented by relatively short upgrading courses based on the concept of modules of employable skill.

52. Loss of manpower by emigration is also a serious factor among professional, technical and administrative staff, although this affects private sector contractors less than the Government and public corporations (the RBPC reported losses of 80 per cent of their intake of engineering graduates after two years service). Private contractors have only recently begun to recruit qualified engineers and technicians, but will need to employ greater numbers of professional staff as they take on more technologically advanced building work and begin to penetrate the market for civil engineering.

Plant, Tools and Equipment

53. Much of the equipment currently operated by domestic contractors was purchased second hand from foreign contractors at the conclusion of their contracts, with the result that it suffers from excessive downtime and is often a key factor in reducing their operational performance. If they are to significantly expand their share of the market they need the opportunity to increase their inventory of plant, tools and equipment, but access to new equipment should be combined with proper training in plant selection, operation, maintenance and management if the investment is to yield its full potential return. Although the Union of Sudanese Construction Contractors has discussed the possibility of forming a joint hiring company, the Mission does not accept this as a feasible proposition as the sole channel for equipment financing under the project in view of the ownership, organizational and management problems that it would entail. The Union itself is not currently fully representative of domestic contractors, and it lacks the very considerable institutional strength that would be needed to administer such an activity. Construction equipment is expensive and vulnerable to rapid depreciation in value if it is not properly operated and maintained. Plant hire businesses are only successful if the operator maintains a high degree of efficiency and hourly, daily, weekly or monthly hire rates are sufficiently high to fully recover all costs (including the costs of eventual replacement) on a realistic estimate of annual usage and within the item's likely economic life. A joint hiring company operated by the Union (or by the Government or any other non-commercial source) would be subject to vociferous pressure to maintain low hire rates, and would be unlikely to recover its initial investment costs.

54. A more promising alternative would be to encourage the development of mutually beneficial hiring arrangements between domestic contractors, based on an increased inventory of plant owned and operated by individual firms. This arrangement would ensure that the incentive of individual ownership was maintained (coupled with individual responsibility for proper operation, maintenance and repayment of purchase costs) but would also spread the availability of specialist equipment to contractors with sporadic demand. Hire rates would be set to cover operational costs, risk and a realistic profit margin, thereby making the acquisition of the item more financially feasible. The Union, particularly if it becomes more representative, would be a suitable vehicle for devising and establishing an appropriate code of practice and hiring agreement to govern plant hire arrangements among domestic contractors. These individual hiring arrangements could be supplemented by pooling schemes among small, but compatible, groups of domestic contractors as the demand arose. A fully structured technical training programme would have to be instituted in conjunction with any scheme for encouraging the acquisition of equipment by domestic contractors in order to ensure that the maximum potential benefit is secured, and a specialist equipment adviser would be required to ensure that the plant purchased was suitable for the very severe operational environment in the Sudan.

IV. POLICIES, INSTITUTIONS AND PERFORMANCE CONSTRAINTS

A. Government Policies and Practices

55. Despite the importance of the construction sector as a factor in national development, the Government has been slow to recognize the importance of encouraging private domestic contractors. Local contractors have suffered from a public image as an ad hoc group, who may do an odd building job from time to time, but whose real interests, expertise and commitment are in trading and other businesses. While in many cases this is true, and even large Sudanese contractors often have other businesses as well, there has arisen a class of capable, sizable local builders who have made substantial investments of capital and permanent manpower in contracting ventures. (Diversification can be a wise strategy for a business subject to wide cyclical swings of demand). While these contractors are far from representing a disadvantaged class in the Sudan, and in fact their resourcefulness is one of their main ingredients for their success, there is still much that the Government could do to foster their further development.

56. Sudan could save considerable foreign exchange by employing local contractors rather than foreign firms on many Government construction projects. However, the Government does not seem to look for opportunities for the local private sector in this regard. In fact, foreign firms called into the country for a single job have several competitive advantages over private local contractors. The foreign firm:

- is not subject to local business profits taxes (recently increased from a 45 per cent maximum rate);
- can bring in equipment duty free (duties and defense taxes on imported equipment average some 35 to 40 per cent);
- obtains favourable contract terms which are usually unavailable to local private firms (including advance payments and payment in foreign exchange); and
- is not subject to the constraints of domestic financing arrangements . Also, foreign firms are normally presumed to do superior work, and while they do often have superior technical and capital resources, they may lack crucial knowledge of local conditions.

57. The frequent omission of mobilization payments on Government contracts with local firms, together with the need to find a 10 per cent cash guarantee, results in a severe cash flow strain during the early phases of the work, which is later aggravated by long delays in disbursements on interim and final payments (up to six months or even a year in some cases). These delays are partly due to administrative difficulties and partly to general budgetary problems, but could be alleviated by better financial planning by Government (perhaps including postponing the commissioning of some work until funds are known to be available) or by assigning higher priority to progress payments on construction jobs. The Mission recommends that a review of public sector contract payment procedures should be undertaken with a view to improving cash flow implications for domestic contractors by ensuring prompt settlement of certified payments and (subject to reasonable financial prudence) relaxing cash guarantee requirements and making appropriate mobilization advances. These improved procedures could be backed up by making contractual provision for the payment of "delay fees" (related to the duration of the delay and the amount involved) to compensate contractors for financial losses resulting from delayed payments and to encourage clients to settle accounts more promptly.

58. In April 1980 the Government consolidated three former sector investment acts into the Encouragement of Investment Act (see Annex 6), which is centrally administered by the Ministry of Finance and National Economy. Up to the present, no contracting firms have benefitted from investment incentives, unless the projects on which they were working had already received the right to import building materials duty free. The new Act also makes no mention of the construction industry as beneficiary. However, in the words of objectives listed in the Act, local contractors do provide "necessary services which contribute (to) economic development ... (and) assist in the realization of self sufficiency." It is recommended that contracting companies be themselves considered "projects" eligible for at least duty free import of equipment under the Act (though not duty free import of building materials), and possibly a period of exemption from business profits taxes for appropriate new firms.

B. Legal and Administrative Framework

58. Tendering is either fully open or among a prequalified list of contractors, although some of the more experienced and reputable domestic contractors are able to secure negotiated contracts with private clients. Most bids are based on a priced bill of quantities, which is remeasured as the work proceeds. Government contracts are subject to the MCPW "General Condition of Contracts and Standard General Buildings Specification Clauses", which were originally based on the British legal and contractual system. The specification clauses were last revised in 1970 and the conditions of contract were modified in 1975 (mainly minor changes aimed at clarification). The contractors argue, with some justice, that the conditions and specifications unduly favour the clients in that they specify responsibilities of the contractor in great detail but limit the employer's responsibilities to a bare minimum. One example is Clause 30 (Neglect of Contract: Government May Do Works)which allows the employer to determine the contract if the contractor is at fault, but provides no protection to the contractor if needed information or instructions are withheld or if, as frequently occurs, there are unreasonable delays in honouring payment certificates. Clause 35 specifies intermediate payments at six weekly intervals (rather than monthly as is common elsewhere) with 10 per cent retention deduction, but does not lay down the period within which the employer should effect payment, or make any provision for interest payments to the contractor on the outstanding sum. If the contractor ceases work until he receives payment (as has occured due to cash flow problems), Clause 34 provides that he may be considered to have abandoned the contract once the period of cessation reaches 15 consecutive days. In view of the history of substantial, erratic and unforeseeable increases in building costs in the Sudan, the most serious problems for domestic contractors arise from the application of Clause 12 (Variation of Prices), which states that "In no circumstances will any claim from the Contractor for a payment due to increased costs incurred by him as a result of increase in wages or in the cost of materials or transport be allowed."

59. The Union of Sudanese Construction Contractors has drawn up a proposed list of amendments to the General Conditions of Contract based generally upon the two standard texts "Engineering Law" by Max Abrahamson and "International Civil Engineering Contracts" by Duncan Wallace. These proposed revisions would have the effect of redressing the balance of risk and responsibility between the contractor and his employer and, although clearly designed to benefit the domestic contractors by reducing their risk of losses, would also have a beneficial effect for clients as established contractors would have more confidence in offering keener tenders for public sector work. By

defining the relative responsibilities of employer and contractor more clearly, they would also reduce the scope for misunderstandings which can lead to disputes and arbitration. The key proposals are:

1. Substitution of "Employer" for "Government" so that the standard conditions will be applicable to all contracts in the Sudan;
2. As a contract guarantee, the Employer should accept a bank guarantee (based on collateral provided by the contractor) rather than require a cash deposit of 10 per cent of the contract sum;
3. Contractor to receive two copies of the drawings instead of one;
4. Price variations to be allowed in accordance with increases in the costs of labour, plant and materials, plus recompense for "major economic dislocation" and provision for valuation of variations and additional work;
5. Unit prices may be renegotiated to take account of modifications in plans or technical instructions if quantities increase or decrease by 15 per cent (currently 25 per cent);
6. Modifications affecting procedure for determining a contract;
7. Procedure in the event of suspension or cessation of work (including possible recovery of extra costs by the contractor);
8. Interim payments to be made monthly (rather than at intervals of not less than six weeks) and should amount to the full value of work executed (currently 90 per cent). Specification of maximum period for Employer to honour agreed certificates, and provision for payment of interest to contractor on sums outstanding beyond this period;
9. Release of half retention money on issue of a certificate of substantial completion;
10. In the event of a dispute, the two arbitrators appointed by the two parties should be authorized to elect an umpire. In the event of a disagreement, the matter should be referred to a High Court of Justice to appoint such an umpire.

60. Some of these proposals could be implemented simply, but others would need careful consideration in order to forecast and allow fully for their eventual implications. For example, the proposal to make provision for price fluctuations is clearly just and, by reducing risks which contractors cannot reasonably forecast, could eventually lead to more realistic and favourable tenders for the client. But acceptance of the principle would mean devising a method to measure cost inflation of building materials, wages and equipment operation, preferably based on a series of building cost indexes which could be updated regularly. With these implications in mind, the Mission recommends that the Government seek assistance (on a short term expert basis) from the World Bank, UNIDO or other international agency to advise and assist the MCPW and the Union of Sudanese Construction Contractors on detailed modifications to the General Conditions of Contract and Specifications, and also advise the MCPW on procedures for setting up cost indexes and other aspects of implementation.

61. Preparation of drawings, bills of quantities and contract documents for small projects are often carried out within the MCPW or client organization, but private consultants (mostly foreign) are employed on major building and most civil works projects. Tender notices for small and medium size projects are advertised in the local press, while those for more substantial projects are published in appropriate international publications. For World Bank-financed projects the usual system of pre-qualification is adopted and a bidding advantage of 7 1/2 per cent is available to local contractors. However, very few domestic Sudanese contractors currently have either the resources or experience to pre-qualify for these projects. The Mission therefore recommends that the MCPW and other public sector clients should, wherever possible, simplify designs and bidding procedures, and "slice and package" large contracts into smaller units for bidding purposes, so that domestic contractors are enabled to compete effectively for more substantial and technically demanding projects. Such measures would inevitably increase the costs of preparation and supervision, but would be of direct assistance to the domestic industry and would offer the eventual prospect of more competitive prices as domestic contractors (with lower overheads) are able to take on a greater proportion of the work available in open competition.

62. The MCPW is proposing a system of registration, but not classification, of contractors. For registration, certain minimum requirements will be set in terms of technical, managerial, financial and physical resources, and the MCPW intends to discuss its detailed proposals with the Union of Sudanese Construction Contractors. Whilst appreciating current impediments, the Mission recommends that the MCPW should work towards a full system of classification, based on regular inspection and monitoring, as a means of regulating the industry and thereby gradually improving standards.

C. Design and Supervision Procedures

63. Most of the design and supervision work on major projects is carried out by foreign consultants, but the MCPW and other ministries have design and supervision capacity to cope with more modest projects and a number of private Sudanese professional practices have been set up in recent years. These cater mainly for the needs of private sector clients. The Sudan Engineering Society, which was established more than 30 years ago, provides a useful professional forum for local engineers and was instrumental in the formation of the Sudan Council of Engineers, which provides advice to the Government on matters affecting the professions. Other supportive institutions are the Engineers' Union and the Engineers' Club.

64. The Mission noted a tendency to over-design concrete structures, due largely to an understandable lack of confidence in the present standards of supervision and quality control. If these deficiencies were tackled effectively, significant savings could be achieved by the application of more realistic design standards and factors of safety. However, to assure the structural integrity of the buildings, it would be necessary to require that engineers, architects and supervisors should make more frequent site inspections to check on the quality of materials and workmanship. In addition it would be necessary to require that domestic contractors employ fully trained and experienced site personnel. Besides the costs stemming from over-design, there is also an excessive tendency to specify imported materials. If more high quality materials, particularly fittings and finishing products, could be produced in the Sudan, local employment opportunities could be created and foreign exchange outflow checked. Thus the Mission recommends that designers should be required to specify local materials and components whenever feasible in order to improve market prospects for domestic manufacturers and economize on scarce foreign exchange.

D. Construction Financing

65. Commercial banking in Sudan is dominated by five state-owned banks. Three foreign banks have branches in Khartoum - Bank of Commerce and Credit International S.A. (BCCI), National Bank of Abu Dhabi and Citibank - and there are two joint venture banks - Sudan Investment Bank (part owned by Société Générale) and the Faisal Islamic Bank (Saudi and other Arab contributors). Specialized development banks include the Industrial Bank, the Agricultural Bank, the Estates Bank and the Sudan Development Corporation. None of the specialized banks have provided financing directly to contractors. The Estates Bank has financed housing construction for individual owners, but lacking funds since its LSd 10 million capital was fully paid in 1973, it has been unable to grant any new loans during the last two years.

66. In the aggregate, since 1975 commercial banks have been the largest source of loan funds for private investments in real estate and industry. As of September 30, 1980 the commercial banks had LSd 507 million of loans outstanding to the private sector, of which LSd 153 million were short term loans to industry and LSd 102 million were medium or long term loans for capital investments[1/]. Since November 1979, however, as part of the Bank of Sudan's credit control measures, the commercial banks have been prohibited from making medium or long term loans, or any loans for real estate projects. An Inter-Ministerial Credit Advisory Committee was then established, chaired by the Governor of the Bank of Sudan, to monitor the implementation of credit controls and to approve overdrafts of more than LSd 100,000 issued to a single individual. A Secretariat Unit in the Bank of Sudan evaluates the credit applications by the commercial banks and recommends actions to the Committee.

67. Given the general tightening of credit availability in the country, it is not surprising that many contractors complain of inadequate financing. In fact, part of the problem is the lack of mobilization advances and delays in receiving interim payments on Government contracts. However, banks can also be faulted for requiring mortgages on undervalued real estate as collateral cover on all overdrafts. Chattel mortgages on equipment or hire-purchase arrangements are hardly ever used, though they should be in cases where a company's business prospects are excellent, but its owner's personal property is limited. Because of limited credit availability, Sudanese contractors have to provide the bulk of the funds for purchasing capital equipment from their own cash resources. Interest charges on bank overdrafts range from 14 per cent per annum to 16.5 per cent per annum. Whilst the Mission formed the opinion that banks are approaching lending to domestic contractors in an ultra-conservative spirit, this is understandable in view of the generally poor lending experience and the intrinsically high risk nature of the contracting business. It therefore has approached the problem of contractors' finance in two ways:

1. By proposing that clients should settle certificate accounts more promptly, backed by a "delay fee" system to compensate contractors for such delays if they continue to occur; and
2. The main project proposal in which the availability of finance would be linked to the supply of specific new equipment and spare parts, backed by appropriate technical and managerial advice.

1/ Source: Bank of Sudan's Economic and Financial Statistical Review, September 1980.

68. Commercial banks also provide local contractors with bid bonds (normally 2 per cent of the bid) and performance bonds (10 per cent of contract). Conditions vary depending on a bank's relationship with an individual contractor. Typically, 20% to 40% of a performance bond must be covered by a deposit (expensive if the contractor's overdraft must be debited to raise the cash for the deposit), and the bank also takes an assignment of contract proceeds. Usually, there is also a 2.5% bank fee for issuing the bond. Although the cost of obtaining bid bonds is significant, the Mission has no evidence that the fees and charges are other than an appropriate reflection of the commercial risk. Whilst it would be possible for Government clients to relax or waive bonding requirements for domestic contractors in certain cases, this would result in the risk being transferred to the client in return for a rather marginal relief to established contractors.

69. There are several private and public insurance companies in Sudan (with standard foreign reinsurance arrangements available as well). Many contractors avoid the cost of insurance unless required by their clients (typically only fire and theft; less often, worker liability). In general, the availability and cost of insurance was not a frequent source of complaint among domestic contractors, and premium rates accord reasonably with the likely level of risk.

E. Availability of Building Materials

70. Undoubtedly the limited availability of cement has been one of the most critical limiting factors on Sudanese construction capacity in recent years. Production at Atbara improved in the fiscal year July 1979 to June 1980 to 130,000 tons compared to a rated capacity of 200,000 tons per annum (tpa), while the other plant at Rabak produced 43,000 tons compared to a rated capacity of 100,000 tpa. Imports in 1979 were 62,000 tons 1/ so that, although imports are believed to have risen considerably in 1980, it is likely that the current level of cement usage is little more than 250,000 tons per annum. The production capacity of the Atbara plant is currently being upgraded by the construction of additional kiln capacity, a new aerial ropeway to improve raw materials supplies, and the increase in electrical generation capacity from 3 MW to 12 MW; the Building Materials Corporation (BMC) expects that by the end of 1982 it should be producing cement close to its new rated capacity of 450,000 tpa. In addition, a replacement crusher at Rabak should bring production there closer to the rated capacity of 100,000 tpa and feasibility studies have been conducted on additional capacity in the longer term. Further, UNIDO is currently devising a training programme through co-operation with the Government of Turkey, which should improve the management and operational procedures of the BMC. The Mission thus concluded that there are reasonable grounds for optimism that cement will be a less serious constraint when all these measures are complete. Distribution will, however, remain a serious problem and priority should be given to improving road access to the plants, in view of the limited capacity of the Sudanese railway system. It should be noted that some estimates of current potential cement demand range up to 600,000 - 700,000 tpa, which would justify proposals such as that to construct an additional 500,000 tpa plant at Derudeb, a small town on the Port Sudan - Kassala railway about 300 km from Port Sudan. However the Mission regards these forecasts as unrealistically high.

1/ A complicating factor in tracing past trends in cement consumption is the fact that Sudanese working abroad were permitted to import cement with their currency savings, although this was officially registered as "null value imports". The amount involved is not known, but estimates for 1977 range as high as 100,000 tpa. This system was superseded in 1980 with the general liberalization of foreign exchange controls.

71. Although there is a continued reliance on a wide range of imported building materials, these (with the occasional exception of reinforcing bars, which are rolled in limited quantities in a local factory) cannot be regarded as a direct constraint on construction output, as has been the case with cement. The Mission reviewed the recent detailed study of the prospects for additional building materials production in the Sudan prepared by the Battelle Institute, Frankfurt for the EEC, but has confined its comments and recommendations to those aspects of building materials production and distribution that have a significant impact on the operations of domestic Sudanese contractors.

72. The most common walling material in the greater Khartoum area is burnt clay brick, of which about 400 million are produced annually. Most of these bricks are produced by the numerous small enterprises located on both banks of the Nile using slop-moulding, sun drying and burning in very simple clamp kilns, and they are generally of poor quality, irregular in shape and of non-standard size. About ten years ago common brick sizes were 230 x 110 x 60 mm, resulting in 400 bricks per cubic metre of wall. Bricks are now as small as 190 x 95 x 45 mm, resulting in a need for up to 700 bricks per cubic metre. The Mission inspected one of the better brick making operations, producing bricks averaging 25 kg/cm2 which are highly susceptible to fracture. Although quality was poor, productivity was impressive and the product was relatively cheap (common bricks LSd 15-20 per thousand, selected bricks for use as facings LSd 25-30 per thousand). The owner was anxious to improve production techniques and quality control, but this would only be feasible if selling prices were to remain competitive. A major problem is that production can only take place during six to eight months of the year, as the brickyard area is flooded during the remaining period. Any mechanized plant would therefore have to be moved and stored for part of the year and the investment would have to be amortized over the relatively short production period. Such considerations would millitate against the purchase of a pug mill plus a generator for improved mixing or building permanent kilns to reduce the proportion of over- and under-fired bricks, currently in excess of 35 per cent. Nevertheless, the Mission identified a clear need to upgrade the production of these small-scale brickmakers and envisages that part of the building materials component of the proposed project could be directed to specific investments aimed at improving output, quality control and management of small-scale brickmaking enterprises.

73. The Mission also envisages a market for good quality, uniform clay bricks with a compressive strength in excess of 100 kg/cm2 for use as facing bricks and in load-bearing structures up to three storeys. The Mission was informed that the MCPW has purchased equipment for two new mechanized brick plants (excepting generators, which will be necessary in view of the voltage fluctuations and occasional breakdowns in mains supply), of which only one was partially assembled (not completed due to site allocation problems). The Mission was unable to inspect this equipment, but it was reported that each unit would have a theoretical capacity of 3,000 bricks per hour, or about 9 million bricks per year. If a suitable clay deposit could be located, this level of production should find a ready market at premium prices, taking into account the need for an additional investment of about LSd 750,000 plus US$ 300,000 to cover the cost of erecting buildings to house the equipment, drying sheds and kilns, plus the purchase of generators (excluding site costs). The lead time to bring a mechanized brick plant on line is normally 18 to 24 months. However, a first step would be to undertake a critical examination of the equipment and evaluate the alternative of producing high quality hand moulded bricks which would, in principle, be a more appropriate technology.

74. Concreting aggregates are freely available in the greater Khartoum area, including sand, gravel and good quality crushed stone. A small rolling mill produces round steel reinforcing bars using scrap as raw material (the limited iron ore deposits in the Red Sea coastal area are currently mined and exported unprocessed on a small scale), and most of the demand for steel bars and rolled sections is covered by imports. NIPCO, a private precast concrete products manufacturer (see Annex 4, Interview 21) has shown considerable enterprise in producing a wide range of specialized precast concrete products, which provides a useful service to local contractors and is worthy of further encouragement. A soft sandstone quarried near Omdurman is a traditional material for house building and boundary walls (laid in mud mortar but with joints pointed in cement mortar), while more durable limestones are quarried further south (Jebelein area, south of Kosti) and are mainly employed as decorative facings. Local marbles are crushed and used as aggregates for terrazzo tiles (although some coloured marble chips are still imported from Italy for this purpose).

75. Apart from palm trunks (Doum palm) used as main support beams in traditional flat roofs, local construction timber is not available in northern Sudan. Softwood for concrete formwork, joinery, etc. is imported from northern Europe, and the distribution trade is generally well organized in relation to contractors' needs. The south of Sudan is a relatively small producer of tropical hardwoods, particularly African mahogany which is used for furniture making and panelling to walls and ceilings.

76. Paint manufacture in the Sudan commenced in the early 1960s, and local production now fully covers local demand. The major local paint factory (Rainbow Industries) used imported raw materials to produce a full range including distempers, PVA emulsions and gloss paints. A few entrepreneurs produce steel windows and doors on a small scale, and some of them are considering limited aluminium fabrication. A substantial proportion of ancillary building materials continue to be imported, including hardware and ironmongery (including nails and screws), electrical fittings, plumbing materials and sanitary fittings, waterproofing materials and sheet glass. Some of the larger domestic contractors import direct (particularly those with a trading background) and certain materials are occasionally in short supply, but active and experienced contractors are usually able to acquire sufficient materials providing they are prepared to investigate all potential sources.

77. Considerable opportunities remain for profitable investment in building materials manufacture and distribution although, in view of the very diversified and dispersed market, the potential for future investment in individual large units should be investigated with caution. In the view of the Mission, however, the availability of building materials - other than cement - is not a key constraint on the performance of domestic contractors. Thus the project identified by the Mission includes only a limited building materials component aimed at improving output, quality control and management of existing building materials producers who have a significant impact on the operations of domestic Sudanese contractors. It is envisaged that this component will take the form of moderate investments in improved equipment for operations such as brick manufacturing, the production of precast concrete items, metal fabrication, joinery, or the production of ancillary building materials.

F. Professional, Technical and Craft Skills

78. Many of the senior staff of domestic Sudanese contractors started their careers as specialist craft sub-contractors or as general traders and have picked up a measure of technical knowledge in the course of their business activities, although professional engineers are now being attracted in increasing numbers. This trend towards participation by qualified and experienced engineers will become increasingly important as domestic contractors bid for more complex structural projects and penetrate the market for road and general civil engineering projects. Engineers receive their academic training either at the University of Khartoum or abroad, and the Council of Engineers is responsible for grading engineers and technicians according to education, experience and professional attainments. So far it has registered:

50	'Consultants'	(eminent engineers)
82	'Specialists'	(degree plus experience)
323	'Engineers'	(degree holders)
638	'Graduates'	(graduates of technical institutions)

Formal management training is available at three institutions:

Department of Business Administration, Faculty of Economic and Social Studies, University of Khartoum

Institute of Public Administration

Management Development Centre

In addition to these general management courses, the Faculty of Engineering and Architecture at the University of Khartoum has taken a lead in establishing an M.Sc. course in Construction Economics and Management. It is, however, also important that management topics be introduced in the undergraduate curriculum, and that short courses in specialist aspects be made available to upgrade the skills of practicing managers.

79. Management skills remain a critical factor in the development of the local industry and, although there has been some progress since the publication of the comprehensive strategy for the Sudan 1/ in 1976, the basic analysis remains valid:

> " Many of the present unsatisfactory features of the industry appear to hinge on inadequate construction management skills. The successful completion of individual projects depends on the ability of the contractor and his staff to wield his resources of money, men, materials, plant and information to maximum advantage. Although management cannot be encompassed or transmitted merely as a portfolio of techniques, knowledge of basic management techniques is a prerequisite to applying the essential innate quality of shrewd judgement effectively."

Although training courses can be helpful, "learning by doing" is probably the most effective and acceptable way of upgrading practical construction management skills, and the Mission's strategy in devising the proposed project has been to link the availability of investment finance to procedures which would improve costing, planning, documentation, monitoring and control procedures in participating enterprises through access to an advisory service provided by a compact multi-disciplinary expert group. Since it would be helpful to attach such an advisory service to an existing parent institution, and preferably one involved directly

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1/ Growth, Employment and Equity - A Comprehensive Strategy for the Sudan, International Labour Office, Geneva, 1976.

in management development, training and consultancy, the Mission reviewed the activities and performance of the Industrial Research and Consultancy Institute and the Management Development Centre.

80. The Industrial Research and Consultancy Institute (IRCI) was established in 1965 with UNIDO's assistance, and has continued with all Sudanese staff to assist industry primarily through undertaking pre-investment project studies. The IRCI also provides product testing and some assistance to existing industries on production problems. In the construction sector, it has undertaken studies of projects to increase production of lime, cement, clay bricks, gypsum and ceramics.

81. The Management Development Centre (MDC) was founded in 1965 to provide management training and consulting assistance to public and private enterprises in Sudan. The ILO has provided continuing assistance to the MDC; its current programme (six advisors) is due to expire by the end of 1981, although there may be a renewal in part. The MDC provides five week courses in production, finance, marketing, and general management, as well as shorter management seminars (two to three weeks) for executives of a single enterprise. In co-operation with a French training institute (CESA) it also offers a four month "young executive" training programme. It schedules courses on demand, charging participants nominal fees of LSd 75 each for seminars, LSd 100 each for the five week course, and LSd 500 for the young executive programme. With a Sudanese professional staff of 44 and 6 expatriates, it now handles between 200 and 300 trainees per year. Since the mid 1970s the MDC has also become active in management consulting for public and private clients. In 1980 it had eight assignments (companies producing matches, asbestos and Pepsi Cola, a gum arabic exporter, a printer and the Council of Engineering). For these services it only charges nominal fees of about LSd 75 per man week.

82. The ILO withdrew from the MDC in the early 1970s, but then returned when a high turnover of Sudanese staff threatened to impair the MDC's effectiveness. Since then the salary levels of the Sudanese staff have been raised (to the levels of university professors, who are the highest paid public servants in Sudan). The staff also benefits from bonuses based on consulting fees earned. As a result, the turnover problem has been greatly reduced, and the MDC has retained a young but capable staff. It is recommended that the technical assistance team associated with the proposed project be located in the MDC.

83. The shortage of first line supervisors and skilled craftsmen was identified as a constraining factor by most of the local contractors, but they remained wary of comprehensive training schemes that would be likely to boost the "brain drain" of emigration. The Mission therefore preferred to propose a modest programme of short upgrading courses based upon the concept of providing modules of employable skill, which should prove cost effective, helpful to the participants and welcome to their employers, while not conflicting with the longer term and more comprehensive training made available by the Khartoum Polytechnic and the Vocational Training Centres. The course modules should be held at an existing institution with suitable workshop facilities and experienced staff who could provide (limited) supplementary training, advice and supervision. Two possible institutions that could support such an activity are the Khartoum Polytechnic and the Khartoum Vocational Training Centre.

84. Khartoum Polytechnic currently provides a three year training programme leading to a technical certificate in Engineering, Business, Agriculture or Fine and Applied Arts. There is also a four year programme for teacher training and there are plans to establish a five year programme culminating in a Bachelor of Science degree. The College of Engineering graduates about 24 students per year in each of the following disciplines: electronics, civil, mechanical and electrical engineering, architecture, surveying, laboratory technology, and textiles.

85. In addition to the above programme, Khartoum Polytechnic offers a two year evening course (20 hours per week) in various building crafts in its College of Further Education. Participants must have some previous training and are expected to keep working on their jobs during the day. Specializations include fitting, welding, machining, auto mechanics, electrical, refrigeration and air conditioning, plumbing, carpentry, bricklaying, and painting. Plastering is expected to be added next year. There were 280 graduates of these craft training courses last year, with over 300 per year anticipated in the future. A shorter ten month craft training course has been provided for unskilled refugees (125 participants to date).

86. Khartoum Polytechnic's workshop and laboratory equipment is in need of repair, and some items need to be replaced. The European Development Fund may provide some of the funds needed in this regard (in connection with the expansion of staff and facilities required to establish a Bachelor Degree programme). It is recommended that the building crafts workshops, however, be financed out of the project proposed in this report, which would hope to re-orient craft level training in the direction indicated above. About US$ 100,000 would be required to provide the needed equipment and spare parts.

87. The Khartoum Vocational Training Centre was set up under a technical assistance programme with the Federal Republic of Germany and has a well equipped carpentry workshop in addition to other departments concerned with metalworking, welding, motor engineering, electrical engineering and radio and television repairs. Students enter on completion of intermediate school (eight years formal education) and undergo two years training at the Centre, followed by a one year supervised apprenticeship. Capacity of the carpentry workshop is 16 students, but 2 parallel courses are run (one in the morning and one in the late afternoon/early evening). Three full time trainers are currently employed, but it was intended that three additional instructors should be engaged from June 1981. The current course content covers general carpentry and cabinet making, and most course leavers find jobs in the furniture industry which generally offers more favourable employment prospects than the construction industry for highly skilled carpenters. Workshop space could be made available during the long summer vacation (15 June - 15 September) for short term carpentry upgrading courses, and the two instructors interviewed by the Mission also commented that they would be prepared to assist in running on site training modules.

88. Most of the foreign and joint venture contractors, as well as some domestic contractors, provide some form of on-the-job training. An interesting approach adopted by Misr Concrete Development Company is the pairing of Egyptian skilled labour with unskilled Sudanese assistants, usually on a one-to-one ratio, and the company claims good results from this practice. There is a view that compulsory on-the-job training schemes should be a feature of all contracts awarded to foreign contractors[1/], but the additional cost would no doubt be reflected in higher tenders and would in any event be difficult to police.

1/ See, for example, recommendations in "Report of the Workshop on the Development of the Construction Industry in the Sudan", Khartoum, Sudan, 25-29 November 1978, ILO Construction Management Programme Note CONSTR/10, ILO, Geneva, 1979 (unpublished).

V. PROPOSED PROJECT TO ASSIST DOMESTIC CONTRACTORS

A. Introduction and Objectives for Phase I

89. The Mission's task was to study the domestic construction industry and identify a project for its development to a level that would enable it to participate effectively in gaining an appropriate share of the market for civil engineering and building construction. It became clear that there is a growing climate of opinion in the Sudan favouring assistance to private productive industry, and the Mission was therefore encouraged by indications that the orientation of the Terms of Reference towards upgrading the Sudanese domestic contractors was timely and appropriate. In order to succeed, a contractor must have at his command resources in four key areas, which may be described as the "four Ms", namely materials, men, money, and machinery (plant and equipment). To employ these resources effectively, he must also possess a fifth intangible but crucial resource: management. The Mission therefore sought to identify the most serious constraints that affect the availability of the four tangible resources and to formulate a project that would tackle them effectively by also providing an input of technical assistance to upgrade their construction management skills.

90. Materials: Undoubtedly the limited availability of cement has been one of the most critical limiting factors on Sudanese construction performance in recent years, but the Mission concluded that there are reasonable grounds for optimism that this constraint will be substantially eased when current measures are fully implemented. Although there is a continued heavy reliance on a wide range of imported building materials, these do not generally result in excessive delays or competitive disadvantages to domestic contractors. Thus the Mission only proposes a limited building materials component in the current project, aimed at improving output, quality control and management in manufacturing operations of direct relevance to the needs of domestic contractors, such as brick manufacturing, production of precast concrete items, metal fabrication, joinery and production of ancillary building materials (plumbing goods, sanitary ware, ironmongery, electrical fittings, etc.).

91. Manpower: In the area of manpower, a key problem is the shortage of skilled craftsmen and the project includes a direct training component to finance the provision of short upgrading courses based on the concept of modules of employable skills.

92. Finance and Equipment: The main focus of the project is on domestic contractors' financial and equipment problems. It was concluded that a scheme to directly finance working capital needs would present serious problems in allocation, monitoring and control, and also that domestic contractors' cash flow problems would be considerably ameliorated if contractors working for public sector clients were able to secure mobilization advances and could rely on prompt settlement of interim and final payment certificates. An outstanding disadvantage for most domestic contractors is the lack of access to foreign exchange at competitive rates to finance imports of necessary plant, equipment and spare parts. (Also, the Government has not yet provided Investment Code benefits to domestic contractors, which puts them at a disadvantage vis-à-vis foreign firms who can normally import equipment duty free).

93. Management: Cost and time conscious construction management is crucial to the success of any construction business, and this will be even more necessary as domestic contractors begin to penetrate the market for civil engineering projects. Thus the proposed project contains a relatively heavy technical assistance component aimed at installing appropriate procedures for project planning and control and generally raising standards of practical construction management, particularly equipment management.

94. The Mission has therefore identified the need for a project to examine in detail the equipment needs of domestic contractors and arrange for the supply of appropriate items through commercial banks operating within the public sector. Allowance has been made both for the acquisition of new equipment and for the purchase of spare parts to rehabilitate the very substantial inventory of existing equipment that is not currently in operation. The project would thus have two main features: provision of foreign exchange for import of equipment and spare parts for domestic contractors; and provision of technical assistance for on-the-job training and courses for managers, engineers and craftsmen in the domestic contracting industry. Since most of the established domestic contractors are based in Khartoum and in order to avoid excessive dispersion of effort, the first phase of the project would focus on the Khartoum metropolitan area. It is proposed that the duration of this phase should be three years, following which consideration should be given to broadening the scope of the project and/or spreading the benefits to other parts of the Sudan. The technical assistance team would include two experts in construction management, one of whom would be the Team Leader, one expert in construction plant and equipment, one financial expert specializing in costing techniques and financial analysis of enterprises, and one general crafts supervisor. In addition, up to 18 months of short-term specialist assistance (e.g. in equipment leasing, building materials, road engineering, crafts specialities, etc.) would be financed based on needs assessed by the Team Leader. The function of the team would be to provide training courses and on-the-job consulting assistance for contractors, and to assist banks with loan applications. Contractors would be entitled to an initial period of consulting assistance at no cost when importing equipment or spare parts under the project, but would thereafter be required to pay small fees for such services.

B. Costs and Financing of the Project

95. A tentative indication of project costs and financing is given below:

PROJECT COSTS (COVERING A THREE YEAR PERIOD)

	Foreign Costs (US$ '000)	Local Costs (LSd '000)	Total (US$ '000)
Technical Assistance and Training			
5 experts (relocation, salary and benefits) (5 x 36 man/months = 180 man/months)	1,225	-	
Housing for 5 experts	-	225	
5 vehicles	70	3	
Vehicle operating costs	18	7	
2 counterparts, 3 secretaries, 5 drivers	-	61	

	Foreign Costs (US$ '000)	Local Costs (LSd '000)	Total (US$ '000)
20 short term craft courses (30 students, 80 hours each), Sudanese instructors and support costs	-	56	
1.5 man/years short term consultants (18 man/months)	200	60	
Sub-total	1,513	402	
Equipment and Spare Parts 1/			
Replacements and spare parts for workshop equipment, Khartoum Polytechnic	100	32	
Equipment and spare parts for building materials workshops	500	148	
Rehabilitation of contractors' existing plant and equipment	2,000	1,000	
New equipment for contractors (including 30% supplement for spare parts)	4,400	1,302	
Sub-total	7,000	2,482	
Price contingencies 2/	3,156	1,499	
Total Costs	11,669	4,383	
Total in US$ '000 equivalent	11,669	+ 5,488	= 17,157

PROJECT FINANCING

	US$ '000	LSd '000
Foreign currency loan	11,669	-
Contractors' funds 3/	-	2,620
Government funds (from counterpart receipts)	-	1,770
Total Financing	11,669	4,390

1/ Local costs include average duties of 35%, which could be eliminated if local contractors are given benefits under the Investment Code.

2/ Assuming project implementation begins in April 1983, rehabilitation of existing plant occurs in the two following years, replacement and spares for Khartoum Polytechnic in the first project year, and other foreign exchange costs are spread equally over the three year implementation period. No separate price escalation is included for consultant salaries and benefits, but all other foreign exchange items and corresponding local costs (primarily duties and taxes) are subject to 10% p.a. price increases. Local costs for personnel, housing and vehicle operating costs (in Sudanese pounds) are subject to decreasing annual price increases according to the following

C. Financing Equipment and Spare Parts

96. Equipment requirements should theoretically be based on forecasts of construction demand and the share of the market to be obtained by domestic contractors, an estimate of the additional capacity needed to meet the market share, and estimates of operational existing equipment as well as that which is in need of replacement or repair. Inadequacy of underlying data makes such a rigorous approach impossible although the Mission, with assistance from the Union of Sudanese Construction Contractors, was able to compile a representative list of existing operational heavy equipment owned by this significant group of domestic contractors (see Annex 7) and a list of heavy equipment in need of rehabilitation (see Annex 8).

97. In the Mission's judgement, there will be a modest increase in construction demand over the next five years, and there is a potential for local contractors to increase their share of the market. With this understood, the Mission developed an integrated package of equipment that would enable local contractors to bid on larger size building contracts, and to begin bidding on small road and general civil engineering projects. The forecast of equipment requirements is based on discussions with contractors in the Khartoum area who would be the target group for phase 1 of the project. In the Mission's judgement, Khartoum-based contractors would be able to absorb about 60 per cent of the proposed package of equipment in the initial three year period. Spare parts and maintenance equipment costs (at the manufacturers' normal recommended level of 30 per cent for overseas operations) are included in the estimates. The costs of rehabilitating and repairing existing equipment were based on sample inspections of the heavy plant inventories of the larger domestic contractors.

98. Methodology: As a first step in forecasting likely levels of demand for equipment and spare parts by domestic contractors, the Mission reviewed construction programmes proposed in the forthcoming Six Year Plan, assuming that, providing the proposed project is implemented, domestic contractors will be successful in securing 25 to 30 per cent by value of work available for tender. Typical contracts might include multi-storey structures, housing, roadworks, irrigation and sewerage schemes, ational and health projects, factories, workshops and warehouses, land arance and earthmoving. Having established a broad estimate of the olume and type of work that might be secured, a list of the equipment that would be required for its execution was prepared. The inventory of existing operational equipment (Annex 7) and repairable equipment (Annex 8) was then deducted from this overall list, resulting in the tentative list of additional equipment needed by Sudanese contractors set out in the following:

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schedule: 40% (in 1981/82), then 30%, 20%, thereafter 10%. This assumes Sudan's rate of price inflation comes under control.

3/ To cover local costs associated with importing equipment and spares, local repair costs on existing plant and equipment, and an estimated aggregate of LSd 117,000 in consultants' fees payable to the Management Development Centre, as well as LSd 28,000 for fees and training courses (half the cost) given by Khartoum Polytechnic.

TENTATIVE LIST OF ADDITIONAL EQUIPMENT NEEDED BY SUDANESE CONTRACTORS

Item	Quantity	Estimated US$	
		Unit Cost	Total Cost
25 metre tower crane	1	200,000	200,000
18 metre tower crane	2	125,000	250,000
30 m3 per hour concrete batch plant	1	75,000	75,000
15 m3 per hour concrete batch plant	2	35,000	70,000
6 m3 tipper trucks	15	30,000	450,000
0.5 m3 concrete mixers	25	4,000	100,000
2 inch concrete vibrators (electric powered)	25	160	4,000
2 inch concrete vibrators (petrol powered)	25	250	6,250
Diesel generator (200 KW)	1	15,000	15,000
Diesel generators (100 KW)	2	5,000	10,000
0.5 ton electric hoists	5	800	4,000
1 ton diesel powered hoists	3	2,500	7,500
250 C.F.M. diesel powered compressors	2	6,000	12,000
50 G.P.M. electric water pumps	5	500	2,500
Semi-automatic concrete blockmaking machines	8	4,000	32,000
1.2 x 2.5 metre steel scaffolding brackets	1200	25	30,000
Scaffolding planks	600	15	9,000
Patented steel or wood forming (shuttering)	15000 m2	10 (per m2)	150,000
Mobile hydraulic crane (80 ft boom, 15 ft jib, 25 tons)	1	250,000	250,000
Track mounted canes (100 ft fixed boom, 50 tons)	2	250,000	500,000
D-6 Caterpillar dozers with ripper attachment	4	140,000	560,000
D-4 Caterpillar dozers	2	100,000	200,000
G-12 Caterpillar graders	3	120,000	360,000
955 Caterpillar loader	3	125,000	375,000
Excavators with backhoe attachments	5	35,000	175,000
10 ton rollers	2	25,000	50,000
5 ton vibrating rollers	2	20,000	40,000
200 ampere welding machines	3	12,000	36,000
Reinforcing steel bending machines	8	2,000	16,000
1.5 m3 dumpers	15	6,000	90,000

99. The estimated current cost of the equipment in the preceding list is US$ 6.3 million at the port of embarkation. However, this includes approximately US$ 2.5 million for purchasing the spare parts and maintenance equipment recommended by the manufacturers for overseas operations. The ocean freight and marine insurance should not exceed 15 per cent of the purchase price, or US$ 1 million. The Democratic Republic of the Sudan levies an import duty of 25 per cent and 10 per cent defense tax, plus 1 1/2 to 2 per cent port charge. These costs, if imposed in full, would involve further local currency expenditures of about LSd 2.2 million. The total budget required for the new equipment would be US$ 7.3 million, plus LSd 2.2 million.

100. There is a substantial inventory of heavy equipment that is currently unusable due to the difficulties experienced by local contractors in the acquisition of spare parts. Local dealers do not generally maintain a sufficient stock of spare parts to reduce loss of production due to downtime to acceptable levels. A further difficulty is that dealers usually insist that all parts are purchased with foreign exchange. It appeared to the Mission that much of this equipment would be quite usable if it were repaired or rehabilitated. Although it is extremely difficult to establish an accurate assessment of the likely demand for spare parts, the Mission estimated that the market value of the reconditioned equipment, when operational, would be in excess of US$ 6 million, while the foreign exchange cost of the spare parts required should not exceed US$ 2 million, plus LSd 1 million to pay local labour and service charges. It is envisioned that a full time Equipment Advisor should serve on the proposed expert team to advise contractors on the practicability of repairing existing equipment, to assist them in procuring appropriate spare parts and install suitable training programmes. The bulk of the repair programme should be completed within the first two years of the project.

101. The project is not designed to finance major investments needed to replace imports with domestic production of building materials like cement,bricks, lime, gypsum, asbestos or ceramics. The Government is itself pursuing projects in the more important of these areas with foreign assistance (cement and bricks). However, it is recommended that the project include a modest component of assistance to small-scale private producers of building materials. An amount of US$ 500,000 is included to finance imported equipment and spare parts for such enterprises. Perhaps 10 to 20 companies would be beneficiaries of this assistance, in activities such as small-scale brick manufacturing, precast concrete production, metal fabrication and joinery. Also, US$ 100,000 is included for workshop equipment for Khartoum Polytechnic to upgrade the facilities needed for training programmes in building crafts.

102. The Mission considered several alternative channels for the financing of equipment and spare parts for local contractors. Creation of a new parastatal or joint venture plant hire company through which all equipment would be channeled was considered inadvisable at present because of (1) the time and difficulty of creating new public entities in Sudan; (2) the complexity of managing such an entity compared with the very poor record of public administration in Sudan; and (3) the desire of Sudanese contractors to own their own equipment (with the exception of a few large specialized items which they would use only occasionally). Some contractors advocate a Government-sponsored plant hire company in the hope that they could benefit from new equipment without taking the risk of investment. However, setting up a company to take on that risk would probably mean establishing another unprofitable parastatal organization, unless the company's general management and supervision and repair of equipment were far better than could reasonably be expected. A wholly private sector jointly-owned hire company, if large enough to include most contractors who should benefit from the proposed

project, would face formidable problems in establishing priorities for use of the equipment among its private shareholders. For these reasons the Mission recommends against establishing a hiring company as the sole channel for equipment imports under the project. However, hiring among private contractors themselves should be encouraged (possibly under the auspices of the Contractors' Union), even to the extent of their establishing small co-operative hiring ventures which could import equipment under the project along with individual contractors. Three useful supporting facilities that could be supported out of general project funds are a Heavy Equipment Maintenance and Service Facility, a Metal Fabrication Shop and a Joinery Works. At present there are a few small workshops providing facilities of this kind, but they lack the equipment and back-up that would be needed to provide a fully satisfactory service (equivalent to that enjoyed by foreign contractors who are able to afford in-house facilities). The equipment costs for the three facilities would be US$ 185,000, US$ 84,500 and US$ 26,500 respectively (see Annex 9). The total cost would therefore be about US$ 300,000 at port of embarkation, plus US$ 50,000 for ocean freight and marine insurance. If local import duty, defense tax and port charges were imposed, this would add about LSd 45,000. If all three facilities were housed in a single compound, the building costs would be about LSd 100,000.

103. The Mission considered having the project managed by one of the specialized banks (the Industrial Bank of Sudan, the Sudan Development Corporation, or the Estates Bank), which would have the advantage of a simplified administrative structure, i.e. a single institution through which both financing and technical assistance could be provided. However, these banks each have some organizational weaknesses and they have not yet provided any financing to construction contractors.

104. The recommended channel for financing is through the five state-owned commercial banks, co-ordinated by the Bank of Sudan, the central bank. These commercial banks are among the best run public enterprises in Sudan, and they are already providing local currency financing to domestic contractors, as well as bonding and guarantees. Taken together, their administrative capacity and geographic reach offer the best chance for project benefits, in the initial and later project phases, to reach most creditworthy contractors. The lack of technical project evaluation capabilities in these banks will mean an input required from the project's technical assistance team in the evaluation of loan requests from contractors. The technical assistance team should be responsive to any request for such assistance from the banks; however, for loans aggregating over US$ 20,000 for equipment or US$ 5,000 for spare parts to a single contractor, the prior approval of the technical assistance team would be required. In examining such requests, the team would be expected to give due weight to the need to standardize purchases whenever possible so as to minimize future maintenance and repair costs. The banks would themselves undertake evaluations of contractors' general creditworthiness, which they can handle on their own, and would take the full risk of collecting on loans. Loans could be provided to individual private contractors,to joint ventures among them formed for bidding on large contracts, to a co-operative leasing company (if contractors establish one on their own), or to small private building material workshops.

105. Project financing would be co-ordinated by the Bank of Sudan, which would, with help from the technical assistance team, issue lending guidelines to the commercial banks, monitor the use of funds, collect counterpart funds from the commercial banks (after allowing a 5 or 6 per cent spread to cover their costs and risks) and disburse counterpart funds to defray the local costs of the technical assistance and training programme. The secretariat unit in the Bank of Sudan to the Inter-Ministerial Credit Advisory Committee would appear to be an appropriate unit to take on this co-ordinating role.

D. Technical Assistance and Training

106. The purposes of the technical assistance provided under the project would be to provide consulting advice and course training for managers, engineers and craftsmen in the domestic contracting industry, and also to assist banks with project loan applications. A technical assistance team would be recruited for three years and would consist of two experts in construction management, one of whom would be the Team Leader, one expert in construction plant and equipment, one financial expert (with expertise in costing techniques and financial analysis of enterprises), and one general crafts supervisor. In addition, up to 18 months of short-term specialist assistance, e.g. in equipment leasing, building materials, road engineering, crafts specialities, etc., would be financed based on specific needs and timing as assessed by the Team Leader.

107. It is recommended that this team be located in the Management Development Centre (MDC), an institution which is already effectively providing management training and consulting services (see paragraph 81). Two Sudanese counterparts, in construction management and finance, would be appointed to work with the team. The team would design courses specifically for the domestic contracting industry in general management, costing and financial accounting, and equipment management. These courses, as well as on-the-job consulting advice, would be provided under the aegis of the MDC. The general crafts supervisor on the team would, aside from on-the-job training, help to organize short-term modules of employable skills courses in Khartoum Polytechnic and possibly in the Vocational Training Centres in carpentry, bricklaying, equipment mechanics, plumbing, plastering, etc. Course participants would be drawn from interested contracting companies who would be expected to defray part of the costs through tuition payments (see paragraph 87).

108. The technical assistance team would also co-ordinate with the Bank of Sudan to establish operating guidelines for the banks participating in the project and information systems for monitoring project disbursements. The team would also prepare progress reports on project implementation for the foreign lender.

E. Later Phases of the Project

109. In view of the experimental nature of the project, the proposed initial three year phase would focus on the Khartoum metropolitan area and would be carefully monitored in order to assess and, if possible, quantify both direct and indirect project benefits. If the first phase proves successful later phases could broaden the scope of the project and/or spread the benefits to other parts of the Sudan.

F. Benefits of the Project

110. The project should result in improvements in the capacity and effectiveness of domestic contractors and in their relationships with Government and financial institutions. These effects, together with improvements in the policy framework affecting domestic contractors, should lead to an increased market share for domestic contractors vis-à-vis foreign competitors, which means foreign exchange savings for Sudan. Additional foreign exchange may be saved by more effective utilization of building materials on job sites. Other results could be increased competition among domestic contractors and better quality of completed projects, or, in other words, better value for money for employers of the services of domestic contractors. It would not be realistic to attempt an accurate quantification of these expected benefits.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Project Proposal

111. Having examined the resources and achievements of domestic contractors in relation to the general organization of the Sudanese construction industry and the demand on its services, coupled with the policies, institutions and constraints which affect them, the Mission identified the priority areas to be tackled as Government encouragement of private domestic contractors in general and the management of individual construction enterprises and the acquisition and operation of appropriate equipment in particular. Accordingly, a project has been designed (see Chapter V) to provide foreign exchange for import of equipment and spare parts allied to a technical assistance and training component aimed at strengthening their managerial and technical capacity. The first phase of the project would cost about US$ 17 million, of which the foreign costs of about US$ 12 million might be financed from external sources, and the remaining approximately LSd 4.5 million local costs from participating domestic contractors and Government funds (arising from counterpart receipts). This phase would focus on the Khartoum metropolitan area and would have a three year duration, following which consideration could be given to further phases to broaden the scope of the project and/or spread the benefits to other parts of the Sudan.

112. The full time technical assistance team would consist of five experts: two construction management specialists, one equipment specialist, one financial specialist and one general crafts supervisor. The experts would be expected to concentrate on on-the-job consulting advice, but also to design and run practical training courses as necessary. In addition, the team would co-ordinate with the Bank of Sudan to establish operating guidelines for the state-owned commercial banks, through which the applications for finance would be channelled, and information systems for monitoring project disbursements.

113. The project should result in improvements in the capacity and effectiveness of domestic contractors, and in their relationships with Government and financial institutions. These effects, together with improvements in the policy framework affecting domestic contractors, should result in an increased market share for domestic contractors vis-à-vis foreign competitors, leading to foreign exchange savings for the Sudan. Additional foreign exchange may be saved by more effective utilization of building materials on job sites. Other results could be increased competition among domestic contractors and better quality of completed projects, or, in other words, better value for money for employers of the services of domestic contractors. It would not be realistic to attempt an accurate quantification of these expected benefits.

114. The Mission recommends that, subject to the submission of a request for the project by the Government of the Sudan, the next step should be consultation with the Government and within the World Bank Group regarding the mounting of a detailed project preparation exercise.

B. Supporting Actions

115. Arising out of the study, the Mission proposes eight supporting actions which are aimed at easing specific constraints, strengthening the general policy framework and institutional improvements (which could be initiated in advance of the main project and would contribute to improving the prospects for its success):

1. Road Building

116. A strategy of encouraging private domestic contractors to engage in road building so that the RBPC will eventually concentrate on general project management plus maintenance of the growing highway network and construction of feeder roads in the less accessible parts of the country.

2. Union of Sudanese Construction Contractors

117. Efforts should be made to strengthen the Union as a local institution and make it more representative, so that it could provide training and other assistance to member firms, including acting as a clearing house for inter-contractor equipment hire or exchange. It is envisaged that the Union could eventually serve as a channel trhough which the proposed technical assistance team could deliver effective support to domestic contractors.

3. Payment Procedures

118. A review of public sector contract payment procedures should be undertaken with a view to improving cash flow implications for domestic contractors by ensuring prompt settlement of certified payments and, subject to reasonable financial prudence, relaxing cash guarantee requirements and making appropriate mobilization advances.

4. Investment Act Incentives

119. Contracting companies should be considered as "projects" under the provisions of the Encouragement of Investment Act (1980) and therefore become eligible for at least duty free import of equipment, although not duty free import of building materials, and possibly a period of exemption from business profits taxes for appropriate new firms.

5. Revision of General Conditions of Contract

120. The Government should seek short-term technical assistance to advise and assist the MCPW and the Union of Sudanese Construction Contractors on detailed modifications to the General Conditions of Contract and Specifications, and also advise the MCPW on procedures for setting up cost indexes and other aspects of implementation.

6. Contract Procedures

121. The MCPW and other public sector clients should, whenever possible, simplify designs and bidding procedures, and "slice and package" large contracts into smaller units for bidding purposes to enable domestic contractors to compete effectively for more substantial and technically demanding projects.

7. Classification of Contractors

122. The MCPW should follow up its proposed initiative in registering contractors by working towards a full system of classification based on regular inspection and monitoring, as a means of regulating the industry and thereby gradually improving standards.

8. Design and Specification

123. Designers should be required to specify local materials and components whenever feasible, in order to improve market prospects for domestic manufacturers and economize on scarce foreign exchange.

WORLD BANK/UNIDO CO-OPERATIVE PROGRAMME

TERMS OF REFERENCE

Sudan: Domestic Construction Industry - Survey and Project Identification Report (with focus on contractor development)

Main Objective

1. The main objective of the study will be to assist the Government in strengthening the domestic construction industry and, to that end, to identify a feasible project that could be financed by the World Bank and/or other interested agencies. The aim is to develop the domestic construction industry to a level that would enable it to participate effectively in gaining an appropriate share of the market for civil engineering and building construction.

Terms of Reference

2. The study should in the first place analyze the need and potential for developing the domestic construction industry. This would include:

(i) A review of the demand aspects of the market, that is, size and technology, types of construction needed, market fluctuations, forecast needs and the possibilities for better planning of the demand for these services.

(ii) A review of the current state of the industry including details of the public/private sector split, foreign competition, classification of private contracting companies according to type, size and form of management and identification of the larger local firms. The review should also include a brief description of the institutional arrangements, viz. the role of the contractors association, relationship between private and public sectors, and an appreciation of the general attitude of Government towards the local private contracting industry, at its present level of operation and if it were to increase in importance.

(iii) For each classification (re ii. above) and if possible for each of the larger companies the study should assess the level of entrepreneurial, managerial and technical capabilities, general standard of craft skills in comparison with the demand, level of mechanization, condition method of acquisition and standards of maintenance of equipment, financial performance and condition.

(iv) A review of the appropriateness of current designs, standards, technology and the availability of the main materials used.

(v) The status of construction vis-à-vis the legal framework and requirements, viz. contract conditions, the labour and financial and taxation laws affecting private construction firms, constraints introduced by design or construction byelaws or standards, procurement requirements, etc.

(vi) A review of the financial support required by the industry (including bonding, insurance and guarantee requirements) and of the general level and sources of support available to meet that need.

3. The study should propose a tentative plan of action, divided into identifiable project phases, with a breakdown of the cost estimates for each phase in local and foreign currency and clearly identifying the priorities to be assigned to each phase. The aspects that this plan should analyze and make recommendations on include:

(i) The technical assistance (technical, managerial and financial accounting and control) that domestic contractors will need to expand and improve their operations both as general contractors and as subcontractors on large projects, and to enable them to qualify for financial assistance on a commercial basis if that assistance were to be made available. Recommendations as to how such technical assistance can be organized should also be included.

(ii) The level of financial support in foreign currencies that domestic contractors would need during the next three to five years for the purchase of spare parts and equipment to expand their operations and an estimate of their local currency working capital requirements. Recommendations should be made as to the best way of channelling this financial assistance in foreign exchange and in local currency to the individual enterprises and the conditions that should be attached to such assistance.

(iii) The policy changes in the areas of bonding, insurance and guarantee requirements, subcontract allocation, phasing of construction projects to provide a steadier pattern of demand, contract legislation, opening of more public sector projects to competitive bidding and promptness of public sector payments for work executed, etc., that would be required to foster an environment conducive to the development of a significant private domestic construction industry; and identification of measures that could be taken to motivate local contractors to expand their size and efficiency of operation.

(iv) What principal design changes and standards modifications would have to be implemented to enable the local construction industry to utilize a higher percentage of locally produced building materials, and what assistance (technical, financial) the producers of these materials would need to achieve an acceptable quality at prices that would be competitive with imported materials, and whether the current system of distribution is adequate to ensure a regular supply of material to the industry.

(v) The availability of skilled labour to this industry and the technical assistance (level and organization thereof) needed to ensure a sufficient supply of skilled labour for the local construction and building materials industries.

(vi) The training of higher level staff in the industry, viz. managers, engineers, technicians, supervisory staff, etc. and what changes in training curricula and additional courses can be implemented to improve the calibre of this staff.

4. In carrying out the study the mission should review and assess inter alia the studies and assistance in the sector of construction industry which have been carried out and/or implemented to date by:

(i) The James Nesbitt and Partners report on the administrative capacity of the industry related to school construction;

(ii) UNICEF and UNESCO in 1978 (action related to education projects);

(iii) EEC study of measures to improve efficiency of building techniques and utilization of local materials (Battelle report);

(iv) ILO courses in costing and management;

(v) Management Development and Productivity Centre in Khartoum.

5. The mission should liaise closely with the Ministry of National Planning and the Bank's resident representative.

6. Timetable for production of report should be as follows:

- Field visit: March 15 - April 7, 1981
- Back-to-Office Report submitted to Association: May 1, 1981
- First draft submitted to Association: July 31, 1981
- Review draft and discussion; deadline for comments: August 20, 1981
- Final report to Association and Government: August 31, 1981

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Ministry of National Planning

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Dr. Habani, Director, Project Preparation Unit
Donald S. Pearson, UNDP/IBRD Team Leader

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Ahmed Sharif Hassan, Director of Maintenance Directorate
Osman El Obeid, Senior Engineer, Maintenance Directorate
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Musa Hassan, Personnel Manager

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Osman Al Nur Mustafa, Secretary General
Osman Mustafa, Director of Earthmoving Branch
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S. Theocharides, Chief Technical Adviser (ILO)

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Dr. Fourouk El Tayeb El Hadi, Acting Director

Foreign Consultants

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R. Self, Senior Representative, Sir M. MacDonald and Partners

Foreign Contractors

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John J. Wilson, Project Manager (Sudan)
G. May, Senior Representative
J. Wilson, Site Manager

Misr Concrete Development Company

Mabeel Allam, Manager, Sudan Branch
Mohamed Imam, Finance Manager
Nabeel Aziz, Project Manager
Abdel Moneim Hassan, Electrical Engineer

Reading and Bates

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S.A. Sayed, Chairman, S.A. Sayed and Partners

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Abdelsalaam A. Abdelmoneim, Technical Adviser, United Trading and Engineering Co. Ltd.

Osman A. Rahim Osman, Director, Factory Equipment Co. Ltd.

Middle East Construction Ltd.

M. Daoud El Khalifa, Director
Ibrahim Moneim Mansour, Financial Director
M. El Mekkawi Mustafa, Director
Abdel Wahab Ibrahim, Chief Engineer
A.M. Abbas, Director, Engineering

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Salah Ibrahim Ahmed, Director, Rahad Engineering Ltd.

Sami Sayed M. Ahmed, Director, Sidko Earthmoving

Mahmoud H. Bakri, Director, Al-Bakri Engineering Co.

Abdoul Ela Contracting and Trading Enterprise Ltd.

I.A. Ibrahim, Executive Manager
Azhari El Araki, Technical Adviser

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O. Abdallah Ibrahim, Chairman and Director, Farahab Trading and Engineering Co.

Farouk Sherif Ahmed, Road Engineer, Transport contractor

Sudan Tractor Corporation (Caterpillar agents)

Ahmed Mahjoub, Manager
Osama Daoud Abdellatif, Sales Director

M. Fucassi, Owner and Manager, NIPCO (Nile Precast Concrete)

Banks

Mohamed Amara, Manager, Research and Promotion, Industrial Bank of Sudan

Mohamed Abdel Magid Ahmed, Chairman, Sudan Development Corporation

Mohamed Saleh, General Manager, El Nilein Bank

Ahmed Osman, General Manager, Unity Bank

Saleh Mohamed Ali Sacran, General Manager, Bank of Khartoum

Abdel Rahman Sid Ahmed, General Manager, People's Co-operative Bank

S. Zumbrowi, Deputy General Manager, People's Co-operative Bank

The Manager, Foreign Department, Sudan Commercial Bank

Mr. Kanani, Managing Director, Estates Bank

Sid Ahmed Osman, Chairman, Agricultural Bank of Sudan

Others

Dr. Sharif, Projects Manager, Arab Authority for Agricultural Investment and Development

Hassan Mitwalli Atabani, Architect (formerly the first Sudanese Chief Architect, Ministry of Public Works)

John C. Durham, First Secretary (Commercial), British Embassy

Lee Gordon, Consular Officer, U.S.A. Embassy

INTERVIEWS WITH PUBLIC SECTOR CONTRACTORS

Name:	Public Corporation for Building and Construction (PCBC)
Address:	c/o Ministry of Construction and Public Works P.O. Box 300, Khartoum
Description:	Parastatal building corporation for execution of government building programme; Director reporting directly to the Minister of Construction and Public Works.
Established:	1973 (first project undertaken in 1974)
Manager:	Nagr El Din Mohamed Ahmed (Director)
Management staff:	200 total, of which 25 are engineers
Skilled labour:	700
Unskilled labour:	1,100
Labour availability:	Skilled labourers are hard to recruit on government pay scales (e.g. carpenters and plumbers LSd 75/month basic, rising to LSd 150/month with overtime and bonus payments).
Equipment:	Some equipment is very old and only part of the equipment is in working order. Some new equipment recently obtained (Danish loan) and not yet put to use. Good workshop facilities for maintenance and repairs, but some equipment from sources where spares cannot be obtained (e.g. equipment from the U.S.S.R., parts for which had to be manufactured in own workshop). Total value of equipment over LSd 1 million (estimated by El Tigani Zarroud, Assistant Manager for maintenance and transport).

New equipment (partly still in Port Sudan) (Danish loan):

20 concrete mixers (0.3 cu. m, 0.2 cu. m),
15 vibrators, 3 welding sets, 4 dumpers (0.5 m3),
4 hoists (500 kg electric), 4 hoists (500 kg diesel),
1 forklift truck (1 ton), miscellaneous light equipment

Older equipment:

30-40 concrete mixers (0.25-0.5 cu. m), of which 20 in working order
4 dumpers in working order, 2 mobile cranes (10 t, 20 t) in working order
1 tower crane recently put in working order (from USSR)
3 other tower cranes (owned by MCPW) are available to PCBC (max. load 2 t, jib 10-12 m, height up to 20 m)
3 block making machines
6 hand guided compactors
10 tipper trucks
56 lorries (5 t, 7 t, 10 t)
2 trailers in working order, 4 not in working order
25 pick-ups - Landrovers and Landcruisers
3 passenger buses
4 mechanical loaders (plus 2 not in working order)
3 compressors
1 generator (16 KVA)
Complete tile factory (terrazzo and cement tiles), capacity 60-80 sq. m per day (high quality products)
Stone quarry in Khartoum North with crushers producing 3 sizes of aggregate, capacity 120 cu. m per day

Mechanized brick factory: machinery was installed at Gereif, but has to be moved as land is now required for other purposes; no kiln had been built yet; no new site for the factory is available yet.

Value of work: LSd 3 million value of work in hand. PCBC executes more than 50 per cent of building work commissioned by Ministry of Construction and Public Works.

Type of work: General building works, mainly in Khartoum area.

Typical contracts: 47 projects complete since 1974 including:

International Fair, Khartoum, LSd 8 million
Parliament Building, Omdurman, LSd 8 million
Buildings in Rahad Agricultural Scheme, LSd 4 million

Financial: Original working capital of PCBC in 1973 was LSd 1/2 million, but this was raised in 1980 to LSd 1 million.
The Corporation generally requires a mobilization advance of about 30 per cent from its public sector clients, since working capital is limited and it is not permitted to raise loans from its (public sector) bankers. Site works are sometimes delayed due to shortage of funds. PCBC is usually required to provide guarantees which further depletes working capital as the banks require financial cover of up to 50 per cent of the value of the guarantee.

Problems:

1. Although about 60 per cent of the labour force is classified as casual workers, PCBC is severely constrained by trade union pressure from releasing redundant workers. Thus the PCBC is much more vulnerable to a fluctuating workload than are private contractors. (N.B. Private contractors do not accept this statement, and argue that they are also subject to trade union pressure but react by accepting the unfavourable financial consequences of discharging redundant workers).

2. Much of the plant and equipment is in need of repair or replacement, and financial constraints have hampered the prompt acquisition of spare parts that would be needed to keep equipment downtime to a minimum.

3. In view of the lack of working capital, it is difficult for the PCBC to contemplate seeking work from outside clients to obtain a more balanced workload. The sporadic calls on its services, often at relatively short notice, makes planning difficult and lowers efficiency.

Remarks: When compared with private contractors the management section of PCBC is very heavily staffed for the limited turnover. The ratio between value of equipment and turnover is also far higher than in the private sector. Up to about two years ago the main client (MCPW, Khartoum Projects Division) preferred PCBC to private contractors as work executed by it required far less supervision input by the client. In recent years management staffing of the private contractors (only a limited number of contractors regularly tender for Government jobs) has improved, but it has diminished for PCBC as it has lost relatively more well trained staff through emigration than the private sector.

As PCBC is not required to tender for works in competition with private contractors, its prices are based on actual costs. In the view of private contractors (and according to the main client, Projects Division, Khartoum) PCBC could not compete with private contractors' prices if it had to secure a workload by open tender.

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Name: Roads and Bridges Public Corporation (RBPC)

Address: P.O. Box 756, Khartoum

Description: Parastatal corporation for execution of government road building programmes and maintenance of existing road network; Chairman reports directly to the Minister of Transport.

Established: 1973 (RBPC absorbed the Roads Section of the Ministry of Works, which has been actively involved in road construction works and training of staff since 1958).

Management:
Chairman - Abdelrahman Mohamed Abdullah Abboud
Director General - Abdu Mohamed Abdu
Director of Maintenance Directorate - Ahmed Sharif Hassan
Director for Projects - El Mahdi Abdel Rahman
Senior Engineer for Maintenance Directorate - Osman El Obeid
Acting Financial Manager - Hassan Moheddin
Personnel Manager - Musa Hassan

Management staff:

Higher management (salaries - super scale)	- 29
Higher technicians	- 127
Lower technicians	- 31
Clerks, storekeepers, foremen	- 102
Total	- 289

Skilled labour: 750

Unskilled labour: 641

Payroll: LSd 3.4 million annually (permanent work force)

Casual labour: 15,000 total maximum work force (varies according to season)

Labour availability: Difficult for RBPC as remuneration is based on government scale, which is considerably lower than prevailing wage rates in private sector (e.g. unskilled labourer starts on LSd 30/month, but would earn LSd 60-90/month in private sector). However, unskilled labour is being trained and promotion prospects provide some incentive. After training (and for higher staff after about two years' work experience) over 50 per cent leave RBPC and emigrate (some joining the private sector).

Equipment: As the Roads Section of the Ministry of Works had been in operation from the 1950s, some of the equipment is very old, often unserviceable. Of the more modern equipment in the following list, about 70 per cent is currently in working order:

30 concrete mixers (1-2.5 cu. m) plus 12 on order,
25 dumpers, 260 tipper trucks,
120 other trucks, 95 pick-ups,
10 compressors, 25 generators (25-300 KVA),
50 mechanical loaders, 6 excavators,
44 dozers (D6 - D8 Caterpillar) plus over 80 older dozers in working order, 48 rollers, 74 graders,
6 pavers, 6 rock crushers (up to 32" x 36")

Value of work: 1980/81 - LSd 44 million

Type of work: Road building including small bridges, culverts and ancilliary structures.
Road maintenance.
Consulting services (design and project management).

Typical contracts:
Port Sudan, roads and air base for Ministry of Defence
Road Summit - Erkowit, 36 km
Road Khartoum - Jebel Aulia, 36 km
Road Khartoum - Gayli, 43 km
Road Kamlin - Wad Medani (half of Khartoum - Wad Medani road)
Road Dubeibad - Dilling, 196 km
Road Omdurman - Wadi Seidna
Airports of Juba, Malakal, Khartoum (as Roads Section, Ministry of Works)

RBPC acted as consultants for the Rahad and Kenana schemes.

RBPC is consultant for the Department of Civil Aviation for airport construction.

RBPC is also carrying out the Wad Medani - Sennar - Kosti road (217 km) by direct labour with management assistance from the U.K. consulting firm Roughton and Partners.

Construction is expected to start shortly on the El Obeid - Debeibad road (96 km), financed by the Government of the Netherlands.

Financial:

A. Information supplied by the Director of Maintenance covering the two separate maintenance budgets:

1. Routine maintenance: Finance obtained directly from Ministry of Finance, mainly local currency with small amount of foreign currency for materials and spares (the majority of which is bought locally). Generally only about 60 per cent of RBPC's budget proposals are approved, and even that is not fully spent. For example in 1979/80 the proposed budget figure was LSd 1.2 million, amount approved LSd 750,000, amount used LSd 500,000.

2. Major maintenance and improvements: (overlay, etc.) Financed from Ministry of Development's budget.
Proposed for 1981/82:
Routine maintenance - LSd 2 million
Periodic maintenance (overlay) - US$ 1.5 million plus LSd 250,000

Maintenance Directorate also executes (smaller) new works (LSd 200,000 in 1979/80).

B. Information supplied by Acting Finance Manager:

Actual budget 1980/81:	LSd 44 million
Proposed budget 1981/82:	
Maintenance	LSd 2 million
New works	LSd 68 million
Total	LSd 70 million

Details of proposed budget for new works:

Kassala - Haya road (finished)	LSd	0.6 million
Wad Medani - Sennar - Kosti	LSd	4 million
Nyala - Khas - Zalingi	LSd	13 million
Jebel Aulia - Dueim	LSd	8 million
Dueim - Rabak	LSd	8 million
Shendi - Atbara - Haya	LSd	0.35 million
Sudan - Kenya	LSd	5 million
Sennar - Damazeen	LSd	8 million
Feeder roads	LSd	2 million
Dinder bridge	LSd	2 million
Haraz bridge	LSd	2 million
El Obeid - Debeibad	LSd	1 million
El Fasher - Nyala	LSd	2 million
Sennar bridge	LSd	2 million
Technical assistance	LSd	3 million
Maintenance	LSd	7 million
Total	LSd	68 million

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Name: Public Corporation for Irrigation Works and Earthmoving (PCIE)

Address: P.O. Box 6190, Khartoum

Description: Parastatal corporation for execution of irrigation works and earthmoving (mainly irrigation canals). PCIE comprises two separate branches: Earthmoving, with headquarters in Khartoum, and Irrigation, with headquarters in Wad Medani. The Chairman reports directly to the Minister of Irrigation.

Established: 1975 (PCIE absorbed the former direct labour department of the Ministry of Irrigation and took over its equipment).

Management: Saghayroon Elzein Saghayroon, Chairman of Board of Directors
Ibrahim Mubarak, Finance Director (covering both branches)
S.A. Kaloda, Director, Irrigation Branch
Osman Mustafa, Director, Earthmoving Branch

Management staff:)
Labour:) see separate data on the Branches
Equipment:)

Value of work: Last audited accounts available are for the financial year 1978/79:

		Estimates for 79/80
Irrigation Works	LSd 9.3 million	LSd 10.1 million
Earthmoving	LSd 3.4 million	LSd 12.1 million
Total 1978/79	LSd12.7 million	LSd 22.2 million

Type of work: The Irrigation Branch carries out civil engineering work related to irrigation schemes and the Earthmoving Branch builds canals and does maintenance of canals (mainly dredging of silt). PCIE works mainly for the Ministry of Irrigation, but also for privately owned irrigation schemes.

Typical contracts:

Earthmoving Branch: Silt removal on all irrigation canals: major operation on which 50 per cent of total number of draglines are constantly employed (120 on the Gezira and Managil schemes only, 160 in total). Silt dredging activities have increased considerably: 1975/76 3 million cu. m, 1977/78 7.3 million cu. m, 1978/79 9 million cu. m, 1979/80 9.6 million cu. m, 1980/81 11 million cu. m. Excavation of canals is also undertaken for private schemes. As no major new schemes are at present under construction, PCIE may try to obtain contracts abroad.

Irrigation Branch:

Rahad scheme (pumping station, bridges, etc.)	LSd	20 million
Assalya sugar project	LSd	3 million
Residential housing	LSd	2 million
Sileit food processing scheme	LSd	1 million
Civil works for no. 4 generator at Roseires Dam (contract for nos. 5,6 and 7 lost to Mowlem, whose tender was 15% lower)	LSd	1 million
PCIE office building	LSd	100,000

Financial:

When PCIE was formed it took over the assets of the Direct Works Department of the Ministry of Irrigation and obtained a loan from the Ministry of Finance which is being paid off out of profits. PCIE has two accounts with the Bank of Sudan, and one with the Nilein Bank. Foreign exchange is obtained through the Bank of Sudan, and PCIE has a foreign currency account with a London bank.

Performance bonds to 10 per cent of contract value are required by private clients, but this requirement is waived by the Ministry of Irrigation.
Moblization advances of 10-20 per cent of contract value are required from all clients.
Suppliers' credit is normally 30 days for cement, steel and fuel.
10 per cent retention on progress payments, but Ministry of Irrigation pays in full after certificate of completion has been issued (no maintenance retention).

Taxes: PCIE does not pay Business Profits Tax, but pays a "contribution" (about 25 per cent of net profit) to the Ministry of Finance and pays full duties and taxes on purchases of materials and equipment.

Problems:

During the last two years the PCIE has suffered cash flow problems due to a shortage of work combined with high overheads, and is now hoping to seek additional work abroad.

Remarks:

PCIE has "the best equipped maintenance workshop in Africa" (PCIE's statement) at Wad Medani (not visited by Mission). Clients' general impressions were that the technical quality of PCIE's work was satisfactory, although productivity levels could be improved. However, PCIE was generally the most highly regarded (or least criticized) of the three construction parastatals.

An example of PCIE's initiative is a proposed joint venture with Andritz (Austrian pump manufacturer) to set up a factory at Wad Medani to roll pipes and manufacture regulators, penstocks, tanks, etc. The initial expenditure is expected to exceed LSd 2 million and it is expected that it will take about a year to get the factory into production (the land for the factory site is already registered). A possible second phase would take the joint venture into pump manufacture.

Date on resources of the Branches:

Earthmoving Branch

Manager:	Osman Mustafa, Director, Earthmoving Branch
Management staff:	230 administrative 122 engineers
Labour force:	3,155 (foremen, mechanics, operators, labourers)
Equipment:	52 graders 130 tractors 330 excavators (mainly draglines) 71 motor graders (Total about 600 separate items; cost LSd 14 million).

Irrigation Branch (Civil Engineering and Structures)

Manager:	S.A. Kaloda, Director, Irrigation Branch
Management staff:	220 administrative 80 engineers
Skilled labour:	800 (permanent)
Unskilled labour:	up to 2,500 (casual)
Payroll:	LSd 0.75 million/month
Equipment:	2 concrete batch plants, 50 concrete mixers, 5 dumpers, 20 tipper trucks, 30 other trucks, 70 pick-ups, 2 tower cranes, 4 mobile cranes, 2 concrete pumps, 1 stone crusher, 5 mechanical loaders, 4 excavators, 6 rollers, 2 block making machines, 5 compressors, 10 generators, 4 well-point systems, 1000 sq. m metal formwork. 30 per cent of equipment not in working order due to scarcity of foreign exchange for spares (when PCIE receives foreign exchange for contracts it is remitted directly to the Ministry of Finance).

INTERVIEWS WITH PRIVATE SECTOR CONTRACTORS

Interview No.	
	Foreign Contractors
1	Sir Alfred McAlpine and Son Ltd.
2	Misr Concrete Development Co.
3	Reading and Bates Construction Co.
4	Strabag-Bau A.G.
	Joint Ventures
5	John Mowlem and Co. - Africa Construct
6	Sudan Korean Construction and Contracting Co.
	Sudanese Contractors
7	Abdel Bagi Engineering Works
8	Aboul Ela Contracting and Trading Co.
9	Factory Equipment Co. Ltd.
10	Farahab Trading and Engineering Co.
11	Middle East Construction Co. Ltd.
12	Momayassin Group of Companies
13	Rahad Engineering Co. Ltd.
14	Ramsis Engineering Co.
15	S.A. Sayed and Partners
16	Saba Construction Co. Ltd.
17	Saudi Sudanese Engineering and Contracting Co.
18	Sidko Earthmoving Co. Ltd.
19	United Construction and Trading Co. (S) Ltd.
20	United Contractors and Estate Developers Co. Ltd.
	Building Materials Manufacturers (Sudanese)
21	NIPCO (Nile Precast Concrete)

Interview 1

Name:	Sir Alfred McAlpine and Son Ltd.
Address:	P.O. Box 6019, Khartoum
Description:	Foreign contractor
Established:	Sudan branch - 1975
Nationality:	Sudanese branch of a United Kingdom company (Marchwiel Ltd.)
Manager:	John Wilson (British nationality) Interview supplemented with information from report in "New Civil Engineer", 26 February 1981.
Management staff:	1 project manager, 1 works manager, 1 office manager/ administrator, 1 senior engineer, 2 foremen (all expatriates), 4 managers, 11 engineers (Sudanese)
Skilled labour:	40 Sudanese
Unskilled labour:	60 Sudanese
Labour availability:	Shortage of competent skilled labour
Equipment:	1 batch plant, 3 concrete mixers, 6 tipper trucks, 3 mix trucks, 1 compressor, 3 generators, 3 mobile cranes, 1 loader, 3 excavators, 1 dozer, 1 roller, 1 grader.
Value of work:	LSd 6 million annually (average in Sudan)
Type of work:	Road construction and heavy civil engineering
Typical contracts:	Subcontract, foundations only, for chemical fertilizer plant (currently). Recently completed large roads contract for Rahad Corporation consisting of a 160 km network of spine and feeder roads and a bridge across the river Rahad (contract value US$ 30 million).
Financial:	No financial problems on current project and N-Ren, the prime contractor, pays promptly. Company was required to secure a performance bond from a bank in the United Kingdom, and a retention of 5 per cent will be held for 1 year after completion. For financial problems on Rahad roads contract see following section.
Problems:	Current project is 6 months behind schedule due mainly to delays in clearing material from the docks, but is otherwise proceeding satisfactorily. Problems on recent Rahad roads project were much more serious, leading to an expected deficit of £ 10.1 million on an initial £ 17.5 million contract (paid in US dollars and Sudanese pounds) which, due to currency fluctuations, will finish at around £ 13 million. McAlpine has considerable experience of road building worldwide, but normally sublets its haulage. However at Rahad the contractor was obliged to assemble and operate its own fleet of 120 trucks. British Fodens and Bedfords were brought in, but were not suited to Rahad's difficult terrain. Dust, lack of water and temperatures up to 45° caused continual trouble. Spares needed in quantity were indented for late and had to be transported 800 km from Port Sudan. Frisch graders and Blaw Knox pavers also gave trouble. In retrospect the firm believes it did not appoint sufficiently experienced and qualified transport staff, and the Chairman of its International Division, R.J. McAlpine, commented: "We used a set-up that had served us well in other countries, but it proved inadequate to cope with the lack of back-up in the Sudan".

Interview 1 (continued)

The company also experienced difficulty in locating materials that met the specification and reported delays in payment for certified work extending up to 6 months and a "not entirely sympathetic" approach by the client to claims for increased costs. However the problems on the contract were essentially caused by "inadequate management, poor plant and a strong (British) pound" in the view of the writer of the "New Civil Engineer" article.

Remarks:

The difficulties encountered by this highly reputable and generally well managed British group are indicative of the special problems of contracting in the Sudan. The company is reviewing its position in view of the level of competition and the difficulty in securing a steady and remunerative workload. If further contracts have not been obtained at the conclusion of the present subcontract work, it will decide whether to pay the necessary duty and sell its equipment on the local market or transfer it elsewhere.

Interview 2

Name:	Misr Concrete Development Co.
Address:	P.O. Box 290, Khartoum
Description:	Building and civil construction company based in Khartoum; subsidiary of foreign contractor
Established:	1946
Nationality:	Sudanese branch of an Egyptian company
Manager:	Nabil Aziz
Management staff:	1 manager, 3 engineers/architects, 3 technicians, 2 accountants, 12 supervisors and foremen.
Skilled labour:	300 Egyptian, 300 Sudanese
Unskilled labour:	50 Sudanese
Labour Availability:	Shortage of qualified skilled labour so the company imports Egyptian craftsmen to supplement its workforce.
Equipment:	1 batch plant, 6 concrete mixers, 6 tipper trucks, 20 dumpers, 2 generators, 8 hoists, 1 tower crane, 2 mobile cranes, 1 concrete pump (value of equipment LSd 3 million).
Value of work:	LSd 10 million annually
Type of work:	Commercial buildings and civil works
Typical contracts:	University buildings, Khartoum LSd 13 million Sudanese Kuwait Centre LSd 8 million Atbara Cement Factory Extension LSd 4 million
Financial:	The company's equity financing is in excess of 10 million Egyptian pounds. The client usually provides any foreign currency required. The Arab International Bank provides performance bonds, letters of credit and guarantees. Company is unable to arrange even short term financing with local banks.
Problems:	Severe shortage of skilled labour. The company has a training programme, but is very short of qualified craftsmen. The long delays in government payments deplete the company's financial resources.
Remarks:	Misr is one of the largest and most successful construction companies in the Middle East. The firm concentrates on large projects in the modern sector, and does not tender for contracts below LSd 1 million.

Interview 3

Name:	Reading and Bates Construction Co.
Address:	37 Street, New Extension, Khartoum
Description:	Sudan branch of large U.S.A. contractor
Established:	1956 in U.S.A., 1977 in Sudan
Nationality:	U.S.A.
Manager:	Patrick Landree (U.S.A. citizen)
Management staff:	1 project manager, 2 accountants, 3 site engineers, 3 site managers, 12 supervisors, 1 foreman (all expatriates)
Skilled labour:	30 plant operators (expatriate) 200 craftsmen (Sudanese)
Unskilled labour:	500
Labour availability:	Shortage of capable craftsmen and operators
Equipment:	Detailed inventory not available, but total value in excess of US$ 5 million.
Value of work:	Currently LSd 300,000 per month, expected to increase to LSd 1 million per month by the end of 1981.
Type of work:	Civil construction associated with oil exploration and production, including roads, drilling sites and camps, dams, piers, warehouses and stores.
Typical contracts:	Direct contracts with major oil companies (details not available).
Financial:	All payments made directly by the client in the U.S.A.
Problems:	Logistics of material movements to remote sites. Shortage of skilled labour. Lack of reliable time- and cost-conscious local civil contractors who would otherwise be allocated work on a subcontract basis.
Remarks:	A major U.S.A. company specializing in servicing oil company requirements. Local firms could gain valuable experience if they could be helped to obtain subcontract work, such as camp accomodation, housing and simple buildings on such projects.

Interview 4

Name:	Strabag-Bau A.G.
Address:	P.O. Box 422, Khartoum North
Description:	Sudan branch office of foreign contractor
Established:	1974 in the Sudan
Nationality:	Federal Republic of Germany
Manager:	Abdo S. Abu Gabal (office manager, Sudanese citizen)
Management staff, Labour and Equipment:	Currenctly between contracts. Expatriate staff and equipment will be brought in and local staff recruited for forthcoming contract. Meanwhile operating on a care and maintenance basis.
Type of work:	Road construction
Typical contracts:	210 km road to Port Sudan (all built by Strabag but using Sudanese haulage subcontractors, during the period 1974-1980); Port Sudan ring road and town roads (financed by F.R.G. aid). (£Sd 29 million contract awaiting approval by PCRB).
Financial:	Sudan branch is fully backed by main company.
Problems:	Main problem is the lack of continuity in contracts.
Remarks:	Has own workshop for plant maintenance and training facilities for plant operators. Sometimes hires surplus plant to other contractors.

Interview 5

Name:	John Mowlem and Co. - Africa Construct
Address:	P.O. Box 1522, Khartoum
Description:	Partnership between Sudanese contractor and Jersey-registered subsidiary of major U.K. contractor (established in 1822).
Date established:	1980
Nationality:	British public company/Sudanese
Manager:	D. Booth (British nationality)
Management staff:	3 senior managers and supporting staff in Khartoum office, plus senior management staff as required on sites.
Skilled labour:	100, plus some subcontract labour
Unskilled labour:	100, plus some subcontract labour
Labour availability:	Adequate craftsmen available at LSd 7-10 per day. Lack of general foremen and has to use engineers as front line supervisors.
Equipment:	18 concrete mixers, 5 dumpers, 2 mobile cranes, 9 tipper trucks, 2 other trucks, 6 pick-ups, 4 compressors, 5 generators, 4 hoists, 4 block-making machines, 3 mechanical loaders, 3 excavators, 1 dozer, 2 rollers.
Value of work:	1979 (Sudanese partner only) LSd 0.5 million 1980 LSd 1.5 million 1981 LSd 5-6 million Forecast 1982 LSd 7-8 million, dropping to LSd 5 million in 1983 unless new projects are secured.
Type of work:	Mainly heavy civil engineering, but also some building projects (non-residential)
Typical contracts:	2 power stations (recently awarded) LSd 19 million office block for Sudan Development Corporation ("design and construct" package deal; recently awarded) 32 hospitals throughout southern Sudan (as part of "design, construct, staffing and operating" package deal).
Remarks:	Partnership is controlled through a Supervisory Board, comprising the Managing Director (British), the Sudanese partners and a representative of Mowlem International. It is intended that the General Manager, Chief Estimator, Quantity Surveyor and Accountant should initially be expatriates, together with senior site management. The parent company, John Mowlem, was established in 1822 and has extensive international experience, particularly in East Africa. At first the partnership was only able to secure relatively small contracts, but has now been awarded quite large ones and, in view of its access to U.K. design expertise, is concentrating on package deal operations. The partner owning Africa Construct was a building contractor in his own right from the early 1950s, with an average annual turnover of about LSd 1.5 million, and also owns 25 per cent of another family enterprise - ICS (International Construct) - and has a continuing interest in a molasses business. There is no joint agreement for co-operation between ICS and John Mowlem - Africa Construct, but there is a gentlemen's agreement not to bid against each other on the same job. Equally, both partners are free to undertake

Interview 5 (continued)

contracts on their own account, with the agreement of the other party, although in fact most work is channelled through the partnership. The Sudanese partner was a builder but Mowlem prefers civil engineering, where it has greater specialist expertise.
John Mowlem generally conducts its overseas operations through joint ventures (30-50 per cent local ownership), e.g. Australia, Sudan, Abu Dhabi, although the Kenya subsidiary is wholly owned. Mowlem generally takes overall technical and financial responsibility and is able to provide a strong input on systems and procedures, estimating, financial control, cost analysis and special technical services (particularly soil mechanics). It can also supply specialist plant and equipment speedily as required and assures maximum life for the equipment by efficient maintenance, repairs and operator training.
The firm tries to use local engineers as agents on smaller projects and as site engineers on major jobs. However, they need a great deal of supervision, and their capacity for paperwork and provision of the detailed reports necessary to suit Mowlem's procedures is generally unsatisfactory unless additional training is given.

Labour wages: LSd 7-10/day skilled
LSd 2/day unskilled
LSd 0.75/day unskilled in south (Wau)
Wages are paid twice weekly.
Overtime or incentive bonus payments do not generally provide an effective incentive. Workers prefer a "job and finish" system, whereby they are free to leave the site after completing a specified task.

Local currency cash flow is a major concern since Mowlem tries to keep foreign income and expenditure and local income and expenditure independently in balance. Thus Mowlem may seek extra local contracts to provide a satisfactory cash flow when this is needed or concentrate on foreign exchange components at other times. Credit facilities are available, including "back to back" financing, but the high lending rate of 16 per cent is inhibiting. Contracts require insurance through a local company, but this can be channelled directly to a U.K. broker to ensure favourable rates.

Interview 6

Name:	Sudan Korean Construction and Contracting Company
Address:	P.O. Box 1873, Khartoum
Description:	Korean/Sudanese joint venture, backed by very substantial financial and technical resources of the Korean partner (Daewoo Industries and Development Co.)
Established:	1977
Nationality:	Sudanese/Korean joint venture
Manager:	Dae S. Hwang (Korean nationality)
Management staff:	1 director, 1 manager, 4 engineers, 3 accountants, 1 deputy supervisor and foremen (all Sudanese except manager)
Skilled labour:	40 (all Sudanese)
Unskilled labour:	60
Labour availability:	Shortage of skilled labour. When necessary can transfer Koreans.
Equipment:	1 batch plant 6 tipper trucks, 1 flat truck, 6 dumpers, 1 compressor, 1 generator, 1 hoist, 1 mobile crane, 1 excavator, 1 dozer, 1 roller, 1 fork lift, 1 tower crane, 1 bar bender.
Value of work:	LSd 3.5-4 million annually
Type of work:	Buildings and roads (also has "design and build" capability)
Typical contracts:	Staff housing (20 units), workshops, service centre and general infrastructure for university.
Financial:	Financing is shared equally be the local partner and the Koreans (through the Central Bank of Korea). The company has no problems with foreign exchange, performance bonds or guarantees. Suppliers limit credit to two weeks.
Problems:	Erratic material supplies, particularly cement and reinforcing steel.
Remarks:	The company has a large inventory of first class heavy equipment and is well managed. Estimating for smaller projects is carried out in the Khartoum office, but bids for large contracts are prepared in the Korean partner's head office in Seoul. The firm's policy of maximizing employment of Sudanese in management positions provides useful experience and training.

Interview 7

Name:	Abdel Bagi Engineering Works
Address:	P.O. Box 2220, Khartoum
Description:	Building contractor specializing in industrial buildings (factories, etc.) and structural steelwork.
Established:	1971
Nationality:	Sudanese
Manager:	Abdel Bagi Omar Attia
Management staff:	1 chief civil engineer, 2 civil engineers, 2 mechanical engineers, 1 electrical engineer, 1 chief accountant, 5 accountants, 1 purchasing officer, 1 stores superintendant, 1 transport director. Payroll: permanent staff LSd 25,000/month.
Skilled labour:	200 at present (a relatively slack period)
Unskilled labour:	600 (see above)
Labour availability:	Difficult to recruit productive skilled labour (5 skilled carpenters in permanent service scout for additional labour when needed; also hired from subcontractors). Unskilled labour: seasonal difficulties.
Equipment:	1 batching plant (30 cu. m/hour), 2 batching plants (10 cu. m/hour), 4 transit mixers, 40 concrete mixers, 14 dumpers, 6 tipper trucks (4-7 cu. m), 8 other trucks (5 t), 8 truck trailers (30 t), 14 pick-ups, 7 mobile cranes (4 crawlers, 3 wheeled) (6-18 t) (2 of the crawlers equipped for auger pile driving), 4 dozers (1 D7, 1D6, 1D4, 1 small), 4 rollers (2 self-propelled), 7 mechanical loaders, 3 excavators, 6 compressors, 4 generators (75-100 KVA), 9 block-making machines (3 large, 6 small), 4 stone crushers, 35 concrete vibrators. Estimated value of equipment: LSd 1.8 million.
Value of work:	LSd 2.5 million (potential capacity LSd 7 million)
Type of work:	Industrial development with all services (water, water disposal, electrical installations).
Typical contracts:	Spinning mill, Khartoum North (foundations, eraction of imported steelwork), value LSd 3 million. Spinning mill at Hag Abdullah (Government job), value LSd 3 million.
Financial:	Invested capital LSd 3 million (office building, workshops, equipment). Overdraft facilities with bank up to LSd 600,000. Letters of guarantee supplied by bank up to LSd 2 million, but 25-40 per cent regarded as overdraft. Foreign exchange difficulties not serious as some equipment (mixers, lorries) can occasionally be bought with local currency. Mobilization payments obtained on some jobs (not on Government jobs). Progress payments on Government jobs are subject to long delays (3-6 months) and are even then sometimes made in "installments".

Interview 7 (continued)

Problems:

Materials supplies (mainly cement).
Spares supplies (normal spares requirements US$ 50,000 per year, but backlog of spares US$ 100,000-150,000).
Information supplied by consultants (foreign consultants, since no work has been done for local consultants) is often unclear and delayed, e.g. spinning mill at Khartoum North designed by Romanian consultants.
Estimating for long-running jobs is difficult due to unpredictable inflation and irregular price movements of materials in short supply.

Remarks:

If credit facilities were easier and foreign currency was available at favourable rates, the contractor would replace old equipment with new (contractor is not in favour of buying second-hand equipment).
As the contractor also operates a steel fabricating workshop, needs for scaffolding and metal formwork can be covered internally.
Occasionally this contractor hires equipment to other firms, but only to well known colleagues, and more as a favour than as a commercial operation.
The same partners own Sahara Engineering Co. Ltd. (specialists in the sale and assembly of water pumps).

Interview 8

Name:	Aboul Ela Contracting and Trading Enterprise Ltd.
Address:	P.O. Box 523, Khartoum
Description:	General building contractor (family-owned limited company)
Established:	1975
Nationality:	Sudanese
Manager:	Ibrahim Abdel Rahim Ibrahim (brother Mahmoud is Chairman).
Management staff:	1 technical adviser (civil engineer) part-time, 2 accountants, 2 administrative assistants, 1 site manager, 4 foremen.
Skilled labour:	35-40 per contract on casual basis
Unskilled labour:	80-100 per contract on casual basis
Labour availability:	Skilled labour is difficult to recruit, so the contractor covers his workers' personal income tax and pays wages weekly weekly which skilled workers prefer to daily payment (less security) or monthly payments (more difficult to manage the family budget).
Equipment:	11 concrete mixers (0.25 cu. m), 2 trucks (10 t), 4 pick-ups, 2 small generators (2.5 and 4.5 KVA), 3 hoists (2 electric, 1 diesel powered), 4 concrete vibrators (with petrol engine). Value of equipment LSd 200,000 (contractor's estimate).
Value of work:	LSd 1 million annually.
Type of work:	Commercial and residential buildings, up to 5 storeys high, value up to LSd 600,000.
Typical contracts:	12 jobs in hand, 7 commercial buildings and 5 residential. All jobs obtained by tender (private sector only). Firm is currently bidding for various buildings (hospital, schools, etc.) to be erected in Merowe new town through a joint venture company with Abdel Bagi Omar Attia (Abdel Bagi Engineering Works); value of works LSd 6 million.
Financial:	Bank overdraft up to LSd 100,000 (security in form of mortgage of partners' real estate) with Sudanese Investment Bank (Sudanese, French and Sudanese Government participation). No cash deposits required for performance bonds. The firm intends to engage in some general trading activities to generate foreign exchange for equipment and spares. Suppliers' credit facilities: up to LSd 15,000 with major suppliers. Mobilization payments: normally 3-5 per cent of contract sum, but in exceptional cases up to 10 per cent. No delays on progress payments (only private sector clients so far).
Problems:	Tendering is based on bills of quantities which are often inaccurate (up to 20 per cent out), but the contractor remeasures as the work proceeds. Detailed drawings supplied by consultants are also often insufficient. Supply and price of cement causes difficulties (black market price of cement fluctuates between LSd 180 and LSd 300 per ton depending on availability) while the official selling price of cement ex Atbara factory is LSd 64 per ton.

Interview 8 (continued)

Occasional shortages of steel in certain sizes leading to redetailing of reinforced concrete work.

No serious problems in repair and maintenance of equipment (the contractor's equipment is very basic).

Remarks:

Contractor would like to obtain more, and more sophisticated, equipment so as to expand activities, e.g.
- cranes (mobile, suitable for work on two to three storey buildings);
- scaffolding and formwork;
- more mixers (but not a batching plant);
- concrete pump;
- tower crane;
- steel bedding machine.

The contractor is not interested in leasing, only in buying and owning.
The contractor had never considered combining with others, but has formed a joint venture with Abdel Bagi (see above) as Abdel Bagi will be responsible for the steelwork and Aboul Ela will do the building works and manage the sites.
According to the contractor, the market is reasonably buoyant and is favourable for expansion.
Main activities in the Khartoum area, but willing to undertake jobs elsewhere provided the contracts are either large or can be done within a short contract period. Even allowing for a 15-20 per cent profit margin, the contractor is often the lowest bidder and has secured a reasonably steady workload.

Interview 9

Name:	Factory Equipment Co. Ltd.
Address:	P.O. Box 2458, Khartoum
Description:	Steel fabrication and pipeline specialist
Established:	1968
Nationality:	Sudanese
Manager:	M.A. Osman
Management staff:	1 master engineer, 1 engineer, 3 assistant engineers, 1 office manager/accountant
Skilled labour:	35 skilled plus 30 semi-skilled (all permanent)
Unskilled labour:	40 (casual)
Labour availability:	Difficult to recruit qualified welders and fitters
Equipment:	1 concrete mixer, 1 tipper truck, 7 flat bed trucks. 5 pick-ups, 1 compressor, 10 welders, 2 mobile cranes (15 ton), 1 back hoe excavator
Value of work:	LSd 1.5 million annually
Typical contracts:	Manufacture of steel petrol and oil storage tanks and piping; Installation of a 200 km long 20 inch pipeline for Shell Oil (in joint venture with a French contractor).
Financial:	Assets approximately LSd 900,000, of which equipment LSd 600,000 and land LSd 250,000. The contractor is able to arrange for foreign currency payments through local sources. So far financing of work in progress has not caused serious problems, but cash flow would be difficult to maintain if the company was able to increase its operations substantially.
Problems:	Any item fabricated in the company's workshops is subject to development tax ranging from 5 to 25 per cent, while foreign contractors are effectively exempt from this tax. Thus the company has to accept lower profit margins if it is to be competitive.
Remarks:	Mr. Osman has had extensive experience as an engineer/supervisor with large international steel companies. In the interviewer's opinion, this firm has significant potential as a specialist steel fabrication and erection subcontractor, which could be of national importance as the oil industry develops.

Interview 10

Name:	Farahab Trading and Engineering Company
Address:	P.O. Box 8139, Elamara, Khartoum
Description:	General building contractor (family-owned partnership)
Established:	31 January 1968 (partnership of Omer Abdalla Ibrahim and Babiker Abdalla Ibrahim, brothers)
Nationality:	Sudanese
Manager:	Omer Abdalla Ibrahim (civil engineering graduate)
Management staff:	3 engineers, 3 accountants, 1 secretary, 1 typist, 5 foremen
Skilled labour:	6 drivers, 1 carpenter in permanent service. 20-25 per contract on a casual basis.
Unskilled labour:	100-300 per contract on casual basis.
Labour availability:	No serious problems.
Equipment:	6 concrete mixers (0.25 and 0.5 cu. m), 1 dumper (0.75 cu. m), 5 tipper trucks (7 t), 3 pick-ups, 2 compressors, 1 generator (2.5 KVA), 2 hoists (500 kg), 6 concrete vibrators, 1 Hilti gun, steel scaffolding and formwork.
Annual turnover:	LSd 2 million (contractor's estimate appeared excessive, more likely to be LSd 1 million).
Type of work:	Offices, houses, flats, warehouses
Typical contracts:	Institute of African and Asian Studies, University of Khartoum (LSd 152,000), army warehouses at Kadaro (LSd 200,000), 7 storey Musaraf building (LSd 750,000), Hag El Safi hospital (LSd 500,000).
Financial:	No credit facilities with bank (Sudan Commercial Bank), so jobs are financed from partnership's own funds (the brother of the manager was already well established when the partnership was formed). Foreign exchange needs are met from hard currency account with Faysal Islamic Bank (part of some jobs is paid in foreign currency, clients being Sudanese working abroad). Performance bonds are obtained by depositing up to 40 per cent in cash so that it is not necessary to mortgage property. Mobilization payments are sometimes available. No credit facilities with materials suppliers.
Problems:	Supply of materials during the periods of shortage (steel and cement mainly). Contractor has imported some steel directly in the past but the timing proved inopportune. Bills of quantity and detail drawings provided by consultants are often inadequate. Contractor has practised and taught quantity surveying and remeasures all work himself. He also works out construction details when these are not provided by consultants. No serious problems in maintenance and repair of equipment as contractor employs part-time mechanics. Contractor would like access to more and better equipment through an equipment pool. Equipment suggested: cranes (mobile and tower), concrete pump, batching plant, mixer trucks, excavators and loaders.
Other activities:	Partnership owns a pharmacy and a small vegetable and fruit farm.

Interview 11

Name:	Middle East Construction Co. Ltd.
Address:	P.O. Box 341, Khartoum
Description:	Building - commercial and industrial partnership
Established:	1963
Nationality:	Sudanese
Manager:	A.T. Babiker
Management staff:	6 directors (all partners), 4 accountants, 10 engineers, 15 supervisors and foremen
Skilled labour:	30
Unskilled labour:	30
Labour availability:	Skilled labour shortage, so the contractor engages subcontractors to perform most of the work.
Equipment:	20 concrete mixers, 6 tipper trucks, 8 dumpers, 4 pick-ups, 2 generators, 1 hoist, 1 mobile crane, 1 tower crane, 1 excavator, 3 block making machines.
Value of work:	LSd 2 million annually
Type of work:	Commercial and industrial buildings
Typical contracts:	Public sector: 30 per cent; private sector: 70 per cent. Can provide design services when required.
Financial:	The company's equity financing is LSd 200,000, plus property, which is used to secure performance bonds, letters of credit and guarantees. Foreign exchange needs are met through bank facilities.
Problems:	Material shortages delay work and inflate costs. Bid documents are often unfair to the contractor, and the Contractors Union is attempting to revise the standard form used by most Ministries. Also, foreign contractors are felt to have many advantages in comparison with local firms.
Remarks:	The company is exceptionally well organized, and the owners and directors are all influential and experienced businessmen. The company has enjoyed an uninterrupted flow of work for the past two years. In the interviewer's opinion, if this company enjoyed the tax reliefs granted to foreign companies and could obtain foreign currency at the parallel rate, it would be fully competitive when bidding against foreign contractors.

Interview 12

Name:	Momayassin Group of Companies
Address:	P.O. Box 2063, Khartoum
Description:	General building contractor
Established:	1950
Nationality:	Sudanese
Manager:	M.E.A. Yassin
Management staff:	1 manager, 10 engineers, 4 accountants, 10 supervisors/foremen
Skilled labour:	100
Unskilled labour:	500
Labour availability:	Scarcity of skilled labour
Equipment:	25 concrete mixers, 5 tipper trucks, 12 pick-ups, 10 dumpers, 10 compressors, 1 generator, 1 hoist, 1 mechanical block making machine, 10 hand block making machines.
Value of work:	LSd 8 million annually.
Type of work:	General building contracts, 80 per cent for public sector clients.
Typical contracts:	Cotton storage warehouses - LSd 3 million Arab-African Bank - LSd 7.5 million, jointly with Belgian contractor Technical school buildings Buildings for University of Juba Sudan Commercial Bank
Financial:	Equity of combined group (including general trading companies) is in excess of LSd 2 million. Is able to obtain overdraft finance from Khartoum Bank (up to LSd 1.5 million) and from Sudan Commercial Bank (up to LSd 0.5 million), and the banks are also prepared to provide bonds and guarantees. Employer's liability and other policies are obtained from the African Insurance Company. Mobilization advances are sometimes available, against guarantees, from private sector clients. Slow payments are a general problem on Government contracts, and delays of more than 6 months in honouring certified payments are not uncommon. Suppliers do not normally grant credit facilities.
Problems:	Difficulty in obtaining foreign exchange for purchases of equipment, spares and materials. Slow payment by public sector clients.
Remarks:	The business is well equipped for building work at current levels of turnover, but would welcome the opportunity to obtain appropriate machinery and plant to diversify into road and general civil engineering projects. The firm already hires trucks and other plant on occasion, and in principle would support the idea of a plant pool for Sudanese contractors, although recognizing the formidable financial, organizational and management problems this would entail.

Interview 13

Name:	Rahad Engineering Co. Ltd.
Address:	P.O. Box 825, Khartoum
Description:	Construction of warehouses, i.e. foundations, erection of imported steel structures and roofing, mainly as specialized subcontractor on development projects.
Established:	1969 as a partnership; 1977 present company registered. Partners (shareholders) Salah Ibrahim Ahmed (Managing Director), Hag Sherif Mahmoud and Kamal Ibrahim Ahmed (brother of Managing Director).
Nationality:	Sudanese
Manager:	Salah Ibrahim Ahmed
Management staff:	3 graduate engineers, 2 non-graduate engineers, 1 chief accountant, 2 accountants, 5 foremen.
Skilled labour:	40 in permanent service
Unskilled labour:	Up to 200 on casual basis
Labour availability:	At present no difficulty in engaging unskilled labour, although up to two years ago there were seasonal difficulties. Skilled work force in permanent service can cope with present workload, but additional skilled labour would be difficult to recruit due to small output of vocational training centres.
Equipment:	8 concrete mixers (0.5 cu. m), 10 dumpers (1.5 cu. m), 2 mobile cranes (10 and 12 tons), no tipper trucks or other trucks, which are hired when needed, 9 pick-ups, 2 mechanical loaders, 2 vibrating rollers, 1 tower crane (15 m boom, load at maximum span 700 kg), 1 compressor, 4 generators (20 KVA), 5 welding machines (300 Amp.), 15 block making machines. Estimated value of mechanical equipment LSd 400,000. Steel scaffolding, metal strutting and plywood formwork; estimated value LSd 150,000.
Value of work:	LSd 3.5 million annually.
Type of work:	Mainly warehouses; some high-rise buildings.
Typical contracts:	Warehouses for gum arabic storage in Port Sudan (25,000 sq. m, value LSd 1.1 million, completion time 14 months); two private sector warehouses in Port Sudan (8,000 sq. m, value LSd 350,000); explosives store for ICI at Suakin (LSd 260,000); completion of a nine storey building for the Social Security Authority, abandoned by another contractor (LSd 1.4 million).
Financial:	Credit facilities with Nilein Bank up to 70 per cent of assessed value of partners' real estate (assessed value far below present day value in contractor's view). Foreign exchange needs covered in the parallel market, even for large quantities of imported material (in the past year over 5,000 tons of cement were directly imported at a cost of US$ 380,000). Performance bonds obtained from local bank; 40 per cent cash deposit, 60 per cent on credit (when credit is exhausted, 100 per cent deposit required). No credit facilities with suppliers. No mobilization payments (except in the past on subcontracts for foreign contractors).

Interview 13 (continued)

Problems:

Lack of escalation clauses in contracts causes difficulties when shortages of materials result in sudden price rises, e.g. "black market" prices of steel and cement.

Limited credit facilities granted by local banks. Only 60 per cent of plant and equipment is regularly in working order due to shortage of spares and scarcity of good mechanics.

Unfavourable competitive situation vis-à-vis foreign firms: local contractor not only pays import duties and other taxes on imported materials and equipment, but also personal income tax for personnel.

Remarks:

This contractor would prefer leasing of additional equipment if a central pool could be set up with proper maintenance facilities and well trained operators. Contractor would object to an equipment pool in which the public corporations had a majority interest, but would not object to a minority holding. The contractor stated that the Ministry of Industry should recognize contracting as an industry so that industry-promotion laws would be applicable.

Like many other contractors, the company (the partners) have to rely on other activities during slack periods. The partners are also involved in vegetable oil production. One third of average income arises from contracting operations, two thirds from other activities.

Interview 14

Name:	Ramsis Engineering Co.
Address:	P.O. Box 1959, Khartoum
Description:	Contractor, specializing in fabrication and design of structural steelwork and prefabricated steel structures; also completion of buildings with main structure in steel (concrete foundations, walling, roof cladding).
Established:	1964 - Start of operations as consultant and contractor after 12 years of service with the Government. 1965 - Registered as company (issue of trading license).
Nationality:	Sudanese
Manager:	Ramsis Naseif Mansour (civil engineer)
Management staff:	2 engineers (1 graduate, 1 diploma holder), 3 superintendants (2 on sites, 1 in charge of workshop), 1 administrative assistant manager, 1 accountant, 2 assistant accountants. (Detail drawing work tendered out).
Skilled labour:	25 in permanent service on workshop and steel erection activities. When erection work exceeds own capacity, skilled artisans are hired on piece-work terms.
Unskilled labour:	15 in permanent service.
Labour availability:	No problems as permanent staff is loyal and well paid.
Equipment:	5 concrete mixers (0.3 - 0.5 cu. m), 3 dumpers (0.5 cu. m), 2 tipper trucks (6 t and 8 t), 2 other trucks (6 t), 2 pick-ups, 3 generators (1.5, 5 and 6 KVA), 1 mobile welding machine (300 Amp.), 10 gin poles (complete kits); various equipment in steel fabricating workshop - value LSd 35,000.
Value of work:	LSd 1 million annually (grown rapidly over last 3 years). One third of turnover is steelwork and steelwork erection.
Type of work:	Structural steelwork structures. Design and supervision of steelwork by contractor; building works design and supervision by consultants.
Typical contracts:	Steelwork for repair workshop in Omdurman, value LSd 0.8 million (main contractor Sudan Korean Construction and Contracting Co.); Concrete structure for 6 storey building in Burri, value LSd 1 million; Water tanks and water towers up to 25 m high.
Financial:	Credit facilities with Sudan Commercial Bank based on value of steel stocks (normally stock value of LSd 150,000 - 200,000 bought through local importers). Clients normally pay 25 per cent of value of steelwork as mobilization payment. No significant foreign exchange needs as contractor buys steel from importers. Performance bonds supplied by bank without down payment.

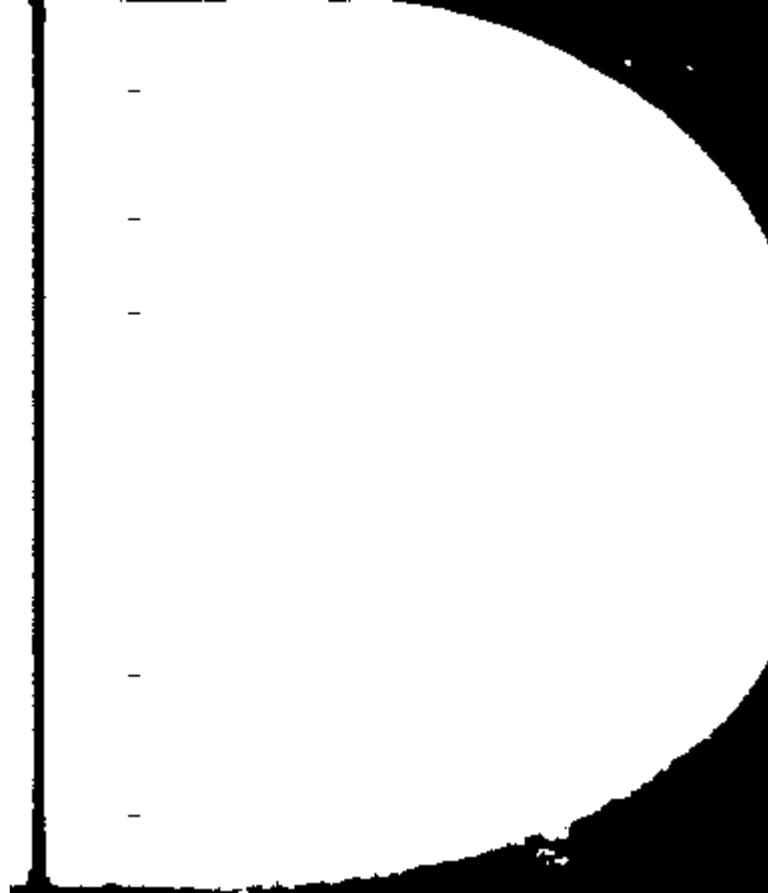
Interview 14 (continued)

Problems: Competitive disadvantage vis-à-vis foreign firms on large contracts as no tax facilities are given to local firms. For example, 109 small sheds for Sudan Gezira Board, 10 x 15 m, value approximately LSd 3 million, went to a foreign firm. The local price was lower but input in local currency was computed by client on the basis of LSd 1 = US$ 2, which rendered the local offer unattractive.

More equipment is required to undertake larger works, but the costs of imported equipment are currently prohibitive (paid for on parallel exchange basis and no tax relief available).

Remarks: Well established specialist contractor with good reputation based on long term performance (over 15 years).

Capacity of workshop (70 tons/month) not fully utilized, mainly due to unfavourable competitive situation vis-à-vis foreign competition. Actual production in 1980 was 300 tons of fabricated steel, or about one third of total workshop capacity.



Interview 15

Name:	S.A. Sayed and Partners
Address:	P.O. Box 1450, Khartoum
Description:	Civil engineering and general construction
Established:	1955, as consulting engineers for irrigation projects. 1960 as civil construction contractor.
Nationality:	Sudanese
Manager:	Sayed A. El Sayed
Management staff:	6 engineers, 1 office manager, 2 accountants, 6 foremen - all Sudanese
Skilled labour:	250
Unskilled labour:	300
Labour availability:	No problem
Equipment:	6 draglines, 10 concrete mixers, 3 tipper trucks, 6 flat bed trucks, 4 pick-ups, 6 dumpers, 2 compressors, 2 generators, 2 mobile cranes, 3 dozers, 2 excavators, 1 backhoe.
Value of work:	LSd 3 million annually
Type of work:	Irrigation and drainage projects; industrial and commercial buildings.
Typical contracts:	Building hostels and laboratory Gezira University; Pumping stations for irrigation schemes; Has design capacity for irrigation schemes.
Financial:	Has credit with the People's Co-operative Bank and Bank of Khartoum. When required can arrange for foreign exchange. No problems securing performance bonds or letters of guarantee. Suppliers will extend credit for 30 days.
Problems:	Many of the company's highly skilled operators and craftsmen emigrated to Saudi Arabia. At the present time there is not sufficient work to support all of the local and foreign contractors, and Mr. Sayed feels that foreign contractors get preferential treatment.
Remarks:	S.A. Sayed appears to be a competitive engineer and manager. The company seems well organized and has many years of experience. If the company could secure some additional heavy equipment, the interviewer is of the opinion that it could compete with many of the foreign contractors.

Interview 16

Name:	Saba Construction Co. Ltd.
Address:	P.O. Box 1524, Khartoum
Description:	General building contractor and civil engineering and architectural consultancy practice with head office in Khartoum, branch office in Port Sudan. Owner of small brickworks near Khartoum with an annual output of 3 million bricks.
Established:	1979 - contracting company 1975 - consultants' office only
Nationality:	Sudanese
Manager:	Omer Elmusharef Muktar, MSc (Seattle)
Management staff:	1 architect, 4 engineers, 2 technicians, 2 foremen (trained at MCPW), 1 clerk, 1 typist, 1 accountant (part time), 1 draftsman (part time)
Skilled labour:	3 permanent, 30 casual
Unskilled labour:	60
Labour availability:	Skilled labour difficult to recruit
Equipment:	1 concrete mixer with hoist (0.5 cu. m), 10 concrete mixers (0.25 cu. m), 3 tipper trucks (1 x 6 cu. m, 2 x 4 cu. m), 5 pick-ups, 4 block making machines, 1 compactor, 5 vibrators, 600 sq. m steel formwork, 1 hoist (1000 kg). Estimated value LSd 200,000.
Value of work:	LSd 1.5 million annually
Type of work:	Offices, workshops, residential buildings, up to 4 storeys
Typical contracts:	Training Centre for Harbour Corporation, Port Sudan, value LSd 400,000; Brigade Headquarters for Armed Forces, Khartoum, value LSd 250,000; Offices and workshops for Pipeline Corporation, value LSd 220,000.
Financial:	Family owned limited company. No credit facilities with banks (not wanted for religious reasons); financing of guarantees, retention and material and labour costs from family's financial resources. Foreign exchange needed for additional equipment and purchase of spares and materials. Arrears in payments by public sector clients puts a heavy strain on financial resources and limits expansion possibilities.
Problems:	Shortage of materials (mainly cement) coupled with price fluctuations cause occasional losses (no escalation clauses in contracts). Lack of competent skilled labour has negative influence on quality of work, leads to higher overheads for supervision and interferes with proper planning of jobs.

Interview 16 (continued)

Remarks: Capable, well respected contractor with good potential for expansion, provided more equipment can be obtained. Contractor would like to improve his brickworks.

For larger jobs contractor has formed joint venture company with Petrico Ltd. under the name Sabapet Ltd. (see also Interview 19).

Additional equipment planned:

Tower crane, dumpers, concrete pump, batching plant

Interview 17

Name:	Saudi-Sudanese Engineering and Contracting Co. Ltd.
Address:	P.O. Box 1405, Khartoum
Description:	General building contractor, specialist in commercial buildings
Established:	1975
Nationality:	Sudanese with Saudi Arabian shareholding (Sheik Mohamed Saleh Baharith of the Baharith Organization, Jeddah)
Manager:	Sayed Abdel Muttalib Ibrahim
Management staff:	3 engineers, 4 assistant engineers, 1 financial and administrative manager, 6 foremen
Skilled labour:	25
Unskilled labour:	Up to 450 (currently less)
Labour availability:	Some difficulty recently as several key employees left to work in Saudi Arabia.
Equipment:	16 concrete mixers, 9 tipper trucks, 10 pick-ups, 8 dumpers, 4 compressors, 5 generators, 2 mobile cranes, 5 block making machines, 4 mechanical loaders, 2 back-hoe excavators, 2 rollers, 1 grader. Estimated value LSd 700,000.
Value of work:	LSd 2.5 million annually
Type of work:	Factories, warehouses, workshops and housing.
Typical contracts:	Textile mill (spinning and weaving) - LSd 4.6 million Housing and offices for Rahad Scheme in joint venture with Six Construct (Belgium) - LSd 16 million 5 small factory buildings - each about LSd 200,000 Hangars for Saudi Airways - LSd 1 million
Financial:	Equity capital (fully paid) - LSd 200,000 Shareholder loan - LSd 300,000 Accounts with Bank of Khartoum, National Bank of Abu Dhabi, El Nilein Bank. Is able to obtain mortgage loans at a current interest rate of 14.5 per cent. Foreign exchange sometimes a problem, although 10 per cent of payments on Rahad contract was in foreign exchange and the firm has some access to Saudi Rials through the Saudi shareholder.
Problems:	Erratic material supplies, particularly cement, steel reinforcement and electrical goods. Unclear arbitration procedures (in dispute with Government for over a year on a textile mill project). Slow payments and difficulty in securing variation orders to cover additional work. Poorly worded contract documents and vague drawings on many public sector projects.
Remarks:	The company has sufficient equipment to double its volume of work, but demand in the private sector has weakened and the company is reluctant to tender for new Government work in view of its unhappy payments experience.

Interview 18

Name:	Sidko Earthmoving Co. Ltd.
Address:	P.O. Box 83, Khartoum
Description:	Earthmoving specialist
Established:	1968
Nationality:	Sudanese
Manager:	Sayed M. Ahmed
Management staff:	1 manager, 3 mechanical engineers, 2 accountants, 2 clerks
Skilled labour:	16 operators, 9 apprentices
Unskilled labour:	15
Labour availability:	Severe shortage of skilled plant operators
Equipment:	6 dozers, 5 excavators, 1 mobile crane, 5 tipper trucks, 1 rock crusher, 3 compressors, 3 generators, 3 welders. Estimated value: LSd 700,000.
Value of work:	1980: LSd 50,000 1979: LSd 200,000
Type of work:	Earthmoving and rock crushing. Joint ventures with other contractors on some civil engineering projects.
Typical contracts:	Factory for Select Food Production Co., grubbing and land clearing; El Obeid - Wau Railway, trench excavation; New Halfa Phase 3, excavation of catch basins.
Financial:	The company is family-owned and finances are limited in view of the capital-intensive nature of the business. A major constraint is the difficulty in procuring foreign currency to finance the purchase of spare parts.
Problems:	Equipment is only working at 35 per cent of capacity, due to heavy downtime caused by lack of spares and fluctuating workload. A further aggravation has been the recent emigration of many of the better operators and mechanics to Saudi Arabia and the Gulf.
Remarks:	The manager stated that if spares became available and the equipment were rehabilitated, the company would be able to tender for larger projects of longer duration and thereby secure a steadier and more economic workload. He would be prepared to joint venture with other Sudanese contractors in order to participate in larger projects. In the opinion of the interviewer, the manager is a young and aggressive contractor with a realistic grasp of his company's capabilities and potential.

Interview 19

Name:	United Construction and Trading Co. (S) Ltd.
Address:	P.O. Box 8, Khartoum
Description:	General building contractor
Established:	1979 - registration of present company 1953 - proprietor started as a painting contractor 1961 - Building and Trading Co., since sold, although Mr. Petrides still provides advice on consultancy basis.
Nationality:	Sudanese
Manager:	E. Petrides
Management staff:	1 civil engineer, 1 quantity surveyor, 1 site manager (Senior Trade School), 5 foremen, 1 accountant, 1 assistant accountant, 2 timekeepers, 1 store keeper, 1 maintenance mechanic
Skilled labour:	10 permanent - 2 electricians, 2 carpenters, 2 drainlayers, 2 bricklayers, 2 plasterers 140 casual
Unskilled labour:	280 (usual ratio 2 unskilled:1 skilled)
Labour availability:	Some problems in recruiting skilled labour
Equipment:	4 concrete mixers (0.75 - 3 cu. m), 4 dumpers (1 and 2 cu. m), 4 mobile cranes, 2 tipper trucks, 1 other truck, 6 pick-ups, 1 compressor, 1 generator (85 KVA), 4 hoists, 4 block making machines (also for cement-sand bricks), 1 mechanical loader (0.5 cu. m), 1 roller (20 t), 1 grader, 5 concrete vibrators, 1 plaster spraying machine. Estimated value of equipment LSd 100,000 - 150,000.
Value of work:	LSd 800,000 annually
Type of work:	General building works for private clients including offices, residential buildings, churches. 95 per cent of contracts obtained by negotiation, only 5 per cent by tender.
Typical contracts:	4 multistorey buildings (offices and flats) up to 7 storeys (value of each approximately LSd 1 million) constructed during 1977-81. 1 church, value LSd 250,000, excluding cost of cement and steel purchased by client.
Financial:	Limited company with equity capital of LSd 200,000, fully paid up, and real estate in the name of the company. Credit facilities with bank (Unit Bank): for foreign-paid contracts (embassies) 20 per cent of contract value; for locally paid contracts credit based on mortgage of company's real estate. Imported materials: for long duration contracts part of materials imported by contractor using funds of foreign-paid contracts, shortfall of hard currency obtained in the parallel market. Company has a general import license (cost LSd 1,000 plus LSd 250 per year).

Interview 19 (continued)

Suppliers' credit facilities: 180 days for supplies from U.K. firms, 30 days with local suppliers.
Mobilization payments: minimum 20 per cent required.
Progress payments: sometimes delayed by slow processing by consultants; about 10 per cent of payments outstanding for a long time or dubious (but contractor's estimates include 30 per cent profit and risk margin).
Retention: 5 per cent maximum (but contractor does provide guarantee of stability of building - duration six years).
Insurance: employers and third party liabilities covered (proprietor has interest in insurance company).

Problems:

Shortage of materials is a frequent cause of delay, but price fluctuations are fully allowed for by this contract.

Sand, gravel and bricks have risen by 10 per cent annually, while cement and steel show strong price fluctuations due to shortages (black market prices). Thus the contractor makes it a condition that cement and steel are provided by the client. Even so, delays can cause serious financial setbacks; the contractor suffered a loss of 30 per cent on one job of LSd 280,000.

To minimize loss of skilled labour through emigration, the contractor now uses more labour from the southern regions and provides housing facilities for key workers.

Bills of quantity supplied by consultants are often inaccurate, but the firm's quantity surveyor remeasures for payment purposes.

Remarks:

No problems with maintenance of equipment: own maintenance mechanic for current maintenance, spares ordered directly from abroad and paid for from foreign accounts abroad when not available locally.

The proprietor/manager of this enterprise has been in the contracting business for over 25 years. Thus he is able to cope effectively with most of the hazards of running a contracting business in the Sudan, and his excellent reputation allows him to negotiate contracts in which risks are limited (materials paid for by clients, considerable mobilization payments, etc.). In order to be able to execute larger jobs he has formed a joint venture company with Saba Construction Co. Ltd. operating under the name Sabapet Ltd., into which joint company the assets of Petrico Ltd., another company owned by the proprietor, have been contributed.

In view of the need the proprietor expressed for more modern equipment to compete with foreign contractors, the contractor would like to be able to lease more sophisticated equipment, provided expert staff is provided for initial operation and training of local counterparts.

Interview 19 (continued)

The proprietor is not in favour of "off the job" training as he fears an additional risk of emigration of skilled labour. He has less reservations regarding on the job training, although even in this case he is afraid that it might lead to wastage of scarce skilled personnel.

In the opinion of the interviewer, the proprietor has an excellent grasp of the fundamentals of the building business and has proved a shrewd and successful entrepreneur.

Long term plans: Undertaking larger jobs through the joint venture company Sabapet Construction Ltd.

Competition with foreign contractors on large jobs through joint ventures with foreign firms (Sabapet plus foreign company).

Interview 20

Name:	United Contractors and Estate Developers Co. Ltd.
Address:	P.O. Box 2074, Khartoum
Description:	Newly formed contracting subsidiary of the United Trading and Engineering Co. Ltd. (commission agents, exporters, importers; with interests in shoe manufacture, poultry and animal products).
Established:	1981 (construction company) 1964 (parent company)
Nationality:	Sudanese
Manager:	Fouad Abdelmoneim (Chairman)
Resources:	Company newly formed, so little staff and equipment resources as yet.
Type of work:	Building contracting and estate development.
Typical contracts:	Parent company has already organized construction of buildings for group companies, farm buildings and shoe factory (Sudanese Lektro Shoe Co.). The group owns LSd 3 million development land in Khartoum, on which it is intended to erect residential property and a hotel.
Financial:	LSd 50,000 initial equity capital.
Problems:	Commercial banks are no longer providing loans for real estate development. High interest rates on other loans (15 per cent). Difficulty and cost in securing bonds and guarantees.
Remarks:	Illustrates the continued readiness of general traders to enter the contracting industry, although in this case the group has some experience of the building trade and the new company will be advised by a brother of the chairman, who is a qualified civil engineer.

Interview 21

Name:	NIPCO (Nile Precast Concrete Co.)
Address:	P.O. Box 1323, Khartoum
Description:	Precast concrete products manufacturer
Established:	1958 as a private company 1965 as an approved industry
Nationality:	Sudanese
Manager:	M. Facassi (holds Italian passport but Sudanese resident)
Management staff:	1 manager, 1 engineer, 3 clerks
Skilled labour:	9 skilled plus 14 semi-skilled
Unskilled labour:	15
Labour availability:	Shortage of skilled labour
Equipment:	4 no. 60 cubic yard per hour concrete mixers, 2 dumpers, 1 generator, 3 automated block making machines, 20 hand-operated block making machines, 1 semi-automatic pipe manufacturing plant, 3 hand-operated tile machines, 1 crusher, 10 vibrators, 1 mechanical sieve. Estimated value: LSd 90,000.
Value of work:	LSd 430,000 annually (25,000 tons by weight)
Type of product:	Blocks, pipes (4 - 28 inch), prefabricated roof units, poles, posts, manhole units, lintels, kerbs, steps and other prefabricated articles (325 separate products). Also has capacity to design and engineer specialized concrete products to clients' specifications.
Financial:	Capital LSd 125,000. Permitted to import machinery duty free. Experiences difficulty in securing foreign exchange for purchase of equipment and spare parts.
Problems:	Irregular and inadequate cement supplies (quota reduced from 125 tons per month to 40 tons per month recently) have held back production. Sometimes forced to accept orders subject to the customer supplying his own cement. Excessive cost and delay in securing spare parts.
Remarks:	The company appears exceptionally well organized, with a realistic approach to the technology it employs. Sophisticated equipment is only employed where there is a clear justification, as in the improved quality of spun concrete pipes, and the company maintains a two year supply of spare parts to minimize downtime. For simpler products, production is labour-intensive using basic equipment that is easy to operate and maintain. Less specialized spare parts are manufactured by the company itself or bought in from local machine shops. In the view of the interviewer, the quality of the products is good and the company is worthy of encouragement.

LIST OF MEMBERS OF THE UNION OF SUDANESE CONSTRUCTION CONTRACTORS

prepared by Abdullah Shaddah, Technical Adviser to the Union

Larger contractors

1. Momayassin Contracting Co., P.O. Box 2063, Khartoum (tel: 74599)
2. El Kidder Enterprise for Contracts, P.O. Box 784, Khartoum (tel: 33880)
3. Sudanese-Saud Engineering and Contract Co., P.O. Box 1405, Khartoum (tel: 42469)
4. El Haj Ahmed Abu Zaid and Sons, P.O. Box 5021, Khartoum (tel: 81948)
5. Middle East Construction Ltd., P.O. Box 341, Khartoum (tel: 75569)
6. Abdel Bagi Omar Attia Enterprise, P.O. Box 2220, Khartoum (tel: 72767)
7. Abu Lela Construction Enterprise, P.O. Box 523, Khartoum (tel: 42464)
8. Falahad Engineering and Commercial Co., P.O. Box 8139, Khartoum (tel: 80400)
9. Fahad Engineering Ltd., P.O. Box 825, Khartoum (tel: 75612)
10. El Rubi Engineering and Electrical Co., P.O. Box 467, Khartoum (tel: 75131)
11. Sidco Commercial and Contracting Co. (A), P.O. Box 1765, Khartoum (tel: 78222)
12. Sidco Commercial and Contracting Co. (B), P.O. Box 83, Khartoum (tel: 41576)
13. Sudanese-Korean Construction Co., P.O. Box 1873, Khartoum (tel: 77034)

Medium-size contractors

14. Ramsis Engineering, P.O. Box 1959, Khartoum (tel: 75094)
15. Petroleum Equipment Co., P.O. Box 2458, Khartoum (tel: 80807)
16. Faisal Construction, P.O. Box 2235, Khartoum (tel: 71958)
17. El Wadi Engineering and Construction Co., Khartoum (tel: 76662)
18. United Commercial and Contracting Co., Khartoum
19. Saed Rinco Enterprise, Khartoum
20. Banjari Construction Co., Khartoum
21. Engineer Contracting Mahmoud Osman Kaleib, Khartoum
22. Sudanese Engineering Co., Khartoum

Smaller contractors

23. Hassan Mahmoud Bakr, Khartoum
24. Modern Construction and Commercial Co., Khartoum
25. Africa Construct, Khartoum
26. Saleh Abdel Rahman and Fadol Fawzi, Wad Medani
27. Bakri Mohamed Medani and Babiker Khadil Medani, Kadugli
28. Omer Babiker Hamed, Khartoum
29. Ahmed Mohamed Nour, P.O. Box 2235, Khartoum (tel: 71958)
30. Arcon Co. (Engineers and Contractors), Khartoum
31. Saba Construction Co., Khartoum
32. Abdel Malik Ahmed El Mileih, P.O. Box 4068, Khartoum (tel: 75408)
33. Moh Hussein, Khartoum

34. Medani Awad El Haj, Khartoum
35. Hussein Sadol Enterprise, Khartoum
36. Abdel Ali Magrabi Majoub, Khartoum
37. Moh. Mirgani El Faki, Khartoum
38. Abdel Halim Mirgan and Bros., P.O. Box 1299, Khartoum (tel: 71968)
39. The National Contracts Services, Khartoum
40. Omar Awad Alla, Khartoum
41. Fahdi Construction Co., Khartoum (tel: 76662)
42. Khalid Hassen Hussein, Shendi
43. Ata El Sid Sid Ahmed, Shendi
44. Fouad Azir Mikhail, Shendi
45. Mukhtar Haj Ali, Shendi
46. Abdel Rahmen Mohamed Ogemi, Shendi
47. Mohamed Abdullah Abu Soweit, Port Sudan
48. Abdel Gadir Ali Ahmed, Port Sudan
49. El Haj El Tahir Mohamed Ahmed, Port Sudan
50. El Tahir Abdel Rahman, Port Sudan
51. Abd El Galil Mohamed Ahmed, Port Sudan

1.0
1.1
28
32
36
40
1.8
2.0
2.2
2.5

PROVISIONAL ORDER

The Encouragement Of Investment Act, 1980

In the Name of God, the Compassionate, the Merciful

The President of the Republic,

In accordance with the Provisions of Article 106 of the Constitution, hereby makes the following Provisional Order :-

CHAPTER I PRELIMINARY

Title and Commencement

1. This Provisional Order may be cited as "the Encouragement of Investment Act, 1980,"and shall come into force as from the date of signature.

Repeal and Saving

2. (1) The following Acts are hereby repealed:-

(a) The Encouragement of Investment in Economic ServicesAct, 1973,

(b) The Development and Encouragement of Industrial Investment Act, 1974.

(c) The Development and Encourgement of Agricultural Investment Act, 1976.

(2) Not withstanding subsection (1) all licences, privileges and guarantees in force granted under the aforesaid laws shall continue to be valid and shall be deemed as if granted under this Act.

Interpretation

3. In this Act, unless the context otherwise requires:-

"The Project" means any enterprise, utility or any economic activity coming within any of the fields whereby investment is allowed in accordance with the Objectives of this Act and approved in accordance therewith.

"National Capital" means the capital owned by Sudanese investor which capital is employed at the commencement of investment in the project and consists of moveable or immoveable assets plus any subsequent additions thereto either in the form of moveable or immoveable assets or cash or through capitalization of profits earned by the project; provided that such additions are made with the consent of the Minister.

" Foreign capital " means :-	(a) The foreign hard currency transferred to the Sudan at the exchange price current at the time of transfer through a bank working in the Sudan for the utilization thereof in execution of a project.
	(b) Imported machinary, equipment and means of transport financed from abroad and necessary for the execution of the project and compatible with the technical development suitable for the Sudan answering such specifications as prescribed by the Minister.
	(c) The foreign hard currency utilized on preliminary studies, feasibility studies and foundation undertaken by the investor within the limits approved by the Minister.
	(d) The profits realized by the project if capitalised with the consent of the Minister or if invested with his consent in another project in accordance with the provisions of this Act.
	(e) Intangible assets i.e. Patents, trade marks technical experience etc registered by the foreign investor for utilization in the project.
" Ministerial Committee "	means The Ministerial Committee for Investment established under section 30.
" The Minister "	means the Minister of Finance and National Economy.
" The Secretary-General for Investment "	means the person appointed as such by the President of the Republic.
" The Secretariat-General "	means the secretariat-General established under section 25.
" The Consultative Committee "	means the consultative Committee for investment established under section 28.

Application

4. (1) Subject to the proviso appearing at the end of section 2, the provisions of this Act shall be applied to all investment projects in the Sudan.

(2) The Minister may on recommendation of Minister of Energy and Mining grant to leaseholders under the Mines and Quarries Act, 1972 the privileges and facilities set forth in this Act in Accordance with the Provisions thereof.

CHAPTER 11

Encouragement of Investment

Fields of Encouragement of Investment

5. (1) This Act encourages investment in Agricultural, animal, mining, industrial, transport, tourism, storage and housing fields and any other economic field prescribed by the Ministerial Committee.

(2) This Act encourages investments initiated by the public sector, cooperative sector, mixed sector, national and private sectors, and the foreign sector.

Objects of Encouragement of Investment

6. The Objects of this Act are in general to encourage investment in projects aiming towards the achievement of the objects of the Development Plan of the Democratic Republic of the Sudan and in particular its objects are to encourage investment in projects which :—

(a) contribute effectively in the increase of national income and widening of the base of national economy and the strengthening of its activity, or

(b) contribute in the removal of any bottlenecks obstructing development, or

(c) to make available necessary services which contribute in the consolidation of economic and social development, or

(d) the production of which depends on local material or the establishment of which is encouraged for production of such materials, or

(e) assist in the realization of self sufficiency and creation of surpluses for export, or

(f) assist effectively in the consolidation of balance of payment, or

(g) make available directly or indirectly chances of labour for citizens, or

(h) have defence or strategic importance, or

(i) contribute in the realization of the objects of economic cooperation or integration with Arab and African countries.

No Discrimination

7. For the purposes of granting Licences, privileges and facilities under this Act, no discrimination shall be allowed among the projects by reason of being national or foreign.

CHAPTER 111

Privileges and Facilities

Granting of Privileges and Facilities

8. (1) Notwithstanding the provisions of any other law, the Minister subject to the provisions of this Act, may with the consent of the Minister concerned grant a project if he is satisfied that such project achieves any of the objects specified in section 6 to such an extent or aspect as may give it a distinctive economic value, all the privileges or facilities set forth in sections 9,10,11,12,13,14,15,16, or any of them.

(2) The type, extent, and period of privileges and facilities shall be specified in accordance with the extent of the achievement of the project to the objects set forth in section 6 hereof and on the light of the policies and priorities determined by the Ministerial Committee.

Exemption from business profits Tax

9. (1) The Minister may, subject to the provisions of section 5, exempt the project wholly or partly from business profits tax for a period of five years starting from the date of the commencement of production. The determination of the period of exemption shall be in consonance with the importance of the project to the national economy and to the size of investment therein.

(2) Notwithstanding subsection (1) The minister, May subject to the provisions of this Act, extend the period of exemption from income profits tax to a maximum period of five years with respect to integrated projects which include in addition to production basic structures like roads and other essential services or with respect to projects requiring large investments.

(3) Any loss occurring during the whole or partial period of exemption shall be deemed to have occurred within the last year of such period.

(4) A project shall be granted exemption from business Profits Tax only for its own benefit and for its importance to the national economy in such way that the benefit shall not return to another state.

Exemption From Duties

10. (1) The Minister may, in accordance with the Provisions of section 8, exempt the project wholly or partly from the following duties : —

(i) customs duties relating to : —

(a) machines, equipments, apparatus and imported spare parts necessary for the project.

(ii) imported raw, artificial or intermediary materials necessary for the project which materials cannot be found locally in the necessary quality and quantity.

(b) import duties on artificial or semi artificial goods arising out of the project.

(c) Any other duties or taxes imposed on the project.

(2) The Minister may, in accordance with the provisions of section 8, exempt the project wholly or partly from excise duties imposed on materals or commodities locally produced which are necessary for the project.

Allotment of Land Necessary for the Project

11. Notwithstanding the provisions of any other Law, the Minister may, after consultation with any authority legally concerned, allot the land necessary for the establishment of the project; he may reduce the price of such land or order that such price shall be paid in instalments subject to such reasonable terms as he may prescribe.

No Local Duties to be Imposed on Projects

12. Notwithstanding the provisions of any other law, no local duties shall be imposed on any project which has been given exemption under section 9 or 10 hereof within the period of exemption save with the consent of the Minister.

Deduction of Costs of Electricity and Transport

13. The Minister may, subject to the provisions of section 8, and after consultation with the other competent authorities grant to the project any of the following facilities :—

(i) reduction of the prices of the electricity used for the purposes of the project.

(ii) reduction of transport fares imposed on the traffic of the imports and products of the project.

Protection of Project Products

14. Subject to section 8, the Minister may direct the authority concerned :—

(a) to raise the customs duties on imported commodities which compete with or act as substitutes to the products of the project during a limited period of time.

(b) to restrict importation of such competative or substitute products for a limited period of time.

Preferential Facilities for Regional Development

15. Subject to section 8, the Minister may grant to the project which is established in certain regions prescribed by the Minister reasonable preferential facilities for achievement of justice in allocating development programms among the different regions and for giving regard to regions of less development.

Submission of Feasibility Study for the Project

16. Privileges or Facilities established by this Act shall only be granted after a technical economic feasibility study for the project has been submitted; provided that such privileges and facilities may be granted on preliminary basis on submission of a preliminary feasibility study.

Obtaining a Licence for Establishment of Project

17. Subject to the provisions of any other law, no investor shall establish or contribute to establish a project in the Sudan except on obtaining a licence from the Minister in accordance with the provisions of this Act.

Terms and procedure for obtaining a licence,

privileges and Facilities.

18. (1) Applications for Licence for any project or for grant of any privileges, facilities or guarantees conferred by this Act, shall be made on the form prescribed by regulations made under this Act.

(2) No alteration or amendment in the size of the project or the purpose for which the licence is granted and no transfer of the project from its licenced place shall be made save with the written consent of the Minister.

(3) No transfer of the ownership or a leasehold of the whole or any part of the project shall be made save with the written consent of the Minister.

(4) The machines, equipments, materials or spare parts with respect to which privileges or facilities have been granted under this Act shall not be used for any purpose other than for which the licence was granted.

(5) The land alloted for the project under this Act shall not be used for any other purpose or mortgage save with the written consent of the Minister.

(6) The owner of the project shall present every year to the Secretary General a copy of the annual accounts of the project signed by a certified accountant.

(7) The owner of the project shall provide the Secretary-General every year with reports about the progress of the operation of execution of the project and the productivity of the project after commencement of production.

(8) The project shall not be liquidated within the five years following commencement of production.

Guarantee not to Nationalize, Confiscate or

Acquire the Project

19. Notwithstanding the provisions of any other law, any capital invested in the Sudan shall enjoy the following guarantees :—

(a) it shall not be nationalized except for the public good and by virtue of a law ; and in such case the following rules shall be followed :—

(i) the investor shall be granted after evaluation of his property, just compensation at the price current at the time of nationalization.

(ii) the evaluation shall be completed within a maximum period of six months commencing from the date of order of nationalization ; payment and transfer of compensation shall be in yearly instalments within a period not exceeding five years in the same currency of capita or any other currency agreed to.

(b) it shall not be subjected to sequestration or confiscation save with the order of a competent court issued in accordance with the laws in force.

Guarantee to Transfer the Profits, Interests

and Foreign Capital Abroad

20. (1) All profits arising out of the foreign capital invested in the project, and all interest arising out of any loan approved in accordance with section 21, shall after all taxes, duties, dues and other obligations due to the Government are paid or fulfilled be transferable outside the Sudan in the currency in which the Capital or loan as the case may be was imported or any other currency agreed to.

(2) If the project is liquidated, sold or its ownership is wholly or partially transferred, the Capital invested in the project shall, after all taxes, duties and obligations legally due to the government or other persons are paid or fulfilled, be transferable outside the Sudan in the currency in which such capital was imported or in any other currency agreed to.

CHAPTER IV : RULES OF INVESTMENT

Investor may obtain

Loans from abroad with consent of Minister

(21) (1) The project may, in accordance with such reasonable terms as may be agreed to by the Minister, borrow money from any foreign body.

(2) No foreign investor shall borrow money from banks and financial houses working in Sudan save with consent of the Minister.

Fixing and Registration of Foreign Capital

(22) The foreign capital invested in the project shall be fixed and evaluated with the consent of the Minister and shall be registered with the Bank of Sudan.

Cancellation of the licence, Privileges,

Facilities and Guarantees.

(23) (1) The Minister may, subject to the provisions of this Act, cancel any licence, privilege or guarantee set forth in this Act in any of the following cases :—

(a) If the investor has not established the project within the period specified in the licence or any extension thereto.

(b) if the investor has broken any of the terms according to which any privileges, facilities, guarantees or licences have been granted thereby

(c) if the investor has provided any false information or used unlawful means by which he obtained a benefit under this Act.

(d) if the project, without reasonable cause, stopped.

(e) if the investor so contravenes the law as may threaten the security and safty of the land.

(2) if the privileges or facilities are cancelled, then the investor shall be compelled to restitute the pecuniary benefit he has obtained as a result of conferment of any such privileges and facilities, provided that such benefit is attributable to the cause justifying cancellation.

(3) the investor against whom an order was made under sub - section (1) may file an application with the Ministerial committee for revision of such order and the resoultion of this Committee shall be final.

Contravention of the provisions of this Act

(24) (1) Whoever contravenes the provisions of section 17 of this Act, shall be punished, on conviction, with fine not exceeding five thousand pounds.

(2) Whoever contravenes the provisions of section 18 of this Act, shall be liable to a compounding of the contravention to be prescribed by the Minister by order but not to exceed five thousand pounds, in assessment of which regard shall be had to graveness of the contravention and to the extent of the unlawful enrichment by the owner of the project. A person against whom a compounding order is issued may apply to the Ministerial Committee for revision of such order and the resolution of this Committee shall be final.

CHAPTER V

Bureaux of Investment

Establishment and Constitution of the Secretariat-General for Investment

(25) (1) There shall be established a unified bureau to be known as "The Secretariat -General for Investment " which shall be subject to the administrative and financial supervision of the Minister.

(2) The Secretariat-General for investment shall consist of

(a) The Secretary General.

(b) The Technical Secretariat which shall consist of full-times specialists to be recruited from all technical departments and scientific specializations concerned with investment and its encouragement and of a limited administrative body, and shall exercise the functions set forth in section 26.

(c) The Consultative Committee.

Functions of the Technical Secretariat

(26) The Technical Secretariat shall have the following functions.

(a) to determine the abilities of investment, the need therefor its rules and any information relating thereto, and submit the same to and propagate among investors and give advice to them.

(b) to consider application for licence, feasibility studies and any other applications submitted by the investor and to make the necessary studies and enquiries about them so as to help investors and enable the authorities concerned to make a recommendation or decision with respect thereto.

(c) to have contacts and cooperate with all other government bodies concerned with the follow-up of investments and control of execution of projects so as to help investors and enable the authorities concerned in this Act to exercise their functions.

(d) to seek assistance from specialists, researchers or government or private bodies in the exercise of its functions in accordance with the preceding paragraphs.

Functions of the Secretary-General for Investment

(27) (1) The Secretary-General shall undertake the preparatory work which consist of the technical studies prepared by the Technical Secretariat and of the recommendations issued by the consultative Committee and of any other necessary substance or papers and he shall submit the same to the Ministerial Committee or Minister as the case may be for the exercise of the powers conferred by this Act.

(2) The Secretary-General in cooperation with other concerned government bodies shall have power to consider and give recommendation to the Ministerial Committee or the Minister as to any matter which is subject under this Act to the decision or consent of such Committee or Minister, provided the consultative Committee is not competent to consider or give recommendation with respect thereto.

(3) The Secretary-General shall submit to the Ministerial Committee or Minister as the case may be any studies or recommendations made by him or by the consultative Committee as to any application of an investor within two months of the date of the receipt of complete application

(4) The Secretary-General shall undertake all preparatory work to the meetings of the consultative committee and shall make ready all preparatory and necessary materials and keep its records and submit the Consultative Committee's recommendations to the Ministerial Committee or Minister as the case may be.

(5) The Secretary-General shall have supervision over the technicans and all other employees of the Secretariate General and shall regulate business therein.

Composition of the Consultative

Committee for Investment

(28) (1) The consultative Committee shall consist of the Secretary General as Chairman and of such members representing bodies directly concerned with investment as the president of the Republic may appoint provided that four members representing the private sector whose tenure of membership shall be three renewable years, shall be included in the appointment.

(2) Members of the consultative Committee shall not depute any person to attend its meetings save with the previous consent of the Secretary-General.

(3) The Members shall disclose any interest or benefits they have relating to any matter discussed by the consultative Committee and they shall not share in any debates or recommendations relating to that matter.

(4) The Secretary-General may invite any person to attend any meeting of the Consultative Committee if he deems this necessary; provided that such person shall not have a counted vote.

Functions of The Consultative Committee For Investment

(29) (1) The Consultative Committee for Investment shall have the following Functions :—

(a) to consider and make recommendations to the Minister with respect to applications for grant of Licence for the projects and to evaluate the feasibility studies relating thereto.

(b) to consider and make recommendations to the Minister with respect to applications for grant of privileges and Facilities for the projects.

(c) to consider and make recommendations to the Minister with respect to applications for increase of capital of any project out of profits.

(d) to make recommendations to the Minister with respect to compounding of the offences it deems necessary to be imposed in accordance with section (24) (2).

(e) to consider and make recommendations to the Minister with respect to cancellation of any privileges, facilities or Licences within the bases referred to in section 23 thereof.

(f) to make recommendations to the Ministerial Committee or the Minister to confer on the consultative committee any additional functions and to delegate thereto any power.

The Ministerial Committee for Investment

(30) (1) There is hereby established a Ministerial Committee to supervise the encouragement of investment.

(2) The Committee shall be composed by the president of the Republic and he may reconstitute committee as and when he deems this suitable.

Functions of the Ministerial Committee

(31) In addition to any function conferred on the Ministerial Committee by any other provision in this Act, the Ministerial Committee shall have power to frame the general policy for encouragement of investment on the light of the objects set forth in section 6 hereof and shall determine the priorities in the grant of licences, privileges and facilities and shall issue all the necessary directions for the proper implementation of this Act.

CHAPTER VI

General Provisions

Settlement of Investment Disputes

34. (1) If a National, Arab or foreign investor obtains any privileges, facilities or guarantees under this Act, this will be regarded as a consent by him to submit to arbitration any legal dispute arising in accordance with the provisions of sub-sections (2), (3) and (4) of this section ; provided that the Sudan shall be the place of arbitration. The Government of the Sudan shall be bound to make available all facilities required by arbitration.

(2) The provisions of Chapter IV of part VI of the civil procedure Act, 1974 relating to arbitration, shall apply to every legal dispute arising directly from investment of national capital in any project.

(3) The provisions of the convention on the settlement of investment Disputes Between Host States for Arab Investment and Nationals of other Arab States, 1974 shall apply to every legal dispute arising directly out of any of the investments to which that convention applies.

(4) The provisions of the Convention on the settlement of Investment Disputes between States and Nationals of other states 1965 shall apply to every legal dispute arising directly out of any of the investments to which the provision of that convention applies.

Power to make Regulations

35. The Ministerial Committee may make the regulations and orders necessary for the implementation of the provisions of this Act. Without prejudice to the generality of the foregoing such regulations and orders may provide for the following :—

(a) the prescription of the procedure whereby applications can be submitted for grant of licence, privileges or facilities and imposition of fees thereon ;

(b) the minimum number of projects to which this Act applies and exceptional cases ;

(c) the prescription of rules relating to control and follow up of projects licenced under this Act.

Made under my hand at the People's palace on 11th. day of Jumade El Akhira, 1400 A.H. being the 26th. day of April, 1980.

GAAFAR MOHAMED NOMIRI,

President of the Republic.

LIST OF EXISTING OPERATIONAL HEAVY EQUIPMENT OWNED BY SUDANESE CONSTRUCTION CONTRACTORS

Item	Quantity
2 C.Y. dragline	1
1 C.Y. dragline	3
50 ton crane, 100 foot boom	3
25 ton crane, 80 foot boom	1
20 ton crane, 50 foot boom	1
15 ton crane, 75 foot boom	2
25 metre tower crane	1
18 metre tower crane	1
30 m^3 per hour batch plant	2
15 m^3 per hour batch plant	3
50 ton mobile crane, hydraulic	3
25 ton mobile crane, hydraulic	4
25 ton mobile crane	3
2 C.Y. excavator/loader	5
1 1/2 C.Y. excavator/loader	5
Excavator/backhoe	6
1 C.Y. backhoe, hydraulic	3
Trencher	1
D-9 Caterpillar dozer	2
D-8 Caterpillar dozer	6
D-7 Caterpillar dozer	2
D-6 Caterpillar dozer	11
D-4 Caterpillar dozer	10
977 Caterpillar loader	4
955 Caterpillar loader	5
933 Caterpillar loader	2
12G Caterpillar grader	5
Heavy duty tractor	12
Rock crusher	5

No attempt was made to inventory small items, generators, vibrators, welding machines, hoists, compressors, trucks, etc.

Annex 8

LIST OF HEAVY EQUIPMENT TO BE REHABILITATED

Item	Quantity
2 C.Y. dragline	2
1 1/2 C.Y. dragline	3
1 C.Y. dragline	2
50 ton crane, 100 foot boom	2
25 ton crane, 80 foot boom	2
15 ton crane, 75 foot boom	1
50 ton mobile crane, hydraulic	3
25 ton mobile crane, hydraulic	4
20 ton mobile crane	2
2 C.Y. excavator/loader	4
1 1/2 C.Y. excavator/loader	3
Excavator/backhoe	3
1 C.Y. backhoe, hydraulic	2
Trencher	3
D-8 Caterpillar dozer	5
D-7 Caterpillar dozer	2
D-6 Caterpillar dozer	8
D-4 Caterpillar dozer	9
977 Caterpillar loader	2
955 Caterpillar loader	2
933 Caterpillar loader	1
G-12 Caterpillar grader	6
Heavy duty tractor	9
Rock crusher	2

The Mission did not attempt to compile a list of the small items, generators, hoists, welding machines, compressors, trucks, etc.

TENTATIVE LIST OF EQUIPMENT REQUIRED FOR THREE SUGGESTED CONTRACTOR SUPPORTING FACILITIES

	Item	Quantity	Unit Cost US$	Total Cost US$
A.	**Heavy Equipment Maintenance and Service Facility**			
	Portable welder	1	6,500	6,500
	Transformer welder	3	3,500	10,500
	Acetylene welder/burner	2	500	1,000
	10 ton hydraulic press	1	5,000	5,000
	12 inch metal lathe	1	4,500	4,500
	8 inch metal lathe	1	3,000	3,000
	Lathe accessories			3,000
	Drill press	2	500	1,000
	Fork lift	1	20,000	20,000
	20 ton overhead crane	1	25,000	25,000
	Air compressor, electric 250 CFM	1	3,000	3,000
	Track pin remover	1	8,000	8,000
	Automatic roller welder	1	13,500	13,500
	Miscellaneous hand tools			6,000
	Electric power tools			3,000
	Air tools			3,000
	Service truck	2	17,000	34,000
	Tractor and trailer	1	35,000	35,000
				185,000
B.	**Metal Fabrication Shop**			
	Portable welder	1	6,500	6,500
	Transformer welder	2	3,500	7,000
	Acetylene welder/burner	3	500	1,500
	Metal sheer	1	5,000	5,000
	Metal roller	1	3,500	3,500
	Metal bender/brake	1	4,500	4,500
	Drill press	3	500	1,500
	5 ton hydraulic press	1	3,500	3,500
	Fork lift	1	20,000	20,000
	20 ton overhead crane	1	25,000	25,000
	Miscellaneous hand tools			3,500
	Air compressor, electric, 250 CFM	1	3,000	3,000
				84,500

Item	Quantity	Unit Cost US$	Total Cost US$
C. Joinery Works			
Radial saw	1	1,000	1,000
Table saw	2	800	1,600
Glue press	2	3,000	6,000
8 inch wood lathe	2	1,200	2,400
Drill press	3	500	1,500
Miscellaneous accessories/tools			5,000
Planers mill	2	4,500	9,000
			26,500