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An Investigation of the Design and Construction Problems in Nigeria

Problèmes de projet et de construction au Nigéria

Entwurfs- und Ausführungsprobleme in Nigeria

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SUMMARY

As with Nigeria, the author presents the particular problems of an oil exporting developing country, in the face of a gigantic construction programme. The problems of delay in construction following an insufficient infrastructure and the explosion of construction costs caused by inflation are also considered.

RESUME

A l'exemple du Nigéria, l'auteur cherche à présenter les problèmes particuliers d'un pays en voie de développement, exportateur de pétrole, face à un gigantesque programme de construction. Les problèmes de retard dans les délais d'exécution, à la suite d'une infrastructure insuffisante sont évoqués, de même que l'explosion des coûts de construction occasionnée par l'inflation.

ZUSAMMENFASSUNG

Am Beispiel von Nigeria versucht der Verfasser, die besonderen Probleme eines ölexportierenden Entwicklungslandes bei der Bewältigung der zahlreichen, grossen Bauaufgaben darzustellen. Besondere Beachtung werden dabei den Problemen der zeitlichen Verzögerung der Bauzeit infolge ungenügender Infrastruktur und der Explosion der Baukosten infolge Inflation geschenkt.



1. INTRODUCTION

Before discussing the problems of the building industry in Nigeria, it is necessary to mention some of the fundamental geographical features which may have a direct or indirect influence on this subject matter.

With an area of around 92 million ha., the Federal Republic of Nigeria, Fig. 1, is the largest country on the west coast of Africa. Based on the 1963 census figure, the projected population of about 80 million in 1976 makes it the most populated country in Africa. There are three areas of high population density.

It lies between longitudes 2° and 15° east of the meridian and latitudes 4° and 14° north of the equator. Owing to its latitudinal extent, Nigeria has varied physical conditions, human types and economy. In general, rainfall diminishes from the south-east and south, towards the north and north-east. In the south-east there is an excess of rainfall all the year; in the north there is adequate rain only in two or three months of the year. There is also a corresponding vegetational range.

There is a great variety in human outlook and organisation. This is evident between the four main groups - Hausa and Fulani in the north, Yoruba in the south-west and Ibo in the south-east. The size and variety of the Federation is likewise reflected in its varied economic resources. She is one of the few large timber exporting countries of West Africa, and is rich in mineral resources.

2. BOOM IN THE CONSTRUCTION INDUSTRY AND PRESENT PROBLEMS

As the world's eighth largest exporter of crude petroleum, Nigeria as well as other members of OPEC benefited from the recent increases in world oil prices. The so-called "oil-money" has reflected in the economic strength of this fast developing country. With the large revenue available in the country, the need for its inhabitants to acquire improved housing and living conditions are growing rapidly. The Federal Government has recognised these needs and is making every attempt to improve the present situation. As a result of this, the Third National Development Plan, 1975-1980 (Table 1), has called for a total investment of about £20 billion. Almost half of this will be spent on construction.

Naturally, the sudden boom in the construction industry of Nigeria is creating various problems. Although these problems¹ are numerous and diverse in nature, the most serious ones are discussed in this section.

2.1 Demand for Foreign Expertise

Although Nigeria has numerous highly qualified indigenous Contractors, Engineers, Architects, Quantity Surveyors and other allied professionals, the present construction boom calls for additional foreign expertise. As stated in the Plan, "while serious effort will be made to assist indigenous contractors to improve their skill, it will be necessary during the Plan period to continue to attract a good number of reputable foreign contractors into the country to augment the overall construction capacity". The shortage of indigenous expertise could also be illustrated by a keynote address to the Commonwealth Association of Architects' Conference held in Accra in 1976. Speaking at this occasion, the Nigerian president of this Association, Mister Oluwole Olumuyiwa, said that the quality of



African architectural expertise was as good as anywhere else in the world, but pointed out that, while it is true that there is acute shortage of architects in Africa, it might not be correct in respect of quality. Although his reference was to Architects, the situation is the same for most Nigerian construction and design expertise.

The principal problem in employing foreign expertise is their lack of previous knowledge of the social, climatic and economic conditions² of Nigeria. These problems range from small projects, where foreign staffs are employed as supervisors, to multi-million Naira (N) complex projects, where foreign firms or consortia are engaged as main consultants or contractors. Basically, the lack of tropical design experience and construction methodology seems to be a major handicap to most foreign personnel and firms. As a result of this, buildings which portray European or other western culture and outlook are gaining ground. The adaption of unsuitable design technique and the choice of wrong materials give rise to the design and construction of buildings which may be found unsuitable in the foreseeable years.

These problems could be alleviated by the training of more Nigerian professional and technical staff, and financial support to able indigenous firms. Where foreign consultants are engaged for massive projects, at least a two-man team of Nigerian professional experts (either from the industry or from the University) should be appointed by the Government to oversee the general concept of the project and also to provide necessary guidelines at the design and construction stages. The Nigerian professional institutes, such as the Nigerian Institute of Architects, the Nigerian Institute of Building and others, should run "induction" courses for new foreign staff joining the construction industry. These courses should provide participants with sufficient materials for tackling the differing climatic, social and economic conditions in Nigeria as compared to their country of origin.

2.2 Construction Delays and Inflation of Building Cost

There is a great shortage of building materials in most parts of the country. This gives rise to hoarding, inflation and the use of inferior alternatives. The Plan recognises the shortage of building materials and aims at minimising existing bottlenecks. Effort is being made to increase investment in domestic production of cement and other essential building materials. The use of local materials such as burnt bricks will be vigorously promoted under the Plan to minimise dependence on imported substitutes.

However, as the industry depends heavily on imported materials, the delay in supply and scarcity of certain materials hinders progress on most sites. From Table 2 it can be seen that a large proportion of the materials needed in the industry for implementing the 5-year development Plan, will be imported. The summary of a recent survey³ of building material prices in selected towns in Nigeria is shown in Table 3. It is clear from this Table that there is a wide fluctuation in material prices. The causes of these variations in prices were attributed to the following six main factors:

- Location of the local building material manufacturing industries
- Transport costs from sources of supply and sites
- Untarred and bad roads to hinterland
- Fuel shortages
- Degree of supply and demand at each location
- Excessive profit margins of the building material merchants.



These problems have been recognised by the Federal Commissioner for Housing Urban Development and Environment, Wing Commander Mouktar Mohammed. Further serious attempts are therefore being made to increase the use of local materials. It is hoped that the extensive use of Nigerian local materials will not only provide more cheap materials, but may lead to the production and development of more suitable building components.

2.3 Inadequate Statutory and Scientific Guidelines

As Nigeria was previously a British colony, there has been a tendency to rely on most standards and practices which were handed down during the colonial administration. These techniques inherited by the Nigerian construction industry are not generally suited to its climatic conditions. Although the British Standards Institute's publications (Codes of Practices and British Standards) are still widely used, the recent construction failures in Nigeria have shown that the behaviour of some materials, such as concrete, in temperate countries differs in some peculiar ways from its behaviour in tropical countries.

The need for adequate statutory and scientific guidelines to suit the conditions in Nigeria has been widely recognised. For example, a symposium on a new code of practice on the structural use of concrete in building was held in Lagos in April 1976. Speaking on the occasion, the Director of the Nigerian Standards Organisation, Mr. D. O. Ogun, stressed that the boom in the construction industries in the country has prompted the organisation to establish a building and construction technical committee of experts to provide guidelines on various building materials. After considerable research, a new code of practice for concrete structures has been produced by the committee. Research work is also continuing in most Nigerian Universities and other Government agencies to produce more relevant guidelines for the construction industry.

Although the growing catalogue of building failures, now reaching serious proportions, could be seen as symptomatic of fundamental problems in the construction industry, the blame for such failure does not lie within one sector only. In Nigeria, the Building Contractor is generally blamed for most of these failures, whereas the Architect, or Engineer, could have been responsible. It is therefore essential that a thorough scientific investigation be carried out before the cause of any failure could be established.

3. CONCLUSIONS

As the boom in the Nigerian construction industry has created a situation where local personnel and materials are unable to meet with the demand, it is essential that foreign expertise and materials are attracted into the country. The Government should, however, increase its efforts towards the training of local technical staff, and the use of local materials should be exploited.

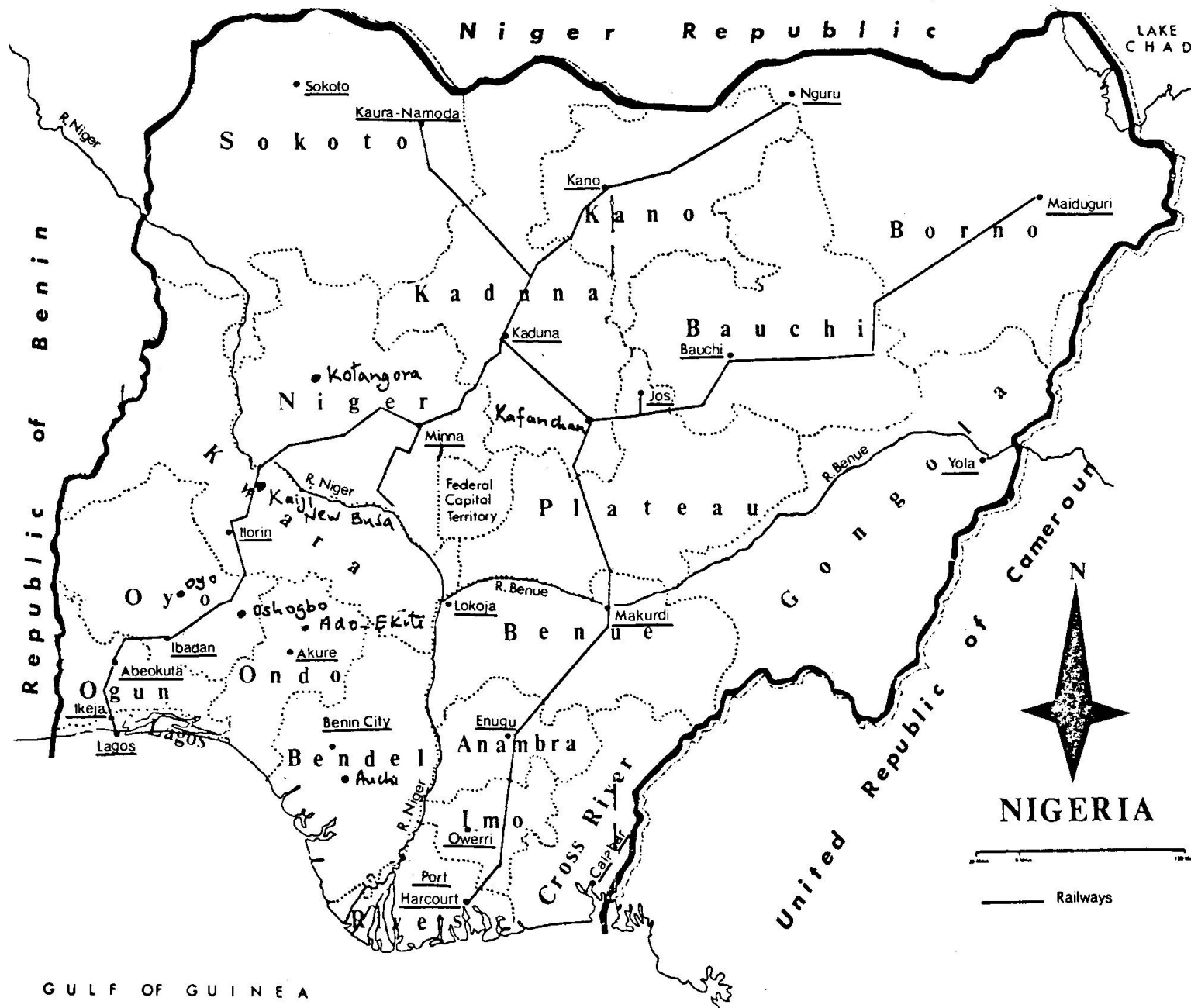
4. ACKNOWLEDGEMENT

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FIGURE 1: FEDERAL REPUBLIC OF NIGERIA



| SUMMARY OF PUBLIC SECTOR CAPITAL PROGRAMMES 1975-80 | | | | | | | | | | | | | | | |
|--|----------------------------|-------------------------|----------------------------|--------------------------|-------------------------|-------------|--------------|--------------|-------------------------|---------------------------|---------------------------|---------------------------|----------------|---------------------------|-----------------|
| Nmillion | | | | | | | | | | | | | | | |
| Sector (1) | Total all Govts. (2) | Federal Govt. (3) | Total all States (4) | Benue- Plateau (5) | East- Central (6) | Kano (7) | Kwara (8) | Lagos (9) | Mid- Western (10) | North- Central (11) | North- Eastern (12) | North- Western (13) | Rivers (14) | South- Eastern (15) | Western (16) |
| A: ECONOMIC | | | | | | | | | | | | | | | |
| 1. Agriculture | 1,645.852 | 750.845 | 895.007 | 64.768 | 95.408 | 142.556 | 66.303 | 14.824 | 63.521 | 68.139 | 73.754 | 65.441 | 48.150 | 63.526 | 128.617 |
| 2. Livestock | 344.046 | 173.176 | 170.869 | 10.314 | 15.227 | 24.682 | 7.299 | 17.090 | 8.383 | 12.280 | 20.801 | 20.080 | 5.700 | 10.648 | 18.365 |
| 3. Forestry | 109.730 | 30.014 | 79.716 | 9.055 | 5.355 | 4.610 | 9.300 | 0.500 | 4.975 | 5.826 | 8.438 | 4.530 | 2.000 | 12.701 | 12.426 |
| 4. Fishery | 101.554 | 58.561 | 42.993 | 3.367 | 1.398 | 1.600 | 1.700 | 15.451 | 2.289 | 0.100 | 1.397 | 0.751 | 5.538 | 5.639 | 3.763 |
| 5. Minings and Quarrying | 2,680.425 | 2,680.425 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 6. Manufacturing and Craft | 5,315.871 | 4,907.227 | 408.644 | 28.938 | 69.271 | 23.966 | 37.804 | 32.246 | 43.500 | 21.289 | 22.463 | 8.200 | 36.228 | 39.419 | 45.320 |
| 7. Power | 1,075.238 | 932.038 | 143.200 | 12.000 | 10.000 | 8.000 | 15.000 | 0.200 | 10.000 | 10.000 | 20.000 | 20.000 | 8.000 | 10.000 | 20.000 |
| 8. Commerce and Finance | 559.355 | 323.433 | 235.922 | 16.900 | 25.700 | 16.086 | 28.650 | 15.500 | 12.180 | 14.175 | 19.600 | 10.305 | 43.100 | 23.573 | 10.153 |
| 9. Transport | 7,303.068 | 6,274.342 | 1,028.726 | 98.990 | 88.728 | 55.340 | 63.990 | 36.265 | 200.000 | 59.723 | 119.956 | 108.180 | 51.650 | 69.184 | 76.720 |
| 10. Communications | 1,338.944 | 1,338.944 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sub-Total | 20,474.082 | 17,469.005 | 3,005.077 | 244.332 | 311.087 | 276.840 | 230.046 | 132.076 | 344.848 | 191.532 | 286.409 | 237.487 | 200.366 | 234.690 | 315.364 |
| B: SOCIAL | | | | | | | | | | | | | | | |
| 11. Education | 2,463.822 | 1,656.193 | 807.629 | 71.702 | 78.239 | 68.647 | 46.129 | 30.642 | 60.807 | 75.600 | 90.511 | 63.264 | 74.300 | 65.931 | 81.857 |
| 12. Health | 759.928 | 314.160 | 455.768 | 30.670 | 62.621 | 32.430 | 28.500 | 53.901 | 39.690 | 23.810 | 42.900 | 30.550 | 34.805 | 22.850 | 43.041 |
| 13. Information | 380.225 | 234.341 | 145.884 | 9.415 | 19.837 | 6.500 | 15.900 | 5.300 | 5.900 | 6.193 | 16.137 | 16.170 | 12.310 | 15.110 | 17.112 |
| 14. Labour | 43.187 | 43.187 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 15. Social Development and Sports | 139.603 | 24.950 | 114.653 | 8.148 | 22.592 | 6.203 | 5.760 | 19.266 | 3.920 | 3.770 | 11.501 | 6.751 | 9.350 | 8.778 | 8.614 |
| Sub-Total | 3,786.765 | 2,272.831 | 1,513.934 | 119.935 | 183.289 | 113.780 | 96.289 | 109.109 | 110.317 | 109.373 | 161.049 | 116.735 | 130.765 | 112.669 | 150.624 |
| C: REG. DEVELOPMENT | | | | | | | | | | | | | | | |
| 16. Water Supply | 930.038 | 317.413 | 612.625 | 58.120 | 57.540 | 40.000 | 45.500 | 44.400 | 73.975 | 41.100 | 42.201 | 43.489 | 7.600 | 31.200 | 127.500 |
| 17. Sewerage, Drainage, and Ref. Disposal | 428.495 | 154.499 | 273.996 | 9.706 | 28.000 | 13.240 | 6.000 | 70.000 | 58.000 | 9.200 | 7.500 | 4.500 | 26.000 | 4.600 | 37.250 |
| 18. Housing | 1,837.430 | 1,650.000 | 187.430 | 5.000 | 20.500 | 30.930 | 8.000 | 11.000 | 30.000 | 10.000 | 18.000 | 10.000 | 10.000 | 10.000 | 24.000 |
| 19. Town and Country Planning | 754.867 | 250.453 | 504.414 | 24.299 | 70.706 | 21.243 | 9.200 | 117.525 | 31.007 | 23.102 | 31.087 | 38.730 | 55.500 | 35.009 | 47.006 |
| 20. Co-operative and Community Development | 193.294 | 16.187 | 177.107 | 12.782 | 17.000 | 17.773 | 6.500 | 35.344 | 11.851 | 10.548 | 23.516 | 16.644 | 1.200 | 13.655 | 10.294 |
| Sub-Total | 4,144.124 | 2,388.552 | 1,755.572 | 109.907 | 193.746 | 123.186 | 75.200 | 278.269 | 204.833 | 93.950 | 122.304 | 113.363 | 100.300 | 94.464 | 246.050 |
| D: ADMINISTRATION | | | | | | | | | | | | | | | |
| 21. Defence and Security | 3,325.517 | 3,325.717 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 22. General Administra- tion | 1,124.128 | 709.210 | 414.918 | 24.809 | 35.955 | 46.421 | 25.250 | 34.960 | 27.092 | 36.617 | 39.866 | 50.472 | 40.877 | 34.160 | 18.439 |
| Sub-Total | 4,449.645 | 4,034.727 | 414.918 | 24.809 | 35.955 | 46.421 | 25.250 | 34.960 | 27.092 | 36.617 | 39.866 | 50.472 | 40.877 | 34.160 | 18.439 |
| Nominal Total | 32,854.616 | 26,165.115 | 6,689.501 | 498.983 | 724.077 | 560.227 | 426.785 | 554.414 | 687.090 | 431.472 | 609.628 | 518.057 | 472.308 | 475.983 | 73.477 |

TABLE 1

SOURCE: FEDERAL REPUBLIC OF NIGERIA
THIRD NATIONAL DEVELOPMENT PLAN 1975-80

| ESTIMATES OF MATERIAL INPUTS REQUIRED FOR IMPLEMENTING THE PLAN | | | | | | | | | | | | | | |
|---|---------------------|--------------------------------|---------------------------|--------------------------|-------------------------|---------|-----------|------------------------------|----------------------------|--------------------------|--------------------|---------------------------|--|-----------------------------|
| Unit | | Quantities, Public Sector | | | | | | | | | | | | |
| | | Housing Barracks Prisons | Offices Hotels etc. | Stores Ware- house | Facto- ries Shops | Schools | Hospitals | Health Centres Clinics | Roads Bridges Tarmac | Water and Sewerage | Miscel- laneous | Public Sector Total | QUANTITIES Private Sector Total | QUANTITIES Total Plan |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| 1. Cement | million tons | 3.48 | 1.19 | .38 | .67 | 4.68 | .42 | .28 | 6.71 | .85 | .95 | 19.61 | 3.46 | 23.07 |
| 2. Reimbursement | million tons | .92 | .86 | .01 | .05 | 1.19 | .11 | .05 | 1.36 | .24 | .17 | 4.96 | .92 | 5.89 |
| 3. Construction Timber | million cu. ft. | 42.89 | 10.88 | .28 | .70 | 32.23 | 26.80 | 1.42 | — | — | 11.59 | 126.79 | 21.73 | 148.52 |
| 4. Joinery Timber | million cu. ft. | 14.38 | 2.15 | .03 | .28 | 16.49 | .80 | 2.03 | — | — | .02 | 36.18 | 5.74 | 41.92 |
| 5. Structural Steelwork | thousand tons | — | — | — | 80.5 | .1 | — | — | 460.0 | 45.0 | — | 585.6 | 195.0 | 780.6 |
| 6. Galvanised Pipes | thousand tons | 45.8 | 8.9 | — | 1.1 | 38.0 | 5.1 | .7 | — | — | — | 99.6 | 23.0 | 122.6 |
| 7. Copper Pipes | thousand tons | — | 2.9 | — | — | — | 2.0 | 1.3 | — | — | — | 6.2 | 1.9 | 8.1 |
| 8. Extruded Aluminium Section | thousand tons | .8 | 8.9 | — | — | — | 1.0 | 1.5 | — | — | — | 12.2 | 7.0 | 19.2 |
| 9. Rolled Steel Section | thousand tons | 179.2 | 2.9 | — | 2.5 | 68.0 | 2.0 | — | — | — | — | 254.6 | 34.2 | 288.8 |
| 10. Asbestos Cement Pipes | thousand tons | 144.6 | 2.9 | — | 1.8 | 33.1 | 1.0 | — | — | — | — | 183.4 | 29.5 | 212.9 |
| 11. Pipes (Cast Iron) | thousand tons | — | — | — | — | — | — | — | — | 81 | — | 81 | — | 81 |
| 12. Pipes (Steel) | thousand tons | — | — | — | — | — | — | — | — | 63 | — | 63 | — | 63 |
| 13. Roofing | | | | | | | | | | | | | | |
| (i) Felt | thousand tons | 35 | 3 | — | — | 38 | 2 | 2 | — | — | — | 80 | 6 | 86 |
| (ii) Asbestos Cement Sheets | thousand tons | 42 | — | — | 7 | 233 | 5 | 7 | — | — | — | 294 | 16 | 310 |
| (iii) Aluminium Sheet | thousand tons | 7 | 18 | — | 70 | 15 | 3 | — | — | — | — | 113 | 235 | 348 |
| 14. Air-conditioning | thousand refr. tons | 15 | 193 | — | — | 51 | 20 | 15 | — | — | — | 294 | 147 | 441 |
| 15. Electrical Installation | Megawatts | 308 | 357 | — | 70 | 322 | 268 | 41 | — | — | 4 | 1,370 | 435 | 1,805 |
| 16. Flexible Floor and Wall Cov. | thousand sq. yds. | 6,877 | 709 | — | — | 338 | 201 | 308 | — | — | 7 | 8,440 | 2,903 | 11,343 |
| 17. Ceramic Floor Tiles | thousand sq. yds. | 12,500 | 5,679 | 41 | 910 | 3,354 | 1,005 | 5,848 | — | — | 53 | 29,390 | 8,046 | 37,436 |
| 18. Ceramic Wall Tiles | thousand sq. yds. | 8,223 | 7,967 | 85 | 210 | 4,120 | 623 | 446 | — | — | 74 | 21,748 | 6,885 | 28,633 |
| 19. Fibre Ceiling Sheets | thousand sq. yds. | 6,216 | 3,433 | — | — | 17,996 | 482 | 1,047 | — | — | 33 | 29,207 | 4,980 | 34,187 |
| 20. Glass | thousand sq. ft. | 36,830 | 17,279 | 28 | 1,575 | 60,434 | 3,752 | 2,430 | — | — | 156 | 122,484 | 25,118 | 147,602 |
| 21. Paint | thousand gallons | 1,639 | 310 | 46 | 210 | 2,658 | 181 | 122 | — | — | 3 | 5,169 | 1,068 | 6,237 |
| 22. Sanitary Wares | | | | | | | | | | | | | | |
| (i) Lavatory Basins | thousands | 165 | 57 | 2 | 14 | 398 | 5 | 18 | — | — | 1 | 660 | 108 | 768 |
| (ii) Sink | thousands | 64 | 5 | — | 7 | 8 | 21 | 3 | — | — | — | 108 | 19 | 127 |
| (iii) Water Closet | thousands | 105 | 54 | 3 | 14 | 349 | 5 | 11 | — | — | — | 602 | 109 | 711 |
| (iv) Urinal Bowls | thousands | — | 12 | 2 | 2 | 190 | 1 | 2 | — | — | — | 209 | 16 | 225 |
| (v) Shower Tray | thousands | — | — | — | — | — | 1 | 1 | — | — | — | 2 | — | 2 |
| (vi) Steel Sink | thousands | 88 | 1 | — | — | 5,478 | 1 | — | — | — | — | 5,568 | 21 | 5,589 |
| (vii) Steel or Cast Iron Bath | thousands | 85 | 3 | — | — | 4,895 | 1 | — | — | — | — | 4,984 | 32 | 5,016 |
| 23. Bitumen | million tons | — | — | — | — | — | — | — | 3.96 | — | — | 3.96 | — | 3.96 |
| 24. Aggregates | million cub. yds. | 10.4 | 3.6 | 1.1 | 2.0 | 12.6 | 1.3 | .8 | 144.2 | 4.9 | 5.5 | 186.4 | 10.3 | 196.7 |

TABLE 2

SOURCE: FEDERAL REPUBLIC OF NIGERIA
THIRD NATIONAL DEVELOPMENT PLAN 1975-80

| | | | LOCATION AND PRICES (prices quoted in Naira) | | | | | | | | | | | | | | | | | |
|----|------------------------|----------|---|--------|----------------|--------|-----------|-------------|--------|------------|---------------|--------|---------------|-----------------------|-------------|--------|-------------|----------------|----------------|------------------------|
| | | | Lagos State | | | | Oyo State | | | Ondo State | | | Anambra State | Rivers State | Bende State | | Niger State | | Kaduna State | Kwara State |
| | | | Suru- lere | Igbobi | Ebute Metta | Ikeja | Ibadan | Onog- bo | Oyo | Akure | Ado- Ekiti | Owo | Enugu | Port Har- court | Benin | Auchi | Minna | Konta- gora | Kafan- chan | Kainji New Bussa |
| 1 | Load of sand | 1 tipper | 34.00 | | 34.00 | 23.00 | 20.00 | 12.00 | 12.00 | 11.00 | | 12.00 | | | 25.00 | | 12.00 | 12.00 | | |
| 2 | Load of gravel | 1 tipper | | | | 75.00 | 40.00 | 17.00 | 18.00 | 28.00 | | 30.00 | | | 70.00 | | 34.00 | 34.00 | | |
| 3 | Ton of cement | 1 ton | 60.00 | 47.00 | 70.00 | 50.00 | 56.00 | 58.00 | 80.00 | 85.00 | 66.00 | 90.00 | 69.00 | 72.00 | 70.00 | 80.00 | 70.00 | 84.00 | 84.00 | 57.00 |
| 4 | Roofing timber | cu. ft. | | | | | 5.35 | 3.70 | 6.00 | 2.80 | | 3.00 | 5.50 | 4.00 | | | 3.40 | 3.50 | 3.50 | |
| 5 | Asbestos roofing | 6' long | 5.00 | 3.00 | 4.60 | 5.00 | 4.40 | 2.65 | 4.00 | 5.50 | | | 6.85 | | 6.80 | | | 6.50 | | |
| 6 | Asbestos ceiling | 4' x 4' | 3.00 | 1.50 | 2.60 | 4.50 | 2.10 | 3.00 | | 7.00 | | 3.00 | | | 2.30 | 2.70 | | | | |
| 7 | Flush door | | | 11.00 | 18.00 | 15.70 | 13.65 | 13.00 | 15.00 | 14.00 | | | 15.00 | 16.00 | | 15.00 | | 18.00 | | |
| 8 | Bath tub | 5' 6" | 85.50 | 80.00 | 70.00 | | 90.00 | 25.00 | | | 72.00 | 80.00 | 88.00 | 60.00 | 64.00 | | | 115.00 | | |
| 9 | W/C | 1 No | 44.50 | 45.00 | 42.00 | 45.00 | 50.00 | 54.00 | 45.00 | 45.00 | 52.00 | 58.00 | 52.00 | 40.00 | | 48.00 | | 55.00 | | |
| 10 | Kitchen sink | 1 No | 46.00 | 48.00 | | | 46.00 | | | | 42.00 | 40.00 | 45.00 | | 50.00 | | | | | 50.00 |
| 11 | Emulsion paint | 1 gallon | 6.50 | 10.45 | 7.50 | 5.50 | 9.95 | 9.90 | 8.00 | 9.50 | 8.00 | 11.00 | 5.50 | 9.50 | 7.50 | 6.50 | 8.00 | 8.00 | 8.00 | 10.50 |
| 12 | Gloss paint | 1 gallon | 7.50 | 12.60 | 9.50 | 6.50 | 12.00 | 12.00 | 7.00 | 11.40 | 7.00 | 12.00 | 8.50 | 10.50 | 9.00 | 7.50 | 9.00 | 10.00 | 11.50 | 12.00 |
| 13 | M.S. Iron rod | Ton | | 360.00 | | 350.00 | 300.00 | 370.00 | 360.00 | 360.00 | 390.00 | 380.00 | 356.00 | | | 358.00 | | 504.00 | | 380.00 |
| 14 | Iron nails | Cwt. | | | | 27.00 | 32.20 | | | | | | 38.00 | 32.00 | 32.00 | 32.00 | 16.50 | 16.50 | 32.00 | 27.00 |
| 15 | Chubb mortice lock | 1 No | | 6.00 | | 5.20 | | | | | | | 7.30 | 7.50 | | | 2.50 | | | 6.50 |
| 16 | 12-in. Gal. steel pipe | 3 m. | 6.00 | 5.00 | 4.50 | 6.00 | 6.00 | 6.00 | 7.00 | 7.00 | | 6.00 | | | | | | 5.50 | | 5.50 |
| 17 | Plain louvre blades | 150 mm. | 0.97 | 0.80 | | 1.22 | 1.25 | 1.06 | 1.25 | 1.16 | 1.50 | 0.90 | 1.22 | | | 1.22 | | 1.30 | | 0.95 |

TABLE 3

BUILDING MATERIAL PRICES IN SELECTED LOCATIONS IN NIGERIA