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THE CONSTRUCTION INDUSTRY IN DEVELOPMENT PROGRAMMES:  
A TECHNO-ECONOMIC REVIEW IN THE WEST AFRICAN SUB-REGION

(Note by the secretariat)

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## PREFATORY NOTE

Organization and Scope of the Report

The first task of the present study on the construction industry is to identify its position in over-all economy. For this purpose Chapter I on the Economic Significance of the Construction Industry is organized in such a way as, firstly, to examine the determinant of demand and, secondly, the aggregate features conditioning supply. The analysis of this subject matter has not been restricted to the West African experience alone but has been extended to draw in data from the African continent as well as from selected industrialized countries. This has been done for two important reasons. Firstly, the lack and inadequacy of statistical data in the sub-region do not permit the drawing of what could be considered valid conclusions. Secondly, it was felt that extending the exercise to the wider world experience would enable the observation of trends in the important determinants of the industry as economic development proceeds. In this context, the variables used as tools for examining trends were value added and wages and salaries per person engaged in the construction industry vis-a-vis the manufacturing sector, this sector having been selected as the element indicative of the industrialization process.

Chapter I thus goes further than defining the position of the construction industry in the economy and indicates on the one hand the factors determining its growth and on the other the problems that will be raised in the wake of this growth. Subsequent chapters are by-and-large devoted to throwing light on the magnitude and complexity of these problems and their ramifications on supply factors. Specifically, the central theme of the report revolves around the performance and efficiency of the industry both under its present structure and also within the prospects of its increased activity. Chapter II thus attempts to describe the current problems underlying the performance and efficiency of the industry today and draws attention to the determinants of building costs. Chapter III is aimed at appraising recent trends in construction activities within the sub-region and uses selected economic tools

for this purpose. It summarizes quantitatively the important demand and supply elements in the industry and in this way serves to lay the groundwork for the projection exercise which is the main purpose of Chapter IV. The implication of the projected level of construction activity in 1980 is examined in this Chapter and it is pointed out that the current unsatisfactory supply situation traced in Chapter II would worsen unless steps are taken by governments to meet effectively the multiple problems that they would increasingly face.

Chapter V which constitutes the conclusions of the report is therefore directed at drawing the attention of governments to the urgency and complexity of the problems of the construction industry. The ultimate recommendation that emerges is that there is a clear need for Governments to approach the planning and implementation of construction programmes within the framework of dynamic development and that this objective can best be tackled through comprehensive planning and action, under a single construction authority rather than through the established conventional technical Government Departments, which by their very nature view problems in isolation of their wider economic and social implications.

Finally, it is to be noted that the scope of the report has not been extended to the analysis of the component parts of the construction industry, although their possible movements within the construction complex as industrialization proceeds is dealt with to some extent. It would be useful to appreciate that the emphasis of the present report is on the macro- rather than the micro-analysis of the construction industry. It is believed that it would be in the wake of such a study and under its umbrella that specific studies either on the component parts of the construction sector, i.e., housing, industrial building, hospitals and schools building, public works, etc., or on the specific central problems of the industry could be undertaken in greater detail in depth.

## CHAPTER I

## THE ECONOMIC SIGNIFICANCE OF THE CONSTRUCTION INDUSTRY

(a) Introductory

1. On the basis of current statistics, the task of quantifying the economic significance of the construction industry is not a simple one. In the first place available statistical data in African countries are inadequate either to make possible long-term observation of trends or to undertake meaningful comparisons among countries. Data would have to be drawn from other developing countries in order to define more reliably the role of the construction sector in the economy. In this way it is also thought that the characteristics of the construction sector in African countries could best be recognized within the broad world picture of the industry in general and in particular in relation to the experiences of those countries of other regions at similar levels of economic development.

2. Secondly, the formal presentation of the contribution of the construction sector to gross domestic product in national accounts statistics imposes a limitation on the comparability of data and their direct usage in analysis. For example, expenditures on maintenance and repair are not included in the figures reporting gross domestic capital formation in construction, whereas they are included in the figures representing the contribution of the construction sector to GDP. Similarly, while all inputs (i.e., building materials and components, services purchased from other sectors, etc.) are included in the former set of figures, they are excluded from the latter. An estimate of the total output of the construction industry must therefore resort to some assessment, however crude, of the total expenditure on maintenance and repairs to be added to those sets of figures reporting gross domestic capital formation in construction.

3. Thirdly, still further limitations on the comparisons to be drawn from national accounts statistics are imposed by the difference in the

definitions used at the national level and by the fact that in many African countries only the monetary sector of the economy is reported with some degree of accuracy; a large part of the real investment in construction takes place in the subsistence sector of the economy on which only very crude estimates can be formulated.

4. Although from the above observations, the task appears formidable, nevertheless, an attempt will now be made to indicate in broad terms the economic significance of the construction industry. The industry will be examined in terms of its contribution to GDP (i.e., value added) and employment, and also in terms of its share in fixed capital formation.

(b) Investments in construction

5. From the point of view of investments, the construction industry represents the major share of capital formation. It therefore would follow that it plays a key role in economic activity.

6. An attempt will be made to throw light on the relationships between capital formation and its construction component. This will be done within the limitations of available data and their coverage - limitations to which attention was drawn in the introductory remarks. The apparent lack of consistency in some of the data presented in subsequent tables can in fact only be explained by these limitations. It may be argued in anticipation that the exercise of quantifying the significance of investments in the construction industry based on data of which the comparability between countries tends to be purely formal and not realistic, might lead to highly questionable results. The point is well taken note of, but it is important to devise means of analysis for defining at least in broad terms the quantitative significance of the construction industry in the economy and so providing the basis for appropriate policy decisions. It is thought that some of the imperfections of the available data could be overcome by giving indications of likely correcting factors or by attempting explanations for major inconsistencies.

7. Table 1.1 contains data on construction, gross domestic fixed capital formation (GDPCF) and gross domestic product for several countries both among developed and developing countries. The data refers to averages over the period 1956-1962.

8. A positive correlation between the share of construction in GDP and the share of GDPCF in GDP appears to be evident. This is demonstrated in Graph 1.

9. However, it would be noted from this Graph that the regression proceeds along a broad spectrum. Notable differences in one variable are apparent for a given level of the other. This could perhaps be attributed to fluctuations in construction programmes or to the relative priorities or differing emphasis placed on the construction industry between countries. It would seem, therefore, that the relationship between construction investments and GDPCF can only be visualized at several levels within a broad spectrum.

10. The general notion that construction investments represent a greater share of economic activity in developing than in developed countries must now be tested by other means, since the above correlation only proves that construction investments and GDPCF increase in direct proportions.

11. For this purpose, Graph 2 has been plotted with the share of construction investments in GDPCF as one axis, and the share of GDPCF in GDP as the other. In contrast to Graph 1, this one appears to lack an evident correlation between the two functions. In addition to the reservations of the comparability of data expressed earlier, it is thought that the scatter of plotted points characterising Graph 2 could further be qualified by the incomparability of GDP and GDPCF at a given time measure.

12. Within the apparently incoherent scatter of plotted points of Graph 4, a number of tendencies could be claimed. On the one hand a series of direct but negative correlations could be indicated between groups of countries (e.g., Morocco, Uganda, and the Sudan, or taking



TABLE 1.1 - The Economic Significance of Construction

Country	Symbol	Gross domestic capital formation				Gross domestic product		
		Gross domestic cap. forma- tion as a % of GDP.	Construction as % of		Period covered Years	Per capita (1958) US\$	Aver. annual rate of growth of real gross domestic product	
			GDFCF %	GDP %			Annual rate %	Period covered Years
Argentina	ARG	21	44	9.2	1956-62	474	2.0	1953-61
Austria	AUS	25	43 <sup>a/</sup>	10.6	1956-62	656	6.0	1953-61
Burma	BUR	18	60	11.1	1956-62	51	4.7	1953-61
Canada	CAN	24 <sup>b/</sup>	64	15.6	1956-62	1767	3.6	1953-61
Ceylon	CEY	13 <sup>b/</sup>	66	8.9	1956-62	122	3.7	1953-61
Chile	CHI	12	40	4.6	1956-62	409	3.0	1953-61
China (Taiwan)	CHT	20	41	8.2	1956-62	115	7.1	1953-61
Colombia	COL	20	52	10.3	1956-61	301	4.4	1953-60
Cyprus	CYP	20	44	9.0	1956-62	403	2.7	1953-61
Denmark	DEK	21	42	8.7	1956-62	975	4.1	1953-61
Ecuador	ECU	15	48	7.3	1956-62	179	4.3	1953-61
Federation of Malaya	MAL	13	65	8.4	1956-61	216	4.1	1956-60
Finland	FIN	28	61 <sup>c/</sup>	17.4 <sup>c/</sup>	1956-62	750	5.0	1953-61
France	FRA	24	47	11.1	1957-62	1113	4.7	1953-61
Germany (Fed. Rep.)	FRG	25	45	11.5	1956-62	931	7.0	1953-61
Ghana	GHA	18	71	12.6	1956-62	154	..	..
Greece	GRE	22	58	13.0	1956-62	310	6.2	1953-61
Honduras	HON	13	59	7.9	1956-62	192	3.7	1953-61
Ireland	EIR	15	53	8.2	1956-62	474	1.9	1953-61
Israel	ISR	29	63	18.4	1956-62	579	10.2	1953-61
Italy	ITA	23	55	12.6	1956-62	490	6.0	1953-61
Jordan	JOR	16	44	6.8	1959-63	138	..	..
Kenya	KEN	18	58	10.6	1956-62	76	..	..
Korea	KOR	14	59	8.1	1956-62	105	4.4	1954-61
Luxemburg	LUX	24	54	12.7	1956-61	1333	3.3	1953-58
Morocco	MAR	10	64	6.6	1956-62	159	0.6	1953-61
Netherlands	NDL	26	46	12.0	1956-62	767	4.8	1953-61
Nigeria	NIG	13	35	4.6	1957-62	66	4.5	1960-62
Norway	NOR	30	46	13.8	1956-62	1035	3.6	1953-61
Philippines	PHI	11	40	4.3	1956-62	191	5.2	1953-61
Portugal	POR	18	57	10.0	1956-62	218	4.8	1953-61
Puerto Rico	PRC	23	60	14.1	1956-62	581	7.3	1953-61
Rhodesia & Nyasaland	FRN	27	53	14.1	1956-62	134	5.8	1955-61
South Africa	SAR	20	56	11.3	1956-62	386	..	..
Spain	SPA	18	51	9.7	1956-58	322	..	..
Sudan	SUD	13	53	6.8	1956-61	82	..	..
Sweden	SWE	23	61	13.8	1956-62	1313	4.0	1953-61
Switzerland	SWI	26	52	13.7	1956-62	1316	..	..
Syria	SYR	16	70	11.2	1956-62	138	3.2	1954-61
Tanganyika	TAN	15	60	9.4	1956-62	52	..	..
Thailand	THA	17	43	7.3	1956-61	78	5.4	1953-61
Tunisia	TUN	19	46	8.6	1960-63	153	4.6	1960-63
Uganda	UGA	12	57	7.0	1956-62	65	..	..
United Kingdom	UKG	15	45	6.7	1956-62	1078	2.7	1953-61
USA	USA	20	64	12.5	1956-62	2324	2.8	1953-61
Venezuela	VEN	21	61	12.8	1956-62	975	6.6	1953-61

Source: United Nations Yearbook of National Accounts Statistics 1963.

a/ Construction figures covering only 1956-60.

b/ Excluding 1957 and 1958.

c/ Construction figures excluding 1956.

still another group, USA, Venezuela, Greece, Italy, France, and Australia). On the other hand, a constant relationship between the two functions could be noted at different vertical and horizontal levels. Further, a series of low positive relationships are also noticeable between groups of countries.

13. The question as to which among these possibilities is the more likely one was left to the computing machine, which came out with a low negative correlation coefficient. The insignificance of the correlation would indicate that there is no firm evidence to show that the share of construction investments in capital formation would decline as the capital formation content of GDP increases. What could be cautiously suggested is that there is a tendency in this direction and, consequently, it could be argued that there might arise a structural change in the constituents of GDFCF as the economy develops, tending to alter the emphasis from construction to capital equipment investment.

14. Finally, table 1.2 has been compiled to show the breakdown of construction investments and to indicate the relative importances of the constituent elements. From both Tables 1.1 and 1.2 it is noted that in general construction investments account for 50-70 per cent of GDFCF.

15. The main share of investments in construction takes place in the housing and building component. Broadly, this would seem to account for 30-50 per cent of GDFCF while the share of the public and civil engineering sector appears to fall in the range of 20-30 per cent. Again, as was noted for the construction industry as a whole, the general tendency of the share of investments in GDFCF of its constituent elements is observed to be one of a slight but noticeable decline as the share of capital formation in GDP increases. This is especially true of individual countries; the world-wide pattern can, however, be visualized only within a fairly broad spectrum.

16. With respect to the housing and building component, two broad groupings could be recognized. It would appear (a) that those countries whose ratio of capital formation to GDP falls in the range of 15-10 per cent and less, show a ratio of housing and building to capital formation

Table 1.1: The share of the construction industry in gross domestic fixed capital formation

Country	Year	Percentage GDPC/GNP	Dwellings	%	Non-Resid. Buildings	Sub-total 4 + 5	Other Construction	Total 6 + 7
1	2	3	4		5	6	7	8
1. Ceylon	1950	9	-----	48	-----	48	25	73
	1953	10	-----	38	-----	38	30	68
	1958	12	-----	45	-----	45	29	74
	1960	13	-----	36	-----	36	36	72
2. China (Taiwan)	1958	15	11		21	33	18	51
	1960	18	13		20	33	21	54
3. Cyprus	1953	14	30		12	42	14	56
	1958	17	23		12	35	16	51
	1960	16	24		11	35	14	49
4. Denmark	1948	13	22		10	32	15	47
	1953	16	19		13	32	15	47
	1958	17	15		15	30	14	44
	1960	19	15		16	31	13	44
5. Ecuador	1950	9	17		6	23	29	52
	1953	11	12		6	18	28	46
	1958	13	17		11	28	25	53
	1960	14	13		9	22	30	52
6. Ghana	1958	30	-----	61	-----	61	18	79
	1960	20	-----	55	-----	55	13	68
7. Greece	1948	11	33		8	41	23	67
	1953	12	39		13	52	22	74
	1958	18	30		10	40	21	61
	1960	25	21		11	32	20	52
8. Honduras	1950	12	29		19	48	24	72
	1953	17	20		23	43	30	73
	1958	13	25		11	36	23	59
9. Ireland	1953	15	21		16	37	25	62
	1958	13	13		17	30	23	53
10. Italy	1953	19	21		5	26	26	52
	1958	20	29		7	36	25	61
	1960	22	25		8	33	24	57
11. Kenya	1950	..	22		22	44	19	63
	1958	19	18		18	36	25	61
	1960	18	17		15	32	23	55
12. Luxembourg	1958	24	17		18	35	22	57
	1959	23	16		20	36	24	60
13. Malta	1958	23	15		16	31	28	59
	1960	20	22		16	38	30	68
14. Mauritius	1953	15	25		11	36	20	56
	1958	16	21		10	31	16	47
	1960	21	25		10	35	17	52
15. Morocco	1951	22	19		11	31	20	50
	1953	20	18		13	3	15	46
	1958	11	22		7	29	21	50
16. Sweden	1953	21	24		39	62	15	77
	1960	22	23		41	64	14	78
17. Tanganyika	1954	18	31		13	44	19	63
	1958	16	32		18	50	13	63
	1960	15	28		15	43	14	57
18. Uganda	1953	..	-----	37	-----	37	25	62
	1958	13	-----	40	-----	40	19	59
	1960	11	-----	35	-----	35	23	58

Source: United Nations Yearbook, 1962.

within the range of 40-50 per cent and over, and (b) that those countries whose ratio of capital formation to GDP falls in the range of 15-20 per cent and over, show a ratio of housing and building investments to capital formation of 40-30 per cent and less. The breakdown of housing and building into residential and non-residential buildings further indicates that the share of investments in residential buildings does not seem to decline appreciably with the increase of the share of capital formation in GDP. In effect, in the majority of cases observed it would appear that it increases somewhat.

17. The trend of the public works and civil engineering component of construction investments on the other hand is apparently more accentuated than the former component. Graph 3 demonstrates this situation, where it would be observed that the negative relationship between the share of investments in public and civil engineering work in capital formation to the share of the latter in GDP is more apparent than was the case for the construction industry as a whole (compare Graph 2). This reflects the relative emphasis which, in the first stage, developing countries have of necessity to place on infrastructural development.

(c) The Aggregate Supply Characteristics of the Construction Industry

(i) Value added

18. In table 1.3, the contribution of the construction industry to gross domestic product is tabulated for a number of African countries. The comparability of the data among countries needs to take into account that GDP is reported variously at factor cost and at market prices and also that there are conceptual differences in the presentation of data for the construction industry, especially in the reporting of figures of the non-monetary traditional construction sector.

19. It will be noted that notable differences exist among countries in the contribution of the construction sector to GDP. Some of these differences can be accounted for by spurts or slumps in construction activities in the specific years referred to in the table. The low percentage shares of construction, in GDP noted in the cases of, e.g.,

Kenya and Uganda, could be attributed to the fall in over-all investments in recent years. The other low percentage figures, for example, those of Chad, Ethiopia and Nigeria could possibly be due to underestimation of the contribution of the subsistence sector.

20. At the other end, high percentage shares of the contribution of the construction sector to GDP are noted in the cases of the Sudan, Madagascar, Tunisia and Congo (Leo.). Again the above arguments would seem to hold in these cases also. In the former two countries, it would seem that spurts in construction activities took place in the years of reference. Combined with this situation, the value added by the manufacturing sector was rather low thus accentuating further the predominant position of the construction industry in the industrial sector. In so far as the latter two countries are concerned, their high percentage share figures for construction would seem to reflect a position to which the construction industry would tend to move as industrialization is being realized. There is no substantial justification for throwing this suggestion at this stage, but observations in this context in industrialized countries (see Table 1.8) would seem to support such a hypothesis.

21. Table 1.3 indicates that, in general, the percentage share of the construction industry in GDP in the majority of African countries falls in the narrow range of 3-6 per cent under the present industrial structure. This might be considered low, but nevertheless, it is significant. In the majority of the countries of Africa, the manufacturing industry<sup>1/</sup> accounts for less than 10 per cent of GDP. Many countries register percentage shares as low as 4-6 per cent. On the other hand very few countries have manufacturing industries which contribute more than 10 per cent. Rhodesia among the countries listed registered a percentage share exceeding 20 as the contribution of the manufacturing industry to GDP.

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<sup>1/</sup> Including electricity, gas and water.

Table 1.3 - Contribution of the Construction Industry to Gross Domestic Product in selected African countries

Country	Ref. date	National currency unit	GDP <sup>1/</sup>	Industry <sup>2/</sup>	Construction	Percentage Industry/GDP	Percentage Construction/GDP	Percentage Construction/Industrial Sector
Cameroon <sup>a/</sup>	1963-64	Billions Fr. CFA	156.5	11.1	5.5	7.1	3.5	49.5
Central Afr. Republic	1961	"	32.04	1.95	0.96	6.1	3.0	49.2
Chad <sup>a/</sup>	1958	"	39.85	2.11	0.44	4.9	1.5	20.9
Congo (Leo.)	1958	Billions C. Francs	58.2	7.7	3.5	13.2	6.0	45.5
Ethiopia	1962	Millions E\$	2130.4	119.4	44.5	5.6	2.1	37.3
Kenya	1964	Millions £	277.7	30.5	4.3	10.9	1.6	14.1
Libya	1959	"	56.1	7.2	2.0	12.8	3.6	27.8
Madagascar	1960	Billions Fr. CFA	140.83	5.7	5.45	4.0	3.9	95.6
Malawi	1963	Millions £	46.7	3.1	1.9	6.6	4.1	61.3
Morocco <sup>b/</sup>	1962	Billions dirhams	9.72	1.39	0.36	14.3	3.7	25.9
Nigeria <sup>a/</sup>	1962	Millions £	1072.3	62.6	29.2	6.9	2.7	46.7
Rhodesia	1964	"	320.4	68.0	13.5	21.2	4.2	19.9
Senegal	1962	Billions Fr. CFA	137.7	12.1	6.1	8.8	4.4	50.4
Sudan	1962	Millions £	406.9	21.9	27.4	5.4	6.7	125.1
Tanzania	1964	Millions £	244.3	10.5	7.5	4.3	3.1	71.4
Tunisia	1963	Millions dinars	397.5	63.9	25.9	16.1	6.5	40.5
Uganda	1963	Millions £	176.1	15.6	3.5	8.8	2.0	22.6
UAR <sup>d/</sup>	1958	Millions LE	1185.0	164.8	51.4	13.9	4.3	31.2

Source: Statistical Bulletin for Africa; ECA, November 1965.

<sup>a/</sup> At market prices    <sup>b/</sup> At market prices of 1960    <sup>c/</sup> At factor cost of 1957<sup>d/</sup> Net domestic product at factor cost<sup>1/</sup> GDP at factor cost unless otherwise indicated<sup>2/</sup> Excluding mining but including electricity.

22. Therefore, the contribution of the manufacturing sector to GDP does not supersede that of the construction industry by a substantial amount in the majority of African countries. Indeed, it would be observed from Table 1.1 (last column) that in general the construction sector tends to be the single predominant sector accounting for the share of the industrial sector in GDP. For most countries, value added by the construction industry is about 50 per cent of the value added by the manufacturing sector. This ratio is exceeded in the case of a number of countries, notably the Sudan, Madagascar, Tanzania and Malawi. On the other hand, it would appear that in those countries where the contributions of the manufacturing sector are relatively higher, the above mentioned ratio falls in the range of 30-40 per cent. This is reflected by the figures of countries such as Morocco, Tunisia, Libya, Congo (Loc.) and the UAR.

23. Tables 1.4 - 1.7 give breakdowns of the contributions to GDP by industry sector for four West African countries, namely Senegal, Dahomey, Guinea and Ivory Coast and help further to define the position of the construction industry vis-a-vis single major industry groups.

24. In Senegal, the 1962 breakdown shows that the construction industry accounted for the single highest percentage contribution of value added in the manufacturing industry,<sup>1/</sup> although closely followed by food industries on the one hand and leather and textile industries on the other. Value added as a ratio of gross output at 55.4 per cent was slightly less than that of the leather and textiles industries which constituted the highest ratio in that year. At 68.1 per cent, value added by the construction industry in Dahomey in 1959 far exceeded all other industry sectors, and so also the ratio of value added to gross output in the industry which stood at 77.1 per cent. In Guinea, the 1956 breakdown shows that the construction industry accounted for 59.7 per cent of the total value added of the industry sector and was far above the next sector (textiles and leather) which accounted for 25.3 per cent. Although not as high as the above, value added by the construction industry in the Ivory Coast in 1964 which was 34.3 per cent of the total for the industrial sector, was nevertheless, the highest single contribution. But

1/ Including electricity, gas and water.

the ratio of value added to gross output in the industry which was 38.0 per cent was exceeded by almost all the other industry sectors

25. The discussion on value added by the construction industry as was done for some African countries would not be complete without some reference to the equivalent role of the construction industry in the industrialized countries. For this purpose Table 1.8 has been compiled, with reference to nine countries in Europe and America.

Table 1.4 - Breakdown by Major Sectors of Industry of Value Added - Senegal 1962

Sector	Gross Output	Purchases from other sectors	Value Added	Percentage of Value added	
				Of Gross Output	Of Sector
Energy	6.33	3.43	2.90	45.8	13.7
Food Industries	24.84	20.00	4.84	19.5	22.9
Leather & Textiles	7.63	3.18	4.45	58.3	21.1
Miscellaneous Industries	8.79	6.00	2.79	31.7	13.2
Construction	11.08	4.94	6.14	55.4	29.1
TOTAL	58.67	37.55	21.12	36.00	100.0

Source: Aperçu Economique, Le Programme d'Action, Senegal, 1964.



Table 1.5 - Breakdown of Value Added by Major Sectors of  
Industry - Dahomey 1959

Sector	Gross Output	Input	Value Added	Billion francs CFA	
				Percentage of Value Added Of Gross Output	Of Total for Industry Sector
Energy	281	102	179	63.7	6.3
Manufacturing	1627	901	726	44.6	25.6
Building and construction	2511	576	1935	77.1	68.1
TOTAL INDUSTRY	4419	1579	2840	64.2	100.0

Source: Op.cit., Table 1.3.

Table 1.6 - Breakdown of Value Added by Major Industry  
Sectors - Guinea 1956

Sector	Value Added	Billion francs CFA	
		Percentage	Distribution of Value Added
Energy	0.5	7.5	
Textile & leather	1.7	25.3	
Miscellaneous industries	0.5	7.5	
Construction	4.0	59.7	
TOTAL INDUSTRY SECTOR	6.7	100.0	

Source: Op.cit., Table 1.3.

Table 1.7 - Value Added by Major Industry Sector -  
Ivory Coast 1964

Sector	Output	Input	Value Added	Percentage Value Added/Output	Percentage Distribution of Value Added by Sectors
Energy and mines	4.73	0.60	4.13	87.3	24.8
Food Industries	3.47	1.72	1.75	50.4	10.5
Wood Industries	1.95	1.09	0.86	44.1	5.2
Textile and Leather	2.30	1.14	1.15	50.0	6.9
Mechanical and electrical	3.87	2.12	1.75	45.2	10.5
Miscellaneous industries	3.77	2.47	1.30	34.4	7.8
Construction	15.04	9.32	5.72	38.0	34.3
TOTAL INDUSTRY SECTOR	35.13	18.46	10.66	47.4	100.0

Source: Op. cit., Table 1.3.

26. The first striking observation arising out of the data in table 1.6 is the absence of large disparities in the percentage contribution of the construction sector to GDP among the industrialized countries. This is in contrast to the case noted for African countries. Secondly the percentage share of the construction sector in GDP is significantly higher than is the case in African countries and falls in the range of 6-8 per cent. The contribution of the manufacturing sector to GDP also shows consistency among countries and in general is observed to fall around 35 per cent of GDP, which is considerably higher than the highest (20 per cent) observed for an African country. Consequently,

although the percentage share of the value added of the construction industry in GDP is higher in the industrialized countries than in African countries, nevertheless, it does not command the same predominant position in the industrial sector in the case of the industrialized countries. This fact is demonstrated by the figures of the last column of table 1.8, where it would be noted that the ratio of the construction to the manufacturing sector falls in the range of 20-25 per cent in general.

27. These observations highlight the contrasting industrial structures of African and industrialized countries and indicate the underlying reasons for the differing positions of the construction industry in their respective economies. The observations also lead to apparently opposing but really complementary conclusions. Firstly, that as industrialization proceeds, it could be expected that the share of the contribution of the construction sector to GDP would increase and that secondly its position vis-a-vis the manufacturing sector would decrease.

(ii) Employment in Construction

28. Another way of characterising the economic significance of the construction industry is to assess its share in over-all employment. Data drawn from national statistics of several African countries indicate that in general the construction industry is the largest employer in the industrial sector. Wages and salaries paid in the construction sector, including social security charges, account for a major share of all industrial wages.

29. A few statistical observations of individual countries would be useful in assessing the role of the construction sector in over-all employment. In 1960 out of 28,400 persons employed in industry in Senegal, 10,000 were employed in construction or approximately 30 per cent. In Nigeria, it is reported that over the period 1959-1961, employment in construction has accounted for approximately 20 per cent of total industrial employment. Industrial employment increased from 137,000 in 1956 to 225,000 in 1962 in Ghana, and employment in construction increased faster and accounted for 17-20 per cent over the period.

Table 1.8 - Contribution of the Construction Industry in Selected Industrialized Countries

Country	Period	National Currency unit	GDP	Of which Mfg. Ind.	Of which Const.	% Mfg. Ind./GDP	% Const./ GDP	% Const. Mfg.
Canada	1962	Million \$	35931 <sup>a/</sup>	9370	1906	26.1	5.3	20.3
Denmark	1962	Million kr.	50027 <sup>a/</sup>	15050	4025	30.1	8.1	26.7
Finland	1962	Million markas	13540 <sup>a/</sup>	4858 <sup>a/</sup>	1147	35.9	8.5	23.6
France	1962	Billion fr.	353.5 <sup>b/</sup>	131.2	23.8	37.1	6.7	18.1
West Germany	1962	Billion m.	355.5 <sup>b/</sup>	146.8	26.5	41.3	7.5	18.1
Italy	1962	Billion lira.	21589 <sup>a/</sup>	7043	1718	32.6	8.0	24.4
Netherlands	1960	Million guilder.	38686 <sup>a/</sup>	12216	2642	31.6	6.8	21.6
Norway	1962	Million Kr.	34205 <sup>a/</sup>	9129	2589	26.7	7.6	28.4
United Kingdom	1962	Million £	24580 <sup>a/</sup>	8651	1631	35.2	6.6	18.9
United States	1962	Million \$	447124 <sup>a/</sup>	130546	23623	29.2	5.3	18.1

Source: UN Statistical Yearbook, 1964.

<sup>a/</sup> At factor cost.

<sup>b/</sup> At market prices.

<sup>c/</sup> Includes electricity, gas and mining and quarrying.

In Uganda out of a total labour force in all industrial sectors of 230,000 in 1963, construction accounted for 4.5 per cent, and in Kenya, employment in construction represented anything between 7 and 3 per cent of total employment in the private sector between 1954-1963. Total employment in construction in Tanzania was recorded to amount to 41,000 persons in 1962, i.e., just over 10 per cent of total employed population including agriculture.

30. Further data are found in Table 1.9 page 17 of the share of the construction sector in total employment for a few selected African countries. The last two columns show considerable disparities in the percentage share of employment in construction in total active population. If agriculture is excluded, a range of 8 to 14 per cent of the economically active population appears to be representative of the share of construction in employment.

31. The comparison of labour statistics between countries, is hindered by differences in coverage of data supplied, by the unreliability of figures concerning employment in the non-monetary sector of the economy or by difference in sampling techniques and definitions used.

32. Table 1.10 is a further attempt, based on other and wider coverage of data, to examine the share of employment in construction of total employment. The table shows that employment in construction accounts for a variable share of total employment, from a minimum of 3 per cent (Hungary, Philippines) to a maximum of more than 10 per cent (West Germany, Italy). This is to be expected in that the relative position of employment in construction would be determined by the economic structure of countries depending on the importance of particular economic sectors such as mining, agriculture, etc.

(iii) Productivity

33. There appears, however, to exist a notable correlation between construction and manufacturing values added per persons engaged. Graph 4, based on the data of table 1.11, demonstrates the correlation. While the ratio of value added per person engaged in the construction industry

Table 1.2 - Economically Active Population in Construction in Selected African countries

Country	Year	Total Active Population thousands		Employment in Construction		Construction as percentage of ...	
		A	B	A	B	A	B
Algeria <sup>1/</sup>	1954	354.5	315.2	34.2	9.6	10.8	
Congo Leo. <sup>2/</sup>	1955	6198.9	918.9	131.1	2.1	14.3	
Gabon	1963	220.0	34.9	3.7	1.7	10.6	
Ghana	1960	2724.8	1146.0	89.3	3.3	7.8	
Morocco	1960	3291.0	1428.0	54.0	1.7	3.8	
Rhodesia <sup>3/</sup>	1960	96.1	87.1	7.0	7.3	8.0	
Tanganyika <sup>4/</sup>	1957	39.2	36.2	1.1	2.8	3.0	
Tunisia	1956	1327.5	423.0	28.3	2.1	6.7	
UAR	1960	7769.1	3366.1	157.5	2.0	4.7	
Zambia <sup>5/</sup>	1961	33.3	31.7	2.5	7.5	7.9	

Source: Yearbook and Labour Statistics, 1964, ILO, Geneva

1/ Europeans

2/ Indigenous population

3/ Europeans

4/ Non-indigenous population

5/ Europeans

(A) Including agriculture, forestry, hunting and fishing

(B) Excluding agriculture, forestry, hunting and fishing.

Table 1.10 - Share of Construction in Employment

Country	Employment in Construction as a percentage of total employment	Reference Year
Austria	8.7	1962
Belgium	7.8	1963
Canada	7.1	1963
Chad	4.8	..
China	5.1	1963
Czechoslovakia	8.0	1963
Finland	9.0	1963
Germany (Fed.Rep.)	10.5	1963
Hungary	5.8	1963
Italy	10.2	1963
Kenya	3.5	1963
Luxembourg	8.4	1960
Netherlands	10.0 <sup>a/</sup>	1961
Norway	8.4	1963
Philippines	2.6	1962
Puerto Rico	8.3	1963
USSR	7.3	1963
United Kingdom	7.0	1963
United States	5.3 <sup>a/</sup>	1963
Yugoslavia	9.8	1963

Source: Yearbook of Labour Statistics, 1964, ILO, Geneva.

a/ Excluding Agriculture.

to that of the manufacturing industry appears constant at the lower range of value added per engaged in the manufacturing industry, it would seem, however, that as the latter increases beyond \$5,000 the ratio tends to decrease. But data is evidently inadequate to state with assurance that value added per engaged in the construction industry in relation to that of the manufacturing industry will decline with industrialization. It is only on the basis of data of the USA alone that the above tendency was observed. If this were to be ignored in the graph, then the correlation would suggest that there is a constant ratio between value added per person engaged in the construction industry to that of the manufacturing industry as industrialization proceeds.

34. Considering the data for both Africa and the industrialized countries listed in table 1.11, it would be noted: (a) that in general value added per person engaged in the manufacturing industry accounts for one and a half to two times that of the construction industry (b) that the differences in value added per person engaged in the construction industry between African and the industrialized countries are not as pronounced as those of the manufacturing industries; and (c) that the African countries show greater disparities in values added per person engaged in either industry sector than the industrialized countries.

35. The lower level of value added per person engaged in the construction industry in relation to that of the manufacturing sector is the result of a combination of several factors operating in the economy. The capital intensiveness of the construction industry is lower than that of the manufacturing industry. The USA data of table 1.11 would seem to support this hypothesis and to suggest that as industrialization proceeds, the construction industry seems progressively to contribute relatively less to value added per person engaged. Increases in labour productivity would tend to be offset to some degree by the larger employment which the less capital intensive construction industry offers. Nevertheless, the manufacturing and construction sectors are closely interrelated in both developing and developed countries. The prospects for African countries are that as industrialization proceeds, the gap



Table 1.11 - Average Value added in Construction and Manufacturing Industries

Country	Construction Industry			Manufacturing Industry				Percentages		
	Period	Value added per person engaged	Value added per unit of salaries and wages	Period	Value added per person engaged	Value added per unit of salaries and wages	Ratio 5-2	Ratio 5-2	Ratio 6-3	Ratio 6-3
	1	2	3	4	5	6	7	7	8	8
<b>AFRICA:</b>										
Algeria	1958	1616.3	2.5	1954	1837.9	3.5	1.14	1.14	1.40	1.40
Ghana	1962	863.0	2.5	1962	1531.3	2.5	1.77	1.77	1.00	1.00
Kenya	1954-57	552.3	1.3	1954-57	869.1	3.0	1.57	1.57	2.31	2.31
Malawi	1955-60	404.8	1.3	1955-61	790.6	3.3	1.95	1.95	2.54	2.54
Morocco	1958-62	1206.4	1.3	1958-61	2161.8	2.2	1.79	1.79	1.69	1.69
Rhodesia	1957-63	1170.0	1.5	1957-62	1769.6	2.0	1.51	1.51	1.33	1.33
South Africa	1957-61	1404.2	1.5	1957-61	2349.3	2.0	1.67	1.67	1.33	1.33
Tanzania	1961-63	450.0	2.5	1961-63	1165.6	4.8	2.59	2.59	1.92	1.92
Tunisia	1960-62	1080.0	2.0	1960-62	2964.8	2.8	2.75	2.75	1.40	1.40
UAR	1962	670.2	1.7	1958-61	1244.0	2.4	1.86	1.86	1.41	1.41
Zambia	1956-61	733.9	1.5	1956-61	1542.3	2.3	2.10	2.10	1.53	1.53
<b>OTHER COUNTRIES:</b>										
Canada	1948	2921.1	1.4	1948	4273.5	2.1	..	..	..	..
Canada	1958	7198.0 <sup>a/</sup>	2.0	1958	7660.6 <sup>a/</sup>	2.1	..	..	..	..
Canada	1960	7449.0	1.9	1960	8136.3	2.0	..	..	..	..
France	1961	3424.0 <sup>b/</sup>	2.6	1961	5045.7 <sup>b/</sup>	3.0	1.47	1.47	1.15	1.15
Luxembourg	1961	2441.1	1.4	1961	3348.8	1.3	..	..	..	..
Italy	1962	1262.3	1.4	1962	1964.8	..	..	..	..	..
New Zealand	1962	1144.7	2.3	1961	3593.0	1.5	1.27	1.27	1.29	1.29
Netherlands	1960	2008.2	1.7	1960	2899.0	2.1	1.44	1.44	1.24	1.24
United Kingdom	1958	2217.8	1.4	1958	2826.4	1.8	1.27	1.27	1.29	1.29
United States	1962	5601.8	1.4	1961	10054.0	1.9	1.80	1.80	1.36	1.36
Yugoslavia	1962	1144.7	2.3	1958	2826.4	1.8	1.27	1.27	1.29	1.29

Source: Statistical Bulletin for Africa, ECA, November 1965.

<sup>a/</sup> Value added is gross of the cost of fuel and electricity.<sup>b/</sup> Persons employed.

between them and the industrialized countries in values added in the construction industry would narrow. This would come about through increased labour productivity, where the prospects for improvement through rationalization of organization and management are higher in African countries.

36. Further, the data of table 1.11 suggest that labour's share in both the construction and manufacturing values added are higher in African countries than in the industrialized countries. This is supported by data on value added per unit of wages and salaries (Columns 3 and 6 of the table). This evidently comes about because, among other economy-wide factors, labour is much more ample in relation to capital in those countries in relation to the industrialized countries.

37. As productivity of the construction sector with respect to the manufacturing sector increases, labour's share in construction tends to decrease with respect to manufacturing. In the industrialized countries where productivity of labour in the construction industry is smaller than for the economy as a whole, the share of labour in the proceeds of production tends to be proportionate small. The opposite is true for African countries. Labour's share in the proceeds of production of the construction industry is relatively high under present industrial structures and is likely to continue to be so for some considerable time in the future. The recognition of this fact is important in orienting government policies aimed:

(a) at absorbing unemployment and

(b) at improving labour productivity in the construction sector.

38. Unemployment as such might not be considered as serious as underemployment in the prevailing economic structures of the countries of the sub-region. Governments might well be advised to absorb the considerable excess labour from the subsistence sector into public works. But today major civil engineering works make use of machines of increasing power and complexity replacing manual labour, while reducing operating time and very often, actual cost. Clearly, there is here a clash of

objectives which could only be reconciled through the exhaustive considerations and studies of the advantages and disadvantages of machines versus manual labour; of the scope of improvement of productivity in the latter and of the problems of acquiring and servicing of the former of economising limited financial and other resources; and of the benefits that could accrue to the economy of pursuing one or the other method.

(d) Conclusions

39. In African as well as industrialized countries, the construction industry plays a key role in economic activity. It makes an important contribution to GDP and employment and accounts for the major share of capital formation. There are, however, significant structural differences between African and industrialized countries as well as between the construction and manufacturing sectors. The realization and understanding of these differences will assist in the elaboration of policies aimed at improving and rationalizing the prospects of the construction industry in Africa.

40. Labour productivity would perhaps constitute the major concern of government policies. Governments might wish to absorb unemployment and underemployment through the expansion of the less capital intensive construction industry. But it also could be visualized that with industrialization and a more rapid increase in productivity in the manufacturing industry, employment would increase in the construction industry, where labour productivity is relatively lower than for the economy as a whole. Any gain that may be brought about in labour productivity might thus be offset by such an employment flow. Government policies must, therefore, aim at reconciling these opposing tendencies and ensure the rational and efficient organization and management of the construction industry.

41. Nothing so far has been said about assessing the performance of the construction industry. The measuring yard for this purpose are trends in building prices and costs. Possibly building price structures and trends would have been instrumental in explaining and qualifying the

various relationships discussed in this chapter. The measurement of price trends is a particularly difficult proposition, not necessarily because of lack of data but because of the lack of a convenient, homogeneous measure of physical output. The type, size, quality, standard, physical location, etc., of the work done by the construction industry vary to an infinite degree. Under these circumstances, measuring price trends within a country, let alone among countries, is a highly hazardous proposition.

42. However without resorting to the complex problem of quantifying price trends and structures, at least one broad generalization on their influence on the output and performance of the construction industry could be ventured. Building costs have been rising steadily in the industrialized countries. It would seem that the gains in productivity tend to be offset by higher increases in wages and salaries and other gains in building costs tend to be absorbed in improving standards of accommodation. Techniques for building cost reduction in these countries, therefore, are to a large extent limited to coping with increasing price trends.

43. Similar problems face African countries; but observations of cost structure in Africa suggest that the prospects for reducing building costs are considerably brighter than in the industrialized countries. There is a wide scope for increasing labour productivity relatively easily through, for example, the simplification and repetition of the construction process. Prices of building materials could be substantially reduced through the expansion and diversification of domestic production. Creating favourable conditions for building-up local contractors, improving administrative and institutional structures, and ensuring continuous programmes in the industry would induce considerable reductions in overhead costs.

44. Within the framework of these guiding principles, it could be visualized that building price trends could for a period of time at least be reversed to the advantage of African countries. At the same

level of investment, more of the physical construction needs of the continent could be satisfied. In other words the performance of the industry could be improved. Whether such a prospect could be continued indefinitely would depend on the effectiveness of policies to contain the forces in the economy tending to increase prices.

CHAPTER II  
THE BROAD CHARACTERISTICS OF THE CONSTRUCTION INDUSTRY  
IN WEST AFRICA, A DESCRIPTIVE APPRAISAL

(a) Administrative and Organizational Characteristics

45. Three distinct layers could be recognized in the organization of the contracting industry in West Africa. At the top are found the large contracting firms, which in general limit their activities to large public and civil engineering works and major building and housing programmes. In the majority of the countries of West Africa, such concerns are usually owned by foreign interests and as a rule are operated by expatriate managers and technicians. They are adequately backed financially and are fully equipped to tackle any specific project. In many cases, these concerns have parent firms in industrialized countries, and are thus in advantageous positions to benefit from the capital backing and technical know-how of the industrialized countries.

46. The large concerns also are favoured in the particular cases where projects are financed through external loans, where often one of the conditions of the loan stipulates the nationality or nationalities of the firms to be employed. The mere condition that the bid is a closed one has evident benefits to the firm that secures the job.

47. On the positive side, it could be observed that these large concerns are bound to be efficient and in general would honour their time tables for completion of projects. Also, the quality of the work that they perform could be very satisfactory. Further, external loans could relatively easily be forthcoming, when it is known that they would be participating in the eventual bid. On the negative side, the main problem is the high cost that the countries of the sub-region pay for their services. These concerns have high overheads, high salaries and allowances for the considerable number of expatriate personnel whom they engage and short term amortization of plants and equipments that they bring over. Moreover, they are in general not in a position to bring

about substantial changes in the structure of the construction industry such as improving productivity, because of their lack of acquaintance with the specific conditions and requirements of the countries in which they take up projects. Under these circumstances their costs are bound to be much higher than they would have been, were it possible for the work to be done by local contractors.

48. There is in general also a closed market. The prospects of local contractors benefitting from their organization and experience are limited. When they leave a country at the completion of a job, it is unlikely that they would have left behind local contractors any better-off either financially or technically, and the country would be no nearer the goal of replacing them for the next project. In fairness, it needs to be pointed out, however, that the initiative of local contractors and government policies which assist their effective participation in major projects as associates to the large firms could improve prospects considerably.

49. In the middle sector of the contracting organization are found a variable but large number of medium size firms. In this group, both African and non-African concerns compete. But organization and ownership vary from one country to the other and within a country. In many of the countries of West Africa, the firms at the top of the group and which are better organized are non-African concerns. Such enterprises are generally owned by French, Italian, Lebanese, etc., nationals residing in the country. However, although few in numbers, in the top group are also found efficient and well operated African concerns. This is particularly the case in Ghana and Nigeria. In the former country, the contracting industry has been reorganized and centralized as a State enterprise. Thus the Ghana National Construction Corporation is in a position to undertake a wide range of construction projects and has succeeded in the Africanization of the industry to a notable degree. On the other hand in Nigeria, the larger firms have grown through the initiative and energy of individual Nigerians with the backing of the Government.

50. The problems of this group of contractors are to some extent universal: shortage of technical means, working capital, and technical and managerial personnel. In addition, the growth of this group of contractors in West Africa is hampered by other factors. Payment delays are frequent, and the work might be interrupted indefinitely because of lack of funds, or because of disputes. The contractor might incur considerable losses in executing the work wrongly under a situation whereby continuous supervision facilities are usually lacking from both contractor and consultant. Delays might occur in delivery dates of materials, especially imported materials, incurring unforeseen costs, and so on. These and other similar factors dissipate the benefits of hard-gained and highly scarce financial resources.

51. The technical problem is no less serious. Costs can only be kept down through continuous technical and organizational improvements of the building process. Productivity must continuously be increased, and investments in new plants and equipment must only be undertaken with the right labour to capital ratio relevant to the prevailing specific conditions. The appropriate decisions and actions in this area demand a high level of managerial and technical proficiency. The problem is further aggravated by the general lack or inadequacy of advisory, research, and professional institutions which could assist in raising the standard and experience of these concerns.

52. Besides impediments to their growth, the medium-size local contractors also face real and apparent barriers. Lack of confidence in their competence to undertake a large project is not unusual among public and private construction authorities and among financial and credit circles. Under those circumstances, local contractors very often find themselves in a vicious circle and fail to secure the chance of proving their worthiness for large projects.

53. Finally, at the lowest layer are found the small contracting businesses, which are generally African owned. The activities of these businesses could broadly be sub-divided into two groups. Firstly there are the small-time contractors generally operating in urban areas and devoting



their activities to housing, small buildings (schools, clinics, etc.), and street, roads and other small-scale engineering projects. Secondly, at the bottom of the ladder are found the artisans devoting their activities to the construction of modest dwellings mainly in the rural areas.

54. The problems of the small-time urban contractor are similar to the group of contractors above him, with the difference that they are more acute. But the prospects of growth of the small-time contractor are better. Qualities of hard-work, initiative, technical self-improvement and business acumen are the important determinants of his growth. If these are lacking, however, stagnation and inertia set in, and he becomes a liability rather than an asset to the community he serves. This situation in fact characterizes the major problem of the small-time urban contractor. He would undertake a job, later to find that he cannot carry it out with his limited technical and financial resources. He undercuts bids, later to abandon it because he would be incurring heavy losses. He would interpret specifications wrongly and involve himself in avoidable and costly disputes with his client. His poor conception of buildings might result in serious functional and technical errors; and unsatisfactory quality of work might be the general rule, and so on.

55. The net result is frustration on the part of both client and contractor. Both incur invisible costs. The promise of savings with which the client started out would not materialize, and certainly on the part of contractor, expected profits would be dissipated by delays, disputes, interruptions and changing prices, etc. The unhappy experience of one client does not seem to deter another clients from embarking on the process; and in other cases there might be no better alternative. It might also be that the public is not fully aware of its inherent strength to improve the system.

56. Nevertheless, however serious the problem of the small-time urban contractor, his potentials for improvement are considerable. A well thought-out training programme would be a most effective means of improving the prospects of these contractors. They form the basis on

which the efficiency and productivity of the construction industry as a whole would depend, and consequently they deserve the attention of government policies and assistance.

57. Lastly, the activities of artisans escape all technical control and are often beyond the reach of monetary economy. They devote their very limited know-how to the erection of rural huts and similar structures. In this group, labour is paid at very small rates or remunerated in kind; hardly any equipments are used and the tools are of the very basic types only; overheads are not counted. It is, therefore, not surprising that the product of such activity is realized at a cost out of proportion with that of the most economical dwellings built by conventional enterprises.

58. This section would not be complete without a survey, however inadequate, of the role of the public authorities and consultants responsible for construction projects. In many countries the responsibility of construction is variously shared out by a Ministry of Public Works, a Ministry of Housing or a Housing Corporation, and local or municipal authorities. These government departments are nominally equipped for design, supervision, control and sometimes also for the actual execution of construction projects. In practice, however, they limit their activities to the design and supervision of a fraction of the total work for which they are nominally responsible. Their resources are inadequate to cope with the whole range of public construction activities. It is also argued that even if they were given all and complete facilities they would still not function as efficiently as a consulting firm.

59. The point, however, has not been noted in practice. Public authorities face difficulties in the recruitment of high-class professionals. In the majority of countries, there is a conspicuous lack or inadequacy of qualified local professionals. The few that are available are either lured away by higher salaries in the private sector or lost for good in responsible but administrative posts in the government. Neither are

public authorities in a position to build-up their wider needs for professionals by the recruitment of expatriates, whose salary levels may be prohibitive when it comes to large numbers.

60. Consequently, as a general rule, major public projects are given out to private consulting firms. These firms are usually subsidiaries of foreign concerns. There are also local but generally non-African consulting firms. It should be noted, however, that in Ghana and Nigeria and to some extent also in Senegal, the incidence of African consulting firms is relatively high and growing continuously. But it could be observed with some assurance that on the whole, the consulting business is dominated by foreign firms. Understandably these firms devote their activities to the major projects and there is thus a vacuum in so far as the needs for consulting services of the individual housebuilder or any other person intending to put up a relatively small structure is concerned. This is one reason why such people fall prey to inefficient and incompetent small-time urban builders.

61. Under present circumstances, the vacuum can only be filled through State intervention. One way of doing this would be to build-up the advisory and research services of public authorities, especially housing corporations. The greater part of the work of public authorities tends to be of a routine nature and limited in scope. Important areas of activities such as analysing cost trends and structures, pursuing research into cost reduction methods, or studying the use of new materials and building techniques and reviewing current building by-laws and standards, etc., seem on the whole to be neglected. Further, it could also be that the set-up sometimes finds itself unable to cope with its routine administrative and technical matters efficiently and might very well be responsible for costly delays and time consuming procedures.

62. In conclusion, it is evident that the contracting and consulting businesses and public authorities concerned in construction have one vital contribution to make to the implementation of construction programmes, but the nature of such contribution will depend on the changes

that they will undergo with a view to solving the specific problems and needs of a rapidly developing economy. It was noted that the most profitable activities are dominated by foreign-owned concerns in both the contracting and consulting areas; that the transfer of technical know-how and experience to local groups is not favoured by existing institutional and administrative arrangements; that vacuums exist in the requirements of consulting and contracting services for the lower-group of private investors; that the role of the public authorities in the field of construction is limited in scope and extent and that there is a general lack of a clear and comprehensive policy of action in the construction sector.

63. The foregoing survey also helps to explain some of the reasons why building costs are high in West Africa and thus anticipates the discussion on building costs later on in this chapter. But first, it would be useful to outline the technical features of the construction industry in West Africa and thus complete the peripheral factors influencing costs.

(b) Construction Practices

64. Traditional and non-traditional methods of construction are both prevalent in the West African countries. The distinction between the two might be difficult, but broadly and for lack of better definition, the latter can be called the "conventional" method as opposed to the former, which concept can be considered to apply to the building methods based on the use of local hand-made materials and typical of the rural areas.

65. The conventional method prevails in the major urban areas and in the public and civil engineering construction activities of West Africa. Subsequent observations in this section are in the main directed to this method with a view to highlighting some of its technical features and problems. The traditional sector, which accounts for some 9/10 of the construction activity of the rural populations, is evidently important. But with the prospects of accelerated economic and social development,

it is expected that traditional building methods would decline substantially and need not retain the attention of the present survey.

66. It would be appreciated that the main characteristics and features of the construction industry are bound to show major differences among countries on the one hand and the type and magnitude of projects on the other. But there are features common to all, and others characterizing the whole but not necessarily applicable to specific elements of the whole.

67. The construction sector is heavily dependent on imports of conventional building materials such as cement, metal construction components, electrical and sanitary fittings and fixtures and so on. A study undertaken by the secretariat recently<sup>1/</sup> has shown that the sub-region is dependent to the extent of 60 per cent of its total needs in values on imports. Domestic production is limited to primary bulk materials such as bricks, blocks, quarry products, etc. Evidently, the domestic production of these and similar materials was inevitable for the mere necessity that they do not lend themselves to long-distance haulage and hence imports.

68. The production processes of these materials, however, are often rudimentary in character. Machines and equipment are generally obsolete and often the technology of production is not well adapted to specific prevailing conditions. Productivity and overheads are high and the quality of the products are usually not up to standard. Production is seasonal and deliveries tend to be unreliable. The construction sector faces not only the problem of poor quality materials, but also their prices are high. Some contractors attempt to overcome these problems through expanding their activities vertically. Hence, they undertake quarry activities or fabricating cement blocks in their own yards and so on. But clearly, these extra activities would not be within the technical and financial capacities of the majority of contractors, and evidently are restricted to the large contractors.

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<sup>1/</sup> A review of the Building Materials Industry in Africa and the Possibilities for a Rapid Expansion (Document E/CN.14/AS/III/5), ECA, Addis Ababa 1965.

69. The fact that the bulk of materials have to be imported from distant sources have also their serious repercussions on the programming of construction projects. Materials have to be ordered months before they are actually needed at the building site. Delays in delivery dates are not unusual, and the contractor would be forced to interrupt the work and thus incur costs. Moreover in paying for the materials in advance, funds are tied down, and the costs of money are increased all round. It is also possible that the materials might arrive in advance of the expected date. Storage facilities would then have to be made available and if the materials are bulky, such as cement for example, this might constitute an important cost item.

70. Under present situations, simple facilities which could improve the efficient utilization of materials are non-existent. For example, ready-mix concrete or already-shaped reinforcing steel services are not available. Aggregates are often supplied in mixed sizes, and the job of grading them is left to the contractor on site. Even in the case of those materials and components delivered to site in their final form such as doors and windows, alterations are often required before placing. The net result is that there is considerable wastage in materials and time.

71. Yet another feature in the utilization of materials is the conservatism which the industry as a whole displays in restricting its scope to few conventional materials. The use of new materials is not encouraged; improvement and greater utilization of materials from local sources are not undertaken on any meaningful scale; and not infrequently the preference for conventional materials is made irrespective of its suitability to prevailing climatic and similar conditions. Sometimes also precedence in the use of materials set either as a result of old bye-laws or simply because of general practice introduced at some period tends to impede the wider use of some (often local) materials. For example, the use of lime for plastering and masonry work is discouraged in many countries. Similarly, the uses of clay roofing tiles, concrete blocks, concrete pipes, timber, etc., are variously excluded in some regulations or practices. In contrast some materials become so popular that no effort

seems to be undertaken to use substitute materials or to question their suitability. This is the case, for example, of corrugated iron sheets for roofing.

72. On the positive side, the use of concrete as a building material is growing fast in West Africa. The flexibility of architectural design, to which this material is particularly adapted, is reflected in many of the modern structures that are prominent in the major urban areas. But the importance of ferro-concrete construction could better be recognized in the scope that it opens for the industrialization of the building process, which step the countries of the sub-region might be convinced to take in order to cope with the considerable demands on the construction industry resulting from accelerated economic development.

73. The switch from the building site to the factory of the building process which the industrialization of building presupposes would seem to be a long way still. But at least two countries have taken the first hesitant and tentative steps in this direction. Panel prefabrication plants were recently started in Ghana and Guinea with the assistance of the USSR. In Ghana, the plant has a capacity for producing dwelling units amounting to 70,000 square meters per year, and in Guinea 54,000 square meters. Prefabrication of dwelling units and other small structures is also proceeding with other materials such as timber, aluminium and asbestos-cement, but no major programmes have yet been launched. On the other hand precast components in concrete have made some headway in some countries. Precast pipes, transmission poles, and articles are fabricated notably in Nigeria, Ghana and Senegal. It would seem, therefore, that the groundwork is being laid in some countries, on which the industrialization of building could be launched.

74. Turning now to the building process itself, the main features to be considered are labour and the extent of mechanization in the industry. No profound analysis would be needed to observe that the construction industry in West Africa is highly labour intensive. Clearly, advantage is taken of the abundance of labour and its low prevailing wages. In

most projects, i.e., excepting the large ones, machinery and equipment is kept to the minimum possible. Excavation often is by hand, the notable exceptions being the major public and civil engineering works. Concrete mixers are used, but many of the small projects are executed without them. Placing of concrete is usually a labour operation, and frequently concrete is compacted manually. Shuttering and scaffolding are generally in timber planks and poles respectively. Power drills, hammers, and screwdrivers and other similar work aids are the exception rather than the rule.

75. Low wages are offset by low productivity. Output per man-hour is usually a small fraction of the equivalent output in industrialized countries. This results not only from the skill factor but also from inefficient building site organizations, the greater time spent on handling of intermediate materials and insufficient acquaintance with the overall building process. Whilst there is abundance of unskilled labour, there is in general acute shortage of skilled and specialized labour. Not infrequently, unskilled labour is trained on site to fill in some of the needs for semi-skilled and skilled labour. No doubt this is commendable, but it has its repercussions on productivity all the same, since in the process both time and materials could be wasted.

76. Finally, the building design procedure varies widely among countries and even within a country. Many countries have not elaborated their own building codes of design and practice. Generally the individual designer has a wide choice of international building regulations. Often the regulations followed are those of the former metropolitan powers, but recent trends have also added to the proliferation of building regulations used within a country. This has come about as a result of the sub-region's access to a wider circle of international consultants than was possible in the past.



77. However varied the building regulations currently being used are, they have some common features, which tend to be too conservative for the economic aims of the countries. The factor of safeties used are in general high. Although they may be justified on the grounds that there are too many unknowns or that supervision is poor or that there are no adequate means of being satisfied that materials used are of the required standards, etc., nevertheless, considerable economies would be secured if concessions were made in those cases where control and supervisory facilities are adequately available. Some regulations also limit the materials to be used or the minimum physical space requirements. Minimum floor to ceiling heights, for example, could be reduced and savings realized on many occasions. No doubt, significant concessions could be made advantageously to progressive and far-sighted designers in both functional and constructional procedures.

(c) Building Cost and its Major Components

78. The foregoing observations have already perhaps given a glimpse of why building costs are high under present conditions. The word 'high' here is not used to signify costs in absolute values, but in relation to earnings. In the industrialized countries the cost of a low-income dwelling is estimated to be equivalent to two year's (and less) earnings of an unskilled labourer. In Africa, the ratio might be as high as 1 to 10 and also considerably more. Moreover, the dwelling unit in Africa could be considerably lower in standard than its equivalent in European countries. It has been seen that the supply of materials takes place within a framework which is conducive to high prices; that productivity is low; and that overheads are high either because of the inefficient organization of the contracting industry or the high amortization and profit margin of the large foreign firms. There is no satisfactory method of characterizing prevailing building cost levels. They vary widely among countries and even within a country. The figures of costs listed below are merely intended to give a very rough indication of the level of building costs by types of construction and by countries.

79. Firstly, in as far as traditional dwellings are concerned, a study undertaken by the University of Paris<sup>1/</sup> surveys construction costs in these sectors for a number of French-speaking African countries. Costs per square meter of gross floor area are noted to vary from US\$ 0.70 to US\$ 7.00. In the lower cost range, all the materials used are of agricultural origin, while in the upper range the difference is that walls are of banco, adobe or puddled clay. Evidently these costs do not include items such as flooring, joinery, electrical or sanitary installations. The average economic life of a dwelling is some five years and gross floor areas of dwellings vary from 10-50 square meters. In Nigeria, costs for similar dwellings in mud walling were of the order of US\$ 11.50 per square meter in 1957<sup>2/</sup>, and a traditional village house in Liberia currently costs about US\$ 11 per square meter<sup>3/</sup>.

80. In contrast to traditional dwellings, building costs of low-income dwellings in conventional materials vary considerably among countries and within a country as well. According to a pilot enquiry into house-building costs carried out by the secretariat in 1963<sup>4/</sup>, dwelling units of some 30-60 square meters gross floor area and directed at low-income urban dwellers, cost US\$ 36 per square meter in Senegal, US\$ 44 in Ghana, US\$ 70 in Mauritania and US\$ 81 in Upper Volta. These dwellings were modestly conceived and executed. Generally, foundations are shallow and are of mass concrete, walling is either of cement blocks or local bricks, roofing is of corrugated iron, aluminium, or asbestos-cement sheets on trusses of local timber, and joinery is simple and of local timber. The walls are plastered and usually whitewashed, and floors are smooth-finished in cement screed. Simple electrical lamps, and Turkish-type water closets are installed. The pilot enquiry showed that in terms of the wages of unskilled labourers, these costs represented 5 to 17 years of earnings; and in terms of skilled workers 3 to 7 years.

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<sup>1/</sup> L'équipement physique en constructions traditionnelles dans les pays africains de la zone franc, Institut d'étude du développement économique et social, Université de Paris, 1963.

<sup>2/</sup> Nigerian National Accounts, 1950 to 1957, P.N.C. Okigbo.

<sup>3/</sup> The Problem of Housing in Monrovia, Roe, 1964.

<sup>4/</sup> Pilot Enquiry into House Building Costs, HOU/WP/5, ECA, 1964.

81. Other examples could also be cited. In Dahomey, dwellings of similar specifications as the above cost anything between US\$ 45 - \$60 per square meter depending on whether they are built by small local contractors or by fully equipped firms. But in Guinea, costs could be as high as US\$ 60 - \$70 per square meter. In Nigeria, houses built by the Lagos Executive Development Board vary in cost from US\$ 35 to US\$ 40 per square meter for the lower income bracket. In Sierra Leone costs vary between US\$ 62 - \$81 for dwellings for the junior civil service category. In Liberia, dwellings for labourers cost between US\$ 30 - \$50 per square meter. Further, according to a comparative study carried out by the French Government<sup>1/</sup>, the estimated cost for a 37 m<sup>2</sup> low-income single-storey dwelling unit was US\$ 43 per square meter in Abidjan, US\$ 50 per square meter in Cotonou, US\$ 59 per square meter in Niamey and US\$ 40 in Dakar.

82. These data give a broad indication of construction cost levels of low-income dwellings built in conventional materials and methods. Costs seem to fall in the wide range of US\$ 30 - \$80. Differences in technical standards among low-income dwelling projects are small. Therefore, the comparison of building costs with reference to these constructions is relatively easier and more informative of the level of building costs among countries. When it comes to medium- and high-income dwellings as well as office and other buildings, the comparison of costs is considerably more difficult. However, some examples will now be cited.

83. In Dakar, a multi-storey family dwelling in units of 100 square meters in gross floor area, constructed in reinforced concrete frames, finished in good quality materials and adequately equipped in electrical and sanitary fittings and fixtures costs about US\$ 63 - \$69 per square meter. A similar structure in Abidjan costs about US\$ 55 - \$79 per square meter. A medium-income dwelling in Nigeria would cost US\$ 40 - \$50 per square meter, and higher standard residential construction currently costs about US\$ 75 per square meter. In Liberia, an apartment in a multi-storey block could cost more than US\$ 100 per square meter.

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<sup>1/</sup> Ministère de la Coopération: Coût de la construction dans différentes villes, étude comparative, SCET Coopération, Paris, septembre 1963.

84. These examples are not adequate to characterize even in broad terms the building costs of higher standard residential buildings. But it would appear that at the lower range of residential buildings, i.e., excluding deluxe constructions, costs fall somewhere between 1.5 to 3 times those of the low-income dwellings in the respective countries. It is also expected that other types of non-residential buildings, i.e., office buildings, hospitals, libraries, etc., also reflect similar cost structures.

85. With regard to industrial constructions, costs are in general lower than those of medium-income residential buildings. But there could be considerable variations depending on conception and unusual construction procedures. In Ghana, an industrial building with metal roofing concrete flooring, and concrete block walling would cost about US\$ 42 per square meter. But a similar structure is estimated to cost over US\$ 100 in Niger, while in Nigeria costs are similar to those of Ghana, but it is also indicated that costs could be as high as US\$ 80 - \$100.

86. Finally, it is evident that there are considerable variations in the levels of costs in all the major construction groups outlined above. Building costs can only be expressed and characterized within a broad range not only among countries but also within a country. The level to which any specific building cost would gravitate to would depend on a host of factors, some of which have been mentioned in previous sections of this report - especially those which explain some of the international differences. In addition, other factors, equally important need to be mentioned here: the distance of the project from the main sources of building materials and labour; the general conditions of the building market at the time of construction; the level of wages in the construction industry relative to other wages in the economy; the size of the project, the continuity of building programmes, etc.

87. It is by the effective tackling of these and other cost-sensitive factors that the rising trends of building costs could be arrested and possibly also reductions in current cost levels be realized. Although

neither comprehensive, nor adequate, some data are available that costs have been continuously rising in many of the countries of the sub-region. For example, in Lagos, building costs for conventional buildings rose by over 78 per cent in the period 1951-1963 and by the same amount in the Western and Eastern Regions of Nigeria but over the shorter period 1951-1957. In Dakar the rise was greater still and was of the order of 108 per cent over the period 1951-1964. The rise in Abidjan as measured by indices of building material prices was 31 per cent over the period 1956-1964.

88. General observations seem to indicate that building costs have been rising faster in West Africa than they have in European countries in the past decade. The average annual increase in the former appears to have been of the order of 6 per cent, while in the latter this rate has not by and large exceeded 3.5 per cent<sup>1/</sup>. Although not the major cause, the rise in wages in West African countries has probably acted as a contributing factor. Table 2.2 (p.41) shows trends of wages of unskilled labourers in French-speaking West African countries. It would be noted that wages increased by more than 100 per cent in the period 1951-1957. In Ghana, earnings of industrial workers rose by 43 per cent in the period 1956-1961, and in Nigeria by 69 per cent over 1956-1960. The average annual increase in wages in the countries of the sub-region therefore fell in the range of 10-25 per cent in the past decade. This contrasts strikingly with equivalent wage rises in European countries which was in the range of 7-10 per cent annually.

89. The prevailing low level of wages will continue to give rise to pressures for higher wages. Unless this trend is offset by higher productivity and through the implementation of techniques for building cost reductions, the increase in building costs will continue to rise and pose serious problems to the implementation of construction projects in general.

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<sup>1/</sup> Government Policies and the Cost of Building, United Nations Geneva, 1959.

Table 2.1 Trends in Minimum Wages in the Non-agricultural  
Sector in French-speaking West Africa

Country	Unit CFA frs. per hour				
	1951	1954	1955	1956	1957
Dahomey	15.30	21.60	21.60	21.60	27.00
Guinea	14.25	21.00	21.00	26.00	31.00
Ivory Coast	12.50	21.00	25.00	28.20	33.20
Mali	11.30	18.20	18.80	21.00	27.00
Mauritania	14.85	20.00	20.00	20.00	29.00
Niger	7.50	15.50	15.50	18.00	21.00
Togo	14.25	18.75	..	20.75	22.00
Upper Volta	9.00	14.00	15.70	18.00	23.00

Source: Outre-Mer 1958, Service des Statistiques d'outre mer.

90. While Table 2.2 helps to explain one aspect of why building costs have been rising in the countries of the sub-region, however, it is neither the only nor the most important reason. Besides the labour component of building costs, the other components have, no doubt, also been increasing. It would now be useful to identify the relative importances of these components under present levels of building costs, for this would assist in the elaboration of actions aimed at reducing building costs. Preliminary work in this area was undertaken by the secretariat in 1964 and has thrown some light on the structure of building costs in a few selected countries<sup>1/</sup>.

91. Three elements of cost are recognized: materials cost, on-site labour cost, and overhead cost and profits. For purposes of definition, the materials cost component can be taken to represent the cost

<sup>1/</sup> Pilot Enquiry into House Building Costs (document HOU/WP/5), ECA, 1964.

of material acquisitions, delivered to site, i.e., including transport costs to site but excluding preparation work prior to placement in the structure. On-site labour cost is the cost of all direct skilled and unskilled labour actually used in the construction. Besides basic wages, it includes social benefit charges as well as other special allowances such as housing, transportation to site, etc. Overhead costs and profits include site overhead costs (salaries of supervisors, foremen, time-keepers, etc., charges for water, electricity, fuel, telephone, access roads, temporary buildings, etc.), administrative overhead costs (salaries of executive technical and administrative staff, office rent, stationary, etc.), and profits and taxes including allowances for depreciation.

92. The limited data available for West Africa on the breakdown of building costs according to the above elements show considerable differences among countries. The differences are greater for materials (40-70 per cent of total cost), and for overheads and profits (10-30 per cent) than for labour. It is possible, however, to define a reasonable range:

Materials	50-60 per cent
On-site Labour	25-35 per cent
Overheads and Profits	10-20 per cent

For public works and major civil engineering constructions, the probable breakdown is estimated to be:

Materials	50-55 per cent
Labour	20-25 per cent
Overheads and Profits	20-25 per cent

Any major departure from the above range would deserve further study to identify the factors accounting for a lesser or greater share of any given element of the total cost.

93. By far the most important component of cost is the material input component, which accounts for over 50 per cent of total cost. Differences among countries in this percentage share may largely be accounted by

differences in the basic prices of materials. In general, prices of materials in land-locked countries are much higher than in the coastal countries. For example, the price of cement in the former is over two times that in the latter. The availability and proximity of bulk materials to construction sites has a further effect of accentuating differences in the material component of cost. Some projects are favoured by close proximity to adequate supplies of bulk materials, others are not and can only secure their supplies by incurring additional costs in transport.

94. Many factors affect the level of labour and overhead costs on a building project. These have already been mentioned. It should, however, be stressed that the level of wages is not the most critical criterion. On the other hand, the output per worker, i.e., productivity of labour is by far the major determinant of the level of labour and overhead costs. The pilot enquiry referred to earlier, has attempted at measuring output per worker. It indicated that productivity of labour varies by as much as three times among the countries concerned.

95. Finally, the above breakdown of costs is not dissimilar to that observed in several European countries, where it is reported that the average percentage share of the cost of materials is about 60 per cent and for the cost of labour plus labour on-costs about 23 per cent, leaving 17 per cent for overheads and profits<sup>1/</sup>. Further, large differences similar to the above, in the share of the components are observed among European countries as well. The materials component could, for example, be as large as 70 per cent in those countries where full-scale pre-fabrication is employed. It would therefore appear that no substantial changes could be expected in the relative over-all structure of costs arising out of the industrialization of the countries of the sub-region, although significant adjustments would take place to take account of trends in prices of materials, wages, productivity, and the over-all organization of the industry.

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<sup>1/</sup> Cost Repetition Maintenance: Related Aspects of Building Prices, ECE, Geneva, 1963.



### CHAPTER III

#### TRENDS IN THE CONSTRUCTION ACTIVITIES OF THE SUB-REGION

##### (a) Indicators of General Trends

96. As was mentioned in Chapter I, there is no suitable yardstick for measuring the physical output of the construction industry. The number of dwellings completed, or gross floor areas constructed in a given year cannot reflect trends in the construction industry realistically, since these indications are the result of aggregating buildings that are widely different in conception, execution and usage. Variations in the quality and standard, the size and volume, the relative complexities of construction techniques used and unit costs applied, etc., are so pronounced from one type of building product to the other, that these data lose much of their usefulness for comparison purposes. Besides, they represent the physical output of only a part of the construction industry in that they obviously do not include the public and civil engineering sector. Moreover, they are reported for only a few countries of the sub-region and even then are not available on a continuous basis.

97. For purposes of a preliminary and broad appreciation, however, the consumption of cement is thought to be a good enough barometer for measuring the real growth of the construction industry and, moreover, this method would make possible comparisons of growth among countries. Cement consumption has been chosen, for cement is a material that is widely used in the construction sector. It would be appreciated, however, that (a) this method would only indicate the broad trend in the activity of the modern sector of the construction industry, since very little cement utilization takes place in the traditional building sector, and (b) the relative intensity of cement utilization does admittedly vary substantially among countries, and hence their respective growth rates might not strictly be comparable. It could, however, be considered that these qualifications would not be of such serious orders as to invalidate a first approximation of trends in the construction industry, especially the building sector.

98. Table 3.1 thus records trends in cement consumption over the period 1958-1964. On the basis of this indicator, it would seem that the rate of expansion at least of the conventional sector of the construction industry slowed down subsequent to 1960. While the rate was of the order of 11.0 per cent per annum in the period 1958-1960, it fell to 2.2 per cent in the period 1960-1964. On the whole, the sub-region recorded a positive expansion, but the trend of individual countries fluctuated somewhat. The years 1961 and 1962 were in particular years of relative depressions in the activity of the industry. It would seem that the construction industry prior to 1960 (and in preparation for independence) passed through a phase of buoyant activity which it would not sustain fully in following years.

Table 3.1 Indices of Cement Consumption in West Africa 1958-100

Country	1957	1958	1959	1960	1961	1962	1963	1964
Dahomey	97	100	123	164	151	136	174	144 <sup>c/</sup>
Gambia	120	100	160	120	200	200	100	100 <sup>c/</sup>
Ghana	91	100	116	152	164	150	120	168 <sup>c/</sup>
Guinea	61	100	76	84	92	92	140	90 <sup>c/</sup>
Ivory Coast	112	100	135	131	130	152	159	178 <sup>c/</sup>
Liberia	181	100	376	252	248	300	319	152 <sup>c/</sup>
Mali	..	..	100	..	152	151	137	100
Mauritania <sup>a/</sup>	..	..	100	..	152	151	137	100
Niger	183	100	50	183	200	183	167	233 <sup>c/</sup>
Nigeria	86	100	105	131	132	133	138	143 <sup>c/</sup>
Senegal	113	100	109	110	117	112	118	117 <sup>c/</sup>
Sierra Leone	75	100	81	81	90	105	115	100 <sup>c/</sup>
Togo	88	100	108	160	148	176	164	124
Upper Volta <sup>b/</sup>	100	13	-	138	276	338	350	
Average for Sub-region	86	100	106	123	130	136	134	136

Source: Secretariat computation.

a/ Indices based on 1959=100.

b/ Indices based on 1957=100.

c/ Based on 1964 provisional figures.

99. Of the three major cement consumers of the sub-region, namely Nigeria, Ghana and Senegal, only Nigeria succeeded in recording steady expansion. On the other hand, a general slowing of the industry seems to have been characteristic of the trend in Ghana over the period 1959-1963. In Senegal only minor fluctuations took place. A steady rate of expansion seems to have eluded the majority of the smaller cement-consuming countries, although the fluctuations were not large on the whole. The incidence of relatively large projects undertaken over a limited period would seem to have influenced significantly the trends in construction activities. On the basis of cement consumption then, the average annual rate of growth in the construction activity of the sub-region would appear to have been of the order of 5 per cent per annum, over the period 1958-1964.

100. But these indications need not necessarily reflect the true picture of trends in over-all construction activity. Large and important public and civil engineering works could be undertaken with relatively little cement utilization. Notable examples are land-clearing, irrigation, and road projects. Consequently, the above indicative trends would have to be cross-checked by other means, notably with the help of value added and investment data. Employment trends in construction could also have been considered in this connexion, but the labour intensive-ness of construction projects varies to such a considerable extent that aggregation of employment figures would not satisfactorily reflect trends in over-all construction.

101. In Table 3.2 (p. 48) trends in the shares of GDP of value added and capital formation in construction are compiled for a few of the countries of the sub-region for which data are available. They indicate the trend in the relative importance of the construction industry in the over-all economy of the countries listed. The share of construction investments in GDP of Ghana fell from 13.7 per cent in 1961 to 12.6 per cent in 1962 and did not recover in 1963. In Ivory Coast, both value added and construction investment shares in GDP have on the whole increased over the period 1958-1964. The steady expansion of the con-

struction industry in Nigeria is again reflected by the share of construction investments in GDP, which increased from 8.2 to 10.7 per cent over the period. A fall in the share of value added in GDP was recorded for 1961 and 1962 in contrast to those of the previous two years. In Niger and Mali the share of value added in GDP is noted to have declined somewhat. But in Senegal, the shares of both value added and construction investments in GDP have shown some fluctuations over the period 1958-1964 not unlike what was earlier noted in connexion with cement consumption trends. Mauritania, on the other hand, registered a unique trend in that subsequent to 1959, the construction industry played a dominant role in the economy. Both the 1960 and 1961 levels of the shares of value added and construction investments in GDP did not conform to the general structural pattern.

102. The growth of the construction industry could now be assessed in real terms by applying the percentage coefficients listed in Table 3.1 to constant GDP series. This is done in Table 3.3 (p.49). The trends appear by and large to reflect those indicated by the cement consumption method. For example, it would be noted that in Ghana, investments in construction fell from US\$ 186 million to US\$ 176 million in 1961, and the recovery in 1963 did not come up to the level of 1961. In Senegal also investments in construction fell subsequent to 1962. On the other hand, a steady expansion in construction activities characterized trends in Nigeria and Ivory Coast, although in the former case, fluctuations in values added were also recorded.

103. Although limited in coverage, these data nevertheless throw light on the trends of the construction industry within the sub-region as a whole since they represent by far the major countries which invest in constructions. Ghana, Nigeria, Senegal and Ivory Coast together account for some 80 per cent of the GDFCF of the sub-region. As noted in Table 3.3, in spite of some fluctuations, the construction industry recorded substantial growth in the over-all period of 1958-1964 in these countries. Investments in construction increased at a compounded

Table 3.2 Trends in the GDP Shares of Value Added and Capital Formation  
in Construction for Selected Countries in West Africa

Country	Period	GDFCF as percentage of GDP	Value Added in Constr. as per- centage of GDP	GDFCF in Constr. as percentage of GDP
Ghana	1958	14.1	..	10.8
	1959	17.3	..	11.7
	1960	20.3	..	12.8
	1961	20.5	..	13.7
	1962	16.8	..	12.6
	1963	18.2	..	12.6
Ivory Coast	1958	12.8	3.5	7.0
	1960	13.9	3.9	8.7
	1961	16.3	..	8.9
	1962	14.1	..	9.4
	1963	14.2	4.7	7.9
	1964	16.3	4.9	8.6
Mali	1959	8.4	8.9	4.8
	1962	12.9	8.3	6.7
Mauritania	1959	7.6	2.8	5.5
	1960	39.4	33.1	39.3
	1961	70.6	24.2	43.9
Niger	1959	5.6	9.6	10.0
	1960	9.6	9.6	..
	1961	9.9	8.4	..
Nigeria	1958	12.0	2.1	8.2
	1959	13.1	2.8	8.8
	1960	13.2	2.7	8.6
	1961	15.0	2.1	10.4
	1962	14.9	2.0	10.7
Senegal	1958	11.0	3.6	6.7
	1959	11.2	4.0	7.3
	1960	10.4	3.5	8.3
	1961	9.8	3.4	7.2
	1962	9.5	3.8	6.8
	1963	..	3.9	..
	1964	..	3.9	..
Togo	1958	3.3	3.0 <sup>a/</sup>	5.3
	1959	7.8	3.4 <sup>a/</sup>	6.6
	1960	8.6	2.4	5.7

Source: Based on National Statistics.

a/ Excluding the Non-monetary sector.

Table 3.3 Trends in Construction Investments and Values Added  
Million US dollars

Country	Period	GDP	GDFCF	GDFCF in construction	Value Added in Construction
Ghana	1958	1,089	154	118	-
	1959	1,235	214	145	...
	1960	1,338	272	171	..
	1961	1,355	278	186	..
	1962	1,397	235	176	..
	1963	1,434	261	181	..
Rate of Annual Increase Percentage over period	1959-1963	715.7	11.1	9.0	..
Ivory Coast <sup>a/</sup>	1958	493	82	35	17
	1960	589	100	51	23
	1961	612	94	55	25
	1962	658	107	62	30
	1963	755	141	60	35
	1964	865		74	42
Rate of Annual Increase Percentage over period	1958-1964	9.8	14.3	13.3	16.3
Mauritania	1960	79	37	31	26
	1961	91	64	40	22
Rate of Annual Increase Percentage over period	1960-1961	15.2	73	35.5	-
Nigeria	1958	3,256	310	209	68
	1959	3,396	345	233	95
	1960	3,506	362	237	95
	1961	3,691	399	277	78
	1962	3,876	391	282	78
Rate of Annual Increase Percentage over period	1958-1962	4.4	6.0	7.8	3.5
Senegal <sup>a/</sup>	1958	..	60	46	..
	1959	578	65	33	23
	1960	591	61	37	21
	1961	610	61	40	21
	1962	653	63	51	25
	1963	636	65	48	25
	1964	667	68	49	26
Rate of Annual Increase Percentage over period	1958-1964	2.9 <sup>b/</sup>	2.1	1.1	2.5 <sup>b/</sup>

Source: Based on National Statistics.

<sup>a/</sup> Investments and values added by the traditional sector are not included.

<sup>b/</sup> Period of reference 1959-1964.

annual rate of over 7.8 per cent in the period 1958-1962 in Nigeria, by 9 per cent in the period in the period 1958-1963 in Ghana; by over 13 per cent in the period 1958-1964 in Ivory Coast; and by just over 1 per cent in Senegal. The growth rates of values added were no less significant either.

104. At the same time, it should be remembered that the growth rates for some of the countries listed include the traditional construction sector and therefore do not reflect trends in the modern sector alone. It would be desirable to identify the share of the traditional sector in the overall growth of the construction industry in order to be able to measure separately the trends in investments directed at modernization, and secondly to assess the future impact of economic development on the modern construction sector as the subsistence sector becomes more and more monetized.

(b) Trends in the Traditional Sector

105. While urbanization has proceeded at a rapid rate, nevertheless, the rural populations in West Africa still account for over 90 per cent of total population. Construction among rural populations by and large still proceeds in time honoured ways, evolved out of local cultures, customs and techniques and using materials that are locally available. In general, rural dwellings are simply conceived and executed. Their economic life varies according to the materials used and broadly falls in the range of 2-10 years.

106. The reliability of estimates of investments taking place in the sector can rightly be questioned in that these are based on qualitative appraisals in the absence and inadequacy of a quantitative base. The prevalent rural dwelling types would have to be characterized in each country, and in particular the general materials used will have to be described. Some agreement would have to be reached on the duration of specific dwelling types in order to estimate the rate of replacement. Also trends in population will have to be established to identify the rate of addition to stocks. Existing stocks in their turn will need to

be estimated since data are non-existent. Finally, the cost of constructing each type of dwelling would have to be assessed, a process that requires a close acquaintance of local conditions.

107. Under the circumstances, it is evident that identifying the role of the traditional sector could be a highly hazardous exercise. Nevertheless, in many countries of the sub-region, national accounts statistics and surveys aim at establishing the share of the non-monetary sector in investments. One of the most comprehensive surveys in this area is the study undertaken by the University of Paris in 1963 of investments in traditional dwellings in the French-speaking countries of West Africa. According to the results of this survey, investments in traditional dwellings have been increasing steadily over the period 1946-1960. The average annual compounded rate of growth was of the order of 1.5 per cent over the period 1950-1960, which is significantly small.

108. The ratio between investments in the traditional and modern sectors would, however, be more informative of the changing inter-relationships of the two sectors over time. This is done in Table 3.4 for selected countries in West Africa. Two striking observations emerge from the computations. Firstly, the percentage share of the traditional sector in total construction investments is substantially high. In most of the countries listed this share falls in the range of 30-40 per cent. Secondly, in general it would appear that the percentage share has been declining noticeably. Both observations are however liable to important qualifications and explanations.

109. Concerning the data for the French-speaking countries in the table, the estimates of investments in the traditional sector are based on assumptions which essentially tend to magnify the order of magnitude of investments. Firstly the average economic life of the dwellings is taken somewhere between 4-6 years. This is considered too low by many experts, who argue that the average economic life of traditional rural dwellings could be as high as 10 years. Secondly, the occupancy of the dwellings seem to be under-estimated. The average occupancy of the



Table 3.4 Relationships between Investments in the Traditional and Over-all Sectors of the Construction Industry - Selected Countries

Country	Period	National Currency	Estimates of Investments <u>a/</u> in the Traditional Sector	Traditional Sector as Percentage of Constr. Industry
Ivory Coast	1958	Thousand million	5.3	41.0
	1960	CFA	5.5	30.0
Dahomey	1959	Thousand million CFA	1.4	56.0
	1962	Thousand million CFA	1.9	39.5
Mali	1959	Thousand million CFA	0.2	25.0
	1960	Thousand million CFA	0.2	3.0
Senegal	1958	Thousand million CFA	5.8	39.0
	1959	Thousand million CFA	5.9	36.0
	1960	Thousand million CFA	6.0	33.0
Nigeria	1955	£ million <sup>b/</sup>	10.2	16.7
	1956		12.2	20.1
	1957		13.6	20.0
Togo	1957	Thousand million CFA	0.8	48.5
	1958	Thousand million CFA	0.8	47.0
	1963	Thousand million CFA	0.4	19.7

a/ At 1960 prices.

b/ At current prices.

dwelling is taken to be 3, while it is very likely to be as high as 7 to 10. Thirdly, a further doubt that arises is that the building costs used in the estimates have probably been over estimated.

110. The example taken from Nigeria seems to support these arguments in that firstly the estimate assumes an average economic life of traditional dwellings of 10 years, and secondly building costs assumed are in real terms lower compared to equivalent dwellings in the other countries. Such qualifications seem to have been taken into consideration in the Togo estimates of 1963 which show a contrastingly lower share of investments in the traditional sector (19.7 per cent) than were indicated in previous accounts (47-48.5 per cent). There would, therefore, seem to be some justification for considering the share of investments in the traditional sector to be generally lower than indicated in Table 3.4. In fact an estimate made in the late 'fifties in the national accounts statistics of eight countries in the ex-AOF<sup>1/</sup>, put the share of investments in the traditional sector at 25 per cent of over-all construction investments. This was based on an average economic life of traditional dwellings of 10 years, which would suggest that the estimate could be considered the minimum for the period.

111. On the basis of the various arguments, and scattered data, it is thought that a percentage share of 25-30 as representing the share of investments in the traditional sector of over-all investments in constructions of the sub-region in the 'sixties could be taken as reasonable. This percentage range seems to be supported also by spot-checks of investments in the modern sector based on imports of materials data. Even at such a lower level, it would still be appreciated that the traditional sector currently occupies a relatively high position in the value of over-all constructions. But it is also significant to note that its position is a rapidly declining one as well. This was roughly demonstrated in the computations of Table 3.4. Already in some countries conventional and more durable materials such as corrugated iron sheets, concrete blocks, etc., are being introduced in the construction of rural dwellings. The Nigerian example is a case in point.

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<sup>1/</sup> Outre-Mer 1958, Service des statistiques d'outre-mer.

112. It is in observing this overlapping and in particular the ultimate direction of the traditional sector towards the purely capital formation element of the economy, that the argument for retaining the sector as a component of capital formation instead of considering it as a consumption expenditure gains plausibility.

(c) Quantitative Summary of the Construction Industry in the Sub-region

113. Table 3.5 summarizes the main components of the construction industry in the countries of the sub-region in the first half of the 'sixties. The main purpose of the Table is to present comprehensive estimates of some of the important elements of the industry. They are based on various scattered data observed earlier for individual countries. Neither accuracy nor in some cases even broad approximations which could be considered reliable are claimed. Moreover, discrepancies between national statistical data and data presented in the table might be observed for some countries. The objective of uniformity and consistency in the presentation of data has led to the modification of some basic data.

114. The conceptual differences in the treatment of the traditional construction sector constitute the major cause of discrepancies. While the national accounts statistics of some countries consider the outputs of the traditional sector as wholly value added components, others include them in fixed capital formations. In still other cases, recorded data exclude the traditional sector from both value added and capital formation components. In Table 3.5, however, the aim has been to consistently include the outputs of the traditional sector with capital formation and only the share of labour and similar expenditures are transferred to value added components. Consequently, both GDFCF and its construction component have been likewise modified for those countries which in their national accounts have excluded the traditional sector.

115. The inherent difficulties of estimating outputs of the traditional sector have already been mentioned. Wide differences could be recorded in estimates carried out by different persons. The basis for the

estimates in Table 3.5 could therefore be challenged and thus further add to the discrepancies referred to earlier. Further discrepancies could come about in those countries where national accounts statistics data of the components listed in the Table are not available. In these cases, estimates were arrived at on the basis of peripheral evidence on the possible current level of relationships among the components and also of the components to GDP. The assumptions made as regards these relationships are noted at the foot of the Table and the acceptability of these estimates will depend on the reliability of the assumptions.

116. Data on employment in construction in the 'sixties are highly unsatisfactory. For many countries, it was found necessary to refer back to the 'fifties to get an idea of the level of employment in construction. For others estimates were made on the basis of data available of the total labour force. It is thought that employment levels indicated in the Table might be gross under-estimates. Certainly, the reliability of the figures put forward for a number of countries could rightly be challenged. Under the circumstances, it was found unrealistic to compute figures of value added per person engaged save for a few countries.

117. While these and similar reservations could be raised to challenge estimates of individual countries, where estimates were necessary, it is thought that the sub-regional picture that emerges could be justified. This is mainly due to the fact that where the countries which account for the major investments in construction are concerned, data were available and the need to resort to estimates was minimal. Nigeria, Ghana, Senegal, Ivory Coast and Mauritania between them accounted over 80 per cent of the GDFCF in construction of the sub-region in the first half of the 'sixties, and Table 3.5 is largely based on actual available data for these countries.

118. The sub-regional picture of the construction industry in the first half of the 'sixties could be characterized as follows. Investments were on the average over US\$ 800 million annually, of which the traditional sector accounted for some US\$ 190 million. Over-all investments

Table 1.5 Quantitative Survey of the Construction Industry in the West African Sub-region in the Sixties

	GDPGF (million US\$)		Investment in Construction (million US\$)		Value Added mainly in modern sector (million US\$)		Value of Imported Construction Materials (million US\$)		Employment in Construction Mainly in Modern Sector (thousand persons)		Value Added per person engaged (US\$)	
	1960	Average 1961-64	1960	Average 1961-64	1960	Average 1961-64	1960	Average 1961-64	1960	1960	1960	1960
	(19) <sup>a</sup> / <sub>2</sub>	(19) <sup>a</sup> / <sub>2</sub>	12.0	13	(5) <sup>b</sup> / <sub>2</sub>	(5) <sup>b</sup> / <sub>2</sub>	3.8	3.6	2.3 <sup>c</sup> / <sub>1</sub>	2.3 <sup>c</sup> / <sub>1</sub>	..	..
Dahomey	(2) <sup>a</sup> / <sub>2</sub>	(3) <sup>a</sup> / <sub>2</sub>	15.0	(2) <sup>a</sup> / <sub>2</sub>	(1) <sup>b</sup> / <sub>2</sub>	(1) <sup>b</sup> / <sub>2</sub>	..	0.7 <sup>b</sup> / <sub>2</sub>	(1.4)	(1.4)	..	..
Gambia	272	258 <sup>a</sup> / <sub>2</sub>	18.0	181	40	54	28.2	38.4	21	89.3	448	448
Ghana	15	21 <sup>a</sup> / <sub>2</sub>	9.1	(11) <sup>a</sup> / <sub>2</sub>	(3) <sup>b</sup> / <sub>2</sub>	(6) <sup>b</sup> / <sub>2</sub>	2.6	7.5 <sup>b</sup> / <sub>2</sub>	24	15.5 <sup>a</sup> / <sub>2</sub>	..	..
Guinea	104	134	15.4	86	23	35 <sup>b</sup> / <sub>2</sub>	12.7	14.9	17	11.5	..	..
Ivory Coast	50 <sup>a</sup> / <sub>2</sub>	60 <sup>a</sup> / <sub>2</sub>	28.0	(42) <sup>a</sup> / <sub>2</sub>	(9) <sup>b</sup> / <sub>2</sub>	(10) <sup>b</sup> / <sub>2</sub>	6.7	20.9 <sup>b</sup> / <sub>2</sub>	19	(4.5)	..	..
Liberia	28	38 <sup>a</sup> / <sub>2</sub>	11.0	19 <sup>a</sup> / <sub>2</sub>	(3)	10	1.9	3.1	15	5.5	546	546
Mali	37	6 <sup>a</sup> / <sub>2</sub>	70.6	40 <sup>a</sup> / <sub>2</sub>	26	22 <sup>a</sup> / <sub>2</sub>	..	12.9 <sup>a</sup> / <sub>2</sub>	..	0.6 <sup>a</sup> / <sub>2</sub>	..	..
Mauritania	22	26	8.8	(17) <sup>a</sup> / <sub>2</sub>	(6) <sup>b</sup> / <sub>2</sub>	(9) <sup>b</sup> / <sub>2</sub>	1.8	2.3	13	(3.5)	..	..
Niger	362	391 <sup>a</sup> / <sub>2</sub>	10.6	282 <sup>a</sup> / <sub>2</sub>	92	73 <sup>a</sup> / <sub>2</sub>	80.5	54.1	34	112.7	816	816
Nigeria	85	89	10.0	69	21	24	10.5	10.0	14	10.0	..	..
Senegal	(20) <sup>a</sup> / <sub>2</sub>	(25) <sup>a</sup> / <sub>2</sub>	12.0	(18) <sup>a</sup> / <sub>2</sub>	(6) <sup>b</sup> / <sub>2</sub>	(7) <sup>b</sup> / <sub>2</sub>	4.7	6.8	34	(9.6)	625	625
Sierra Leone	10	11	8.5	8 <sup>a</sup> / <sub>2</sub>	(2)	3 <sup>a</sup> / <sub>2</sub>	1.7	3.3	28	0.6 <sup>a</sup> / <sub>2</sub>	..	..
Togo	(21) <sup>a</sup> / <sub>2</sub>	(24) <sup>a</sup> / <sub>2</sub>	12.0	(15) <sup>a</sup> / <sub>2</sub>	(5) <sup>b</sup> / <sub>2</sub>	(6) <sup>b</sup> / <sub>2</sub>	1.9	2.9	13	5.2 <sup>a</sup> / <sub>2</sub>	..	..
Upper Volta	1,047	1,166	14.0	708	242	265	157.0	181.0	22	272.2	845	845
TOTALS	178	187	2.2	178	187	187	30	29	29	29	29	29
Less Contribution of Trade Sector	869	979	11.8	530	622	63.5	63.5	63.5	63.5	63.5	63.5	63.5

<sup>a</sup>/ Average of 1961-63<sup>b</sup>/ 1963 figure<sup>c</sup>/ GDPGF taken as 28% of GDP<sup>d</sup>/ 1962 figure<sup>e</sup>/ 1961 figure<sup>f</sup>/ GDPGF taken as 12-15% of GDP<sup>g</sup>/ Constr. GDPGF taken as 60-75% of GDPGF<sup>h</sup>/ Value added estimated at 3-5% of GDP<sup>i</sup>/ 1957 estimate

accounted for 69.4 per cent of GDFCF, while the modern sector on its own is estimated to have accounted for 63.5 per cent. Value added mainly of the modern sector was of the order of US\$ 265 million annually, thus accounting for 3.2 per cent of GDP. The expenditure on imported materials was US\$ 180 million annually which accounted for some 30 per cent of investments in construction. Employment in 1960 was about 270,000 persons, and value added per person engaged was estimated at about US\$ 840.

119. The current level of construction activity, its position in over-all economy, and its many-faceted problems were thus far examined in so far as available data and their reliability permitted. The prospects of rapid industrialization and their impact on the construction industry must now be examined in order to contain the strains and stresses that these will give rise to and to cope efficiently with the far greater demands on the resources of the industry. In the next chapter an attempt is made to project the volume of the construction industry and to assess the magnitude of the bottlenecks that will have to be overcome.

## CHAPTER IV

### PROJECTION OF DEMAND AND ITS IMPLICATIONS ON SUPPLY FACTORS

#### (a) Projection of Value of Construction Activities

120. The projection of the volume of construction activity is done for two reference years in the next fifteen-year period, namely 1965, and 1980. The method used is admittedly not a sophisticated one. It is based on the relationships of construction to GDP. It is believed, however, that the long-term trends of this relationship which was discussed at length in Chapter I with the help of graphs, and in particular the qualifications which were pointed out, would be useful in reappraising the methodology and making it a more sophisticated and reliable tool of projections. No other all-embracing method seems to present itself. Estimating housing and building needs on the basis of future population growths would not lead to a realistic estimate in that evidently, needs would be far in excess of available resources and would have to be ~~out~~ down to size. An inventory of planned public works projects (dams, roads, bridges, irrigation schemes, etc.) would not be a satisfactory method, especially in long-term projections, for the mere fact that the time dimension does not permit the identification of the physical magnitude of the project.

121. In table 4.1 the coefficients used for the projections of investments, value added, value of material inputs and employment in constructions are shown. These are largely based on observations of long-term trends of the components that are projected. Firstly in so far as investments in constructions are concerned, it would be recalled from Chapter I that the ratio of investments in construction to GDFCF is unlikely to change significantly over time. The prevailing average ratio of 64% has therefore been assumed for the whole fifteen-year period. However, the share of housing and building in investments is assumed to increase from the present 40% of total investments to 45%, while the share of other constructions (mainly civil engineering works) is assumed to decline from 24% to 19%. These assumptions are supported by the exposition in Chapter I and the graphs in the Annex. Furthermore, it will be appreciated that as economic

Table 4.1 - Coefficients Proposed for Sub-regional Projections

No	Item	1965	1980
1.	Share of Investments in construction (modern) of GDFCF - Percentage .....	64	64
2.	Share of Investments in housing and building *(modern) of GDFCF - Percentage .....	40	45
	- of which the share of housing	18	20
	- of which the share of non-residential buildings	22	25
3.	Share of Investments in other constructions mainly civil engineering, of GDFCF - Percentage	24 <sup>a/</sup>	19
4.	Share of Investments in Traditional sector of Investments in construction (modern) - Percentage	25	10
5.	Share of value added (mainly modern sector) of GDP - Percentage .....	3.5	5.5
6.	Share of Expenditure on Materials of Investments in construction (modern)- Percentage .....	55	55
7.	Value Added per person engaged US\$ .....	850	1,500

a/ Including land clearing, quarrying, etc., activities

development proceeds an increasing proportion of the traditional sector activities are expected to enter the conventional construction sector thus accounting for an increased share of housing and building investments. In this connexion, it might be noted that the ratio of investments in the purely traditional sector to investments in the conventional sector is assumed to fall from the current estimated 25 per cent to about 10 per cent of the value of construction investments in 1980. This might be considered optimistic but even at 10 per cent, the investments taking place in this sector would be considerable. It is thought that the fast growths in population expected to take place during the period will continue to pose serious housing shortages which are expected to entail the significant participation of the traditional sector.



122. Value added has been assumed to increase from the present 3.5 per cent to 5.5 per cent by 1980. This is based on the trends examined in Graph 1, which indicate that as industrialization proceeds and as value added in the manufacturing industry increases with it, value added in the construction industry will increase in direct proportion. The assumptions of value added per person engaged are, to say the least, highly questionable. They are based on general observations of likely trends and prospects. The main purpose of these assumptions is to be able to estimate future employment requirements for constructions. It would evidently be appreciated that the employment figures arrived at by such a crude method could only lead to a rough approximation, - perhaps not even satisfactory for a broad appreciation of future employment needs.

123. Finally, the value of building materials is assumed to remain constant at 55 per cent of investments in construction over the whole period. It could, however, be argued that the share should decline based on the contention that expected developments in the domestic production of building materials would lead to significant reductions in the prices of materials. Nevertheless, it would also be appreciated that improved building organizations and administrations, and increased labour productivities are also expected to bring about relative reductions in the labour and overhead components of cost. Possibly, some minor adjustments in the relative ratios of the elements of cost would take place; but there would be no convincing reason to alter the present relationships of the elements of cost significantly. Costs of constructions would very likely show significant reductions as a whole, which would mean that more of the needs could be satisfied with less of investments.

124. Based on these coefficients, the projections are summarized in Table 4.2 (p.61). It will be noted that investments in construction are expected to rise to nearly US\$ 3.5 thousand million, of which the housing and building component would be expected to account for over US\$ 2.4 thousand million.

The annual compounded rates of growth which these increases imply are 10.1 per cent for construction investments and nearly 11 per cent for its housing and building component. The former contrasts to the 5 per cent compounded rate of growth observed in the period 1960-1964.

Table 4.2 Projections of the Significant Elements of the Construction Industry  
of the West African Sub-region  
At 1960 prices

Item	1965	1980	Implied rate of growth 1965-1980
1. GDP.....	9,551	22,531	5.8
2. GDPCF .....	1,279	5,408	10.1
3. Ratio of GDP to GDPCF - Percentage .....	13.0	22.4	-
4. Investments in Constructions (modern)... of which:-	819	3,461	10.1
Investments in Housing and building...	230	1,082	10.8
Investments in non-residential building	281	1,352	11.0
Investments in other constructions ....	307	1,028	8.4
5. Value added in Constructions (modern)....	334	1,239	9.1
6. Value of Expenditure on materials (modern)	450	1,904	10.1
7. Employment in construction (thousand persons)	394	826	5.0

(b) The Impact of Projected Demand on Inputs

125. Nevertheless, the more significant point of the projected sustained growth rate is its impact on the capacity of the construction industry and in particular the substantial demands on input supplies that it would impose. So far as material inputs are concerned currently, shortages in supplies are made up by imports to the extent of 50-60% of total requirements of construction materials. If it is assumed that the expansion of the domestic industry is only adequate to keep the present import to domestic production ratio at the same level over the period 1965-1980, then the shortages in supplies by 1980 would be expected to reach some US\$ 1.1 thousand million annually in contrast to the US\$ 260 million estimated amount in 1965 and

further in contrast to the actual US \$ 200 million in 1963. Evidently, if the sub-region for any reason would find itself unable to expand the domestic building materials industry even at the modest rate implied above, then the 1980 picture of shortages would be more acute than was indicated.

126. The prospects of rapid industrialization, however, imply a far greater effort than the mere continuation of the present situation as the modest rate of growth of the domestic building materials industry assumed above suggests. It is not easy to indicate what the 1980 target of the industry should or could be. Total import substitution could very well be aimed at, but this would not be a realistic target in that there are practical limitations to contend with, such as inadequacies or lack of inputs and investment funds, or delays in programming or simply because the continued importation of some materials might be judged as more feasible than their domestic productions.

127. A broad appreciation of the magnitude of the future demand for shortages of building materials is, however, desirable in order to be able to plan the general orientation of policies and actions under the assumption of dynamic growth of the domestic industry. For this purpose, a simple assumption is made to the effect that imports could be envisaged to fall to 10 percent of total expenditure on building materials. This assumption is merely taken as a basis of a model by which the implications of the estimated growth of the construction industry on the domestic building materials industry is to be assessed. It should be appreciated that the assumption is made with due consideration of what could possibly be attained and is not purely hypothetical.

128. Accordingly, it could be shown that by 1980, the domestic industry would be expected to be able to supply the construction industry with materials worth some US\$ 1,714 million annually (see Table 4.3). If it is further assumed that the capacity of the domestic industry was such as to satisfy 44% of total demand, (i.e. purchases by the construction industry from the domestic building materials industry amounted to about US\$ 200 million annually in 1965), then it follows that the capacity of the domestic industry would have to be increased such that its annual sales would reach US\$ 1,514 million by 1980 at 1960 prices.

Table 4.3 Evolution of Expenditures on the Acquisition of Building Materials -- Three Hypotheses and Their Implications  
(1960 prices in million US \$)

	1965	1980	Cumulative Foreign Exchange Drain.
<hr/>			
A. Hypothesis of Expansion of the Building Material Industry not taking place			
Expenditure on the acquisition of materials	450 1,904		
- of which imports.....	260 1,644		14,280
share of imports of total expenditure (%)	(58)	(86)	
B. Hypothesis of Expansion Taking Place <u>but just enough</u> to contain current import to domestic production ratio			
Expenditure on the acquisition of materials..	465 1,677		
- of which imports .....	260 939		9,000
Share of imports of total expenditure (%)....	(56)	(56)	
C. Hypothesis of dynamic expansion taking place <u>such as to reduce the share of imports</u> to 10% of total expenditure			
Expenditure on the acquisition of materials..	450 1,904		
- of which Imports .....	260 190		3,375
Share of imports of total expenditure (%)...	(56)	(10)	
<hr/>			

129. The various alternatives and their implications for the economy are summarised in Table 4.3 (p.63). Hypothesis A represents the extreme case of the construction industry growing at the estimated rate but without any expansion in the building materials industry being undertaken. The hypothesis serves a purely demonstrative purpose in that in practice some expansion of the building materials industry is bound to take place during the period. Hypotheses B and C on the other hand represent the two limits within which the share of imports of total expenditure would fall. To the extent that a dynamic expansion of the domestic industry takes place thus also the share of imports would increasingly gravitate to the level indicated by hypothesis C.

130. The cumulated drain on foreign exchange under the three hypotheses is estimated in the last column of Table 4.3. Under hypothesis B, US\$1,104 million would have to be spent annually on imported materials by 1980 and the cumulated expenditures are estimated to fall in the range of US\$10,230 thousand million in the period 1965-1980; whereas under hypothesis C, the expenditure on imported materials would be expected to fall to US\$190 million annually by 1980, and the cumulated expenditure would not be expected to exceed US 3,375 million. The dynamic growth of the building materials industry which hypothesis C implies would thus mean a saving of US\$6,855 million in foreign exchange in the period 1965-1980 over the modest growth rate implied by hypothesis B.

131. These estimates not only stress the seriousness of the building materials supply problem resulting from the expansion of construction activities, but also indicate the important savings in foreign exchange that could accrue to the economy from a well-planned and synchronized development of the domestic building materials industry. In so far as efforts in the latter are marked by success, so also will depend the level to which economies are achieved in the realisation of construction projects, and thus more of needs satisfied. The supply of building materials is evidently the most important aspect of the bottleneck in the implementation of construction projects at the high estimated rate, but it is not the only one. The problems of labour and its productivity, the

organization and efficiency of the contracting business, the effectiveness of the role of institutional and administrative arrangements in planning, policy actions and implementations of construction projects, the adequacy of research facilities and other equally important factors add to the complexity of the problem of containing effectively the impact of the rapid expansion of the construction industry.

132. A quantitative appraisal or the elaboration of a model as ~~was~~ done for the material component of supply is neither possible nor desirable to assess the supply needs of the above mentioned factors. The preceeding chapter has dealt with the current problems that these ~~factors~~ raise. Evidently, unless steps are taken to rectify current deficiencies and improve future prospects, the progress of the construction industry would be seriously impeded.

## CHAPTER V

### CONCLUSIONS

#### (a) The Demand and Supply Prospects

133. The construction industry occupies a key position in overall economy. In the countries of the West African sub-region it often constitutes the single most important sector in industrial activity. The main features of the industry in the sub-region in the first part of the sixties have been characterized in broad terms. In terms of value added, it was estimated that this was of the order of US\$ 265 million annually accounting for some 3.2% of GDP. The construction industry is the single most important component of capital formation and accounts for 60-70% of GDFCF. Investments in constructions were of the order of US \$800 million annually in the period 1960-1964, of which the share of the traditional construction sector was estimated to account for a proximately US\$ 190 million. In terms of employment, the construction industry also plays a key role. Some 8-14% of total employment appears to be accounted for by the construction sector. The estimate of the annual employment level of some 270,000 persons in the early 'sixties is possibly a gross under-estimation and anyway does not include the share of the traditional sector.

134. On the demand side, the construction industry is profoundly influenced by changes in investments. The growth of the manufacturing industry is neither the direct cause nor effect of increased activities by the construction industry. But as both industries are dependent on investments, evidently they are inter-related. Moreover, the two industries complement each other. The process of the building up of economic infrastructure improves the prospects of the manufacturing industries, and the growth of the manufacturing industries in their turn contributes to the efficiency and economy of the construction industry. The long-term considerations for developing countries seem to indicate that as industrialization proceeds, productivity in the construction sector would grow at a rate no less than that of the manufacturing sector. Indeed, the scope for considerable gains in construction productivity is evident in developing countries for two important reasons. Firstly,

productivity is currently at a very low level and, secondly, with relatively modest effort it could be increased considerably.

135. The notable disparities among the countries of West Africa in the relative positions of the manufacturing and construction sectors as measured by values added indicate the differing industrial structures among these countries and to some extent also the level of industrial development that has taken place in a country with respect to another. In some countries, the construction industry singly accounts for a greater share of contribution to GDP than the manufacturing sector and in others the construction industry plays a commanding role even if its relative contribution to GDP is not as high. Data from the industrialized countries further stress the contrasting industrial structures between a developed and developing economy and indicate the relative position to which the construction industry would shift as industrialization proceeds. While in African countries the ratio of value added in the construction sector to that of the manufacturing sector falls in the wide range of 20-100%, selected data in the industrialized countries indicate that it falls in the narrow range of 20-25 per cent.

136. The lower percentage ratio noted above is the consequence of a decline that takes place in the relative importance of the construction industry in the economy as the manufacturing sector grows. It is not the result of any decline in the industrialized countries in investments in construction. On the contrary, investments in absolute terms have continued to increase. There are no significant disparities between developing and industrialized countries in the ratio of construction investments to GDFCF. Any apparent and small differences appear to be more the result of relative emphasis and long-term trends rather than short-term shifts in the share of construction investments of total investments. It would seem, however, that in the long-run, a somewhat noticeable shift in investments might take place favouring investments in machinery and equipment in relation to investments in constructions. But long-term and world-wide observations seem to indicate that this would not be of any significant order, and in any case in so far as developing African countries are concerned, the ratio of construction investments in GDFCF is very likely to remain constant over the foreseeable period of time.



137. Such an assumption does not, however, mean that there are no differences in demand characteristics between developing and industrialized countries. Construction investment in African countries is mainly channeled to dwelling constructions and civil engineering and public works, while in industrialized countries the emphasis is primarily directed towards housing and building construction aimed at (a) continuously improved standards of accomodation and (b) coping with industrial, commercial and administrative building demand. Whereas today the emphasis in African countries is the building up of infrastructure needs, the prospects are that as more of these needs are satisfied, the trend would be expected to shift in favour of housing and building.

138. Construction needs in the West African sub-region are enormous, but the needs that could be satisfied would be determined by the rate of general economic development and in particular by the rate of growth of capital formation and its growing share of GDP. On the assumption that GDP would increase by an annual rate of just over 5%, and capital formation by some 9% over the period 1965-1980, it is estimated that investments in construction would also increase by 9% annually so that by 1980 investments in the mainly modern sector of construction would reach some US \$3 thousand million yearly. This is nearly four times the 1965 rate. Although an increase of considerable magnitude, this would only satisfy a part of total needs. The traditional sector would still have to continue to supply part of the formidable and ever-increasing housing needs of the sub-region arising out of increasing populations and the need for replacing obsolete dwellings.

139. Even though total demand would thus not be expected to be fully satisfied, on the supply side the estimated levels of investments would necessitate considerable expansion of the capacity of the construction industry. Today the industry in the countries of West Africa is characterized by its dependence on imported building materials and components, inadequacy of skilled manpower, lack of technical and manggerial personnel, general absence of large and medium capacity local contractors, inefficiency and incompetence of small and artisan contractors and general inadequacy of

institutional, administrative, research and training facilities to improve the efficiency of the industry and to elaborate short and long-term plans of actions for its development.

140. These are some of the main factors which in the sixties pose serious problems of implementation of construction projects with all their ramifications on costs and prices. Unless the appropriate steps are taken now to tackle the problems of supply which these factors entail, the ability and proficiency of the construction industry to cope with increasing investments would deteriorate such that increasingly less demands would be satisfied at the increasing costs which would evidently arise as a result of pressures on supply.

141. The central planning and policy issues of the construction industry must thus be directed at solving the supply problem and ensuring the efficiency of the industry. A comprehensive examination of all supply factors and the elaboration of effective solutions for each one of them within a defined overall objective are necessary measures of purposeful and appropriate actions. Every effort directed at improving some part of the whole will no doubt benefit the whole.

142. In concluding this report, therefore, an attempt will now be made to suggest the broad lines of actions which governments might wish to consider for further detailed studies and their subsequent implementations. It is not claimed that all the factors of supply or that all the problems of supply are exhaustively listed in the following paragraphs. Such a procedure is neither feasible in a report of this kind, nor essential for its limited objective of highlighting and drawing attention to the broad and essentially major problems and policy requirements of the construction industry.

(b) The Need for Expanding the Building Materials Industry

143. Building materials and components account for 50-to% of investments in construction and, consequently, they account for the single most important of the supply problems of the industry in quantitative terms. At the same time, the sub-region is dependent to the extent of 40-70% of needs, in terms

of values, on imports. Under the present building materials supply structures, prevailing prices are high for widely varying reasons: high transport, insurance and handling charges and possibly also high duties in addition to the former on imported materials, and inefficient organization, low productivity, high costs of imported inputs, and production from uneconomic-sized units, etc., of the domestic industry. Further, supply is unreliable, delays are frequent, and choice of materials is limited by lack of diversity of available materials. The performance of the industry is kept at a low level by these constraints.

144. The rate of investments in construction projected for the 1965-1980 period would necessitate the growth of building materials supply at an annual rate of over 10 per cent. This would mean that the annual expenditure on building materials and components would reach some US\$ 1.7 thousand million in 1980 from a level of US\$ 0.5 thousand million in 1965. If the problems of the 'sixties are to be eliminated or minimized, if the progress of the construction industry is not to be impeded and if its performance is to be maximized, then a dynamic and rationalized growth of the building materials industry is not only desirable but imperative.

145. There are no serious or insurmountable problems, either, to embark on a major development of the building materials industry. In as far as the foreign exchange components of investments are concerned, the cumulative savings which accrue by the dynamic replacement of imports by locally produced materials is estimated to be of the order of US\$ 6 thousand million over the period 1965-1980 an amount which would be quite adequate to meet the foreign exchange component of investments<sup>1/</sup>. The alternative would be the continuation of the past rate of development, which in effect means that the present import to domestic production ratio of 58 per cent would be carried to 1980. The cumulative drain on foreign exchange spent on imported materials would in this instance be expected to reach some US\$ 2 thousand million. Besides being an expenditure of considerable magnitude, moreover, it can be considered as a loss from the point of view of its potentials for otherwise generating development and contributing to value added.

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<sup>1/</sup> For such comparative calculations see Document E/CN/WP/4/Add.1, ECA, 1964.

146. Raw material and other input resources cannot be considered as impediments to the development of the industry either. The West African sub-region as a whole does not lack adequate quantities of suitable raw material resources. Surveys indicate that there are considerable resources of limestones for lime and cement, clays for bricks and ceramics, sands for glass, metallic ores for eventual use as fabricated building components, abundant timber for a wide range of building timber products etc. Fuel and power potentials are not lacking either. The imbalance in the distribution of resources might be considered a hindrance, but this can be overcome through the co-operation of the countries at the multi-national and sub-regional levels.

147. Perhaps the main reason for approaching the development of the building materials industry cautiously is the twin problems of smallness of national markets and inadequacies of transport facilities. While the former can be overcome by multi-national co-operation, the latter acts to diminish the full benefits to be derived from such co-operation. Nevertheless, the identification of projects by national, multi-national and sub-regional classifications, and their distributions based on sound technical and economic arguments would reveal the scope for launching a major expansion programme.

148. The arguments for sector industries are set out in other papers.<sup>1/</sup> Here it would suffice to indicate the broad outlines of a possible development pattern. A large part of building materials production has essentially to be undertaken within a purely national framework. The production of voluminous and heavy building materials such as concrete products, bricks, quarry products, etc, have to be undertaken as close to centres of consumption as possible. Moreover, the minimum economic capacity of production is almost always satisfied for these materials by purely local demand. Sawwood and a wide variety of timber-derivative factories can also be established for purely national markets.

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<sup>1/</sup> See in particular papers on cement, clay, and cement-based industries in West Africa.

149. On the other hand, the minimum economic production unit of some building materials imposes limitations on their feasibility for purely national markets when these are below the economic production level. Such materials are cement, asbestos-cement, ceramic products, glass and other wood-sheet products among many building materials and components which can be described as voluminous and heavy. These are industries which would have to be set up to serve multi-national markets. Another compelling reason for setting up multi-national projects would be the lack or inadequacy of raw-material resources such as limestone and timber.

150. Finally, sub-regional projects are those projects where only the sub-regional demand would justify the setting up of a production unit in a given time span. Sheet glass, sanitary and electrical fixtures, iron and steel and other metallic industries lend themselves to sub-regional co-operation in the foreseeable future. Evidently, as demand grows, sub-regional projects would give way to multi-national projects in as much as multi-national projects would give way to purely national industries.

151. Although multi-national and sub-regional projects constitute the key to a rapid development of the building materials industry in the sub-region, it will be appreciated that national building material industries are of primary importance to the sustained growth of the industry. The development of secondary industries based on multi-national and sub-regional projects should be fostered with a view to laying the basis for promoting technical know-how and securing national diversification of productions. For example, steel re-rolling mills, corrugating of metal sheets, metal joinery industries, wire products, etc., could suitably be undertaken at the national level. The improvement and intensified development and utilization of local materials must command greater attention of national policies. It is through a concerted attack on all potential and feasible sources of building materials and the maximum economic utilization of resources that a major step could be taken to satisfy the increasing needs of the construction industry.

(c) The Problem of Training Skilled Manpower

152. The training of manpower to cope with a rapidly growing demand raises yet another bottleneck for the implementation of construction projects. Let alone the vastly increased needs of the 'eighties, the skilled manpower needs of the sub-region in the 'sixties were not satisfied by local supply, and the shortages had to be made up by redruitments from sources external to the sub-region and continent. Indeed, the situation as regards the higher levels of manpower needs (architects, planners, engineers and building technicians is better discribed as vacuum than as a shortage.

153. Under the circumstances, conventional training programmes are no doubt inadequate to cope with the problem of manpower needs of the sub-region effectively. It has been suggested <sup>1/</sup> that the training targets for dynamic growth could be conceived along the following pattern in quantitative terms:-

Level 3:	Architects and planners	1-3 annual output per million inhabitants
	Civil structural sanitary and municipal engineers	3-5 annual output per million inhabitants
Level 2	Building technicians	15-30 annual output per million inhabitants
Level 1:	Skilled workers and foremen	200-400 annual output per million inhabitants

Such a programme would imply that by 1980, the annual outputs of the sub-region should reach 600-1,200 for level 3, 2,200-4,400 for level 2, and 30,000 for level 1.

154. The orders of magnitude indicated above are based on the assumption that a balanced output will be maintained over long periods of time between the specialists turned out at the different levels of education. The relatively low figure indicated for architects and engineers assumes that three to five times as many building technicians at level 2 will be trained every year. If this were not the case, professionals qualified from level 3 would have to be diverted from their functions to fill the gaps left by the inadequacy of level 2.

<sup>1/</sup> See Housing in Africa, ECA, 1965.

155. The emphasis on technical training in developing countries should be comparatively greater than in countries with developed economies. Not only must their rate of output of skilled manpower be aimed at a high level, but training methods must be adapted to their specific requirements and conditions. For example, the lack of textbooks on technical subjects specifically designed to take into account the experience of African students and the ultimate purpose of their training is felt to constitute a serious obstacle to the rapid expansion of construction activities.

156. Whatever pace is adopted for devising and implementing long-term training programmes, the shortage of skilled manpower will be such that output of conventional training programmes can not substantially affect the supply of skilled manpower. Emergency training programmes will have to be established to cope with immediate needs, without losing sight of the ultimate aims of long-term plans.

(d) The Need for the Reorganization and Improvement of the Contracting Industry

157. The expansion and reorganization of the contracting industry constitutes yet another vital concern of policy actions. It has been seen that the sub-region is dependent on foreign enterprises or foreign-owned local enterprises for the execution of major construction projects. A noticeable emergence of medium-sized indigenous entrepreneurs has not yet taken place, which further aggravates the chances of the large numbers of small and artisan contractors to assume greater responsibilities in the construction industry. The prevailing structure and operation of the contracting industry are conducive to high construction costs and if the situation is allowed to continue the performance of the industry for a given level of investment will decline progressively.

158. It is, of course, the general lack of adequately trained contractors which is the root of the problem. But, in addition, local contractors are at a disadvantage from the point of view of access to financial sources since in general their credit worthiness is low, whilst foreign enterprises can count on the world financial market for loans to undertake any size

of work. Moreover, the lack of continuity of construction projects on one side and the lack of mobility of local contractors to take advantage of job opportunities in another country on the other side, discourage investments in new equipments and, in turn, improvement in efficiency. By its very nature, the present system of classifying contractors according to their past performances, and the system for awarding contracts based on such classification is not conducive to the rapid growth of local contractors - which means in short that unless a complete reorientation of policies is achieved, the prevailing structure will be perpetuated.

159. The central policy issue in this case can be described as the promotion of local contractors at every level. Governments might choose alternative means to arrive at the same solution. The setting up of national construction corporations for major projects might be thought an appropriate intermediate solution until the country produces an adequate number of suitable entrepreneurs. A massive training programme combined with a policy of incentives and guidance might also be considered an equally effective tool for localizing the contracting business. But, whatever method is employed, the policy must be clearly defined in its short and long-term objectives and must be elaborated with the specific national needs and conditions in mind. It must be a deliberate policy, but at the same time the ultimate objectives of increasing the performance and the efficiency of the construction industry must not be blurred or shelved.

(e) Towards Comprehensive Planning of the Construction Industry

160. The complex and interrelated problems of the construction industry and in particular those that are raised by a fast growth of the industry within the prospects of accelerated economic development cannot effectively be tackled in isolation of each other. Policy consideration must encompass the whole range of factors influencing the construction industry and chart out the best co-ordinated path. The problem of the construction industry is not only defined by the problem of material and labour inputs and the organization of the contracting business, but also by other equally important factors. Continuity of construction programmes, technical, administrative



and supervisory machinery for planning and executing projects, research and documentation facilities, by-laws and standards are some of the factors to which the attention of policies must also be directed.

161. In addition, the elaboration of a comprehensive construction policy should be based on clearly defined economic and social objectives and alternatives. Governments might decide on using the construction industry to fight under-employment and unemployment. For this purpose, construction methods will need to be made labour-intensive, and at the same time measures will have to be undertaken to ensure that the method would not prove wasteful in the use of scarce resources, especially of investment funds. It would be appreciated that the case for labour-intensive public works is strong in that in addition to creating employment opportunities on a large scale, it also would secure savings in foreign exchange which would otherwise have been spent on the acquisition of expensive capital goods on which modern civil engineering and public works have come to depend heavily. Moreover, the problems of maintaining such equipment and the need to create continuous work to justify its depreciation would be avoided. Manual labour has also operational advantages for small and scattered projects because of its great flexibility. In these cases it is bound to be more effective, often more economical and sometimes the only feasible method even with the present relatively inefficient methods of working.

162. But labour-intensive methods also have their disadvantages especially when the project is large. The rate of output is low and the method can rarely attain the high rates of output possible with machinery, even if it can compete in terms of cost. The deployment of the labour force raises serious problems of organization. Important investments of a non-productive character such as workers' temporary housing, health facilities and welfare amenities might be required. Finally, it should also be noted that machinery is irreplaceable in certain types of work such as breaking up of hard materials, lifting of materials through great heights, excavation under water, etc.

163. These arguments stress the point that it is not possible to be definitive a priori as to the choice of methods. The choice has furthermore to take into consideration the ultimate objective of increasing labour productivity. In the limited context of public works, productivity can only be increased by increasing output per unit of time through the use of up-to-date production techniques. But this principle evidently runs counter to the objectives of labour-intensive methods, and moreover it assumes that a transformation of the economic and social structure has taken place, and consequently also of employment.

164. Yet in developing countries the stress is laid on the problems of unemployment and under-employment. The question of productivity in public works must be examined within the wider framework of economic and social development, and not only from the point of view of immediate returns. Confronted with the dual objectives of promoting employment on one side and increasing productivity on the other, and convinced that both are vital to development needs, developing countries must aim at reconciling these apparently conflicting objectives. The prospects for increased productivity of labour-intensive methods are, in the face of the prevailing low-level of productivity, considerable in the West African sub-region. The objective of improving productivity could be partly satisfied through actions that would eliminate prevailing wastage of resources from badly organized work, badly run work sites, and a poorly utilized labour force. In the short-run, therefore, there need not exist a clash of objectives; and in the long-run it could be envisaged that the desired transformation of economic and social structures and, inter-alia, employment opportunities would have taken place.

165. The industrialization of building is bound to attract the increasing attention of government policies. The magnitude of estimated demand is of such an order that vast expansions of the capacity of the construction industry would have to be realized to cope with it. Further, it has been seen that the expansion of the supply factors is a time consuming process, since it involves the major development of the building materials industry,

the training of skilled manpower, the reorganization of the contracting business, and the development of planning and research facilities. Under these circumstances, the demand pressure would very likely give rise to an inflationary tendency.

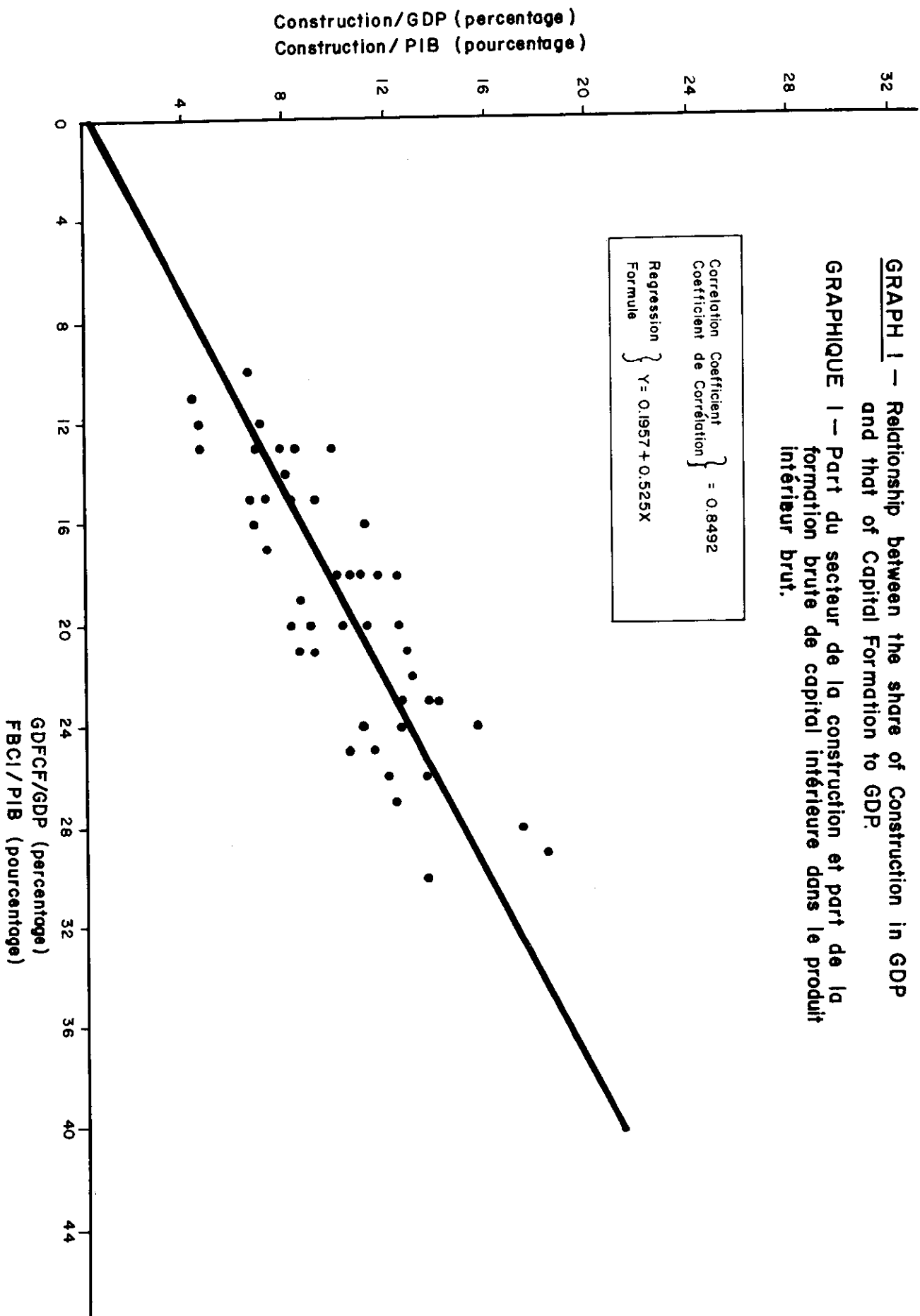
166. The need to economize on limited supply of resources and the desire to reduce construction costs, on the one hand, and the assurance of a sustained housing and building programme, on the other, might convince governments to start industrialization of building at least on a limited scale. Industrialization of building in the sense of mass production of prefabricated elements would in all probability prove the only means of coping with the estimated housing needs of the sub-region in the eighties. But the change to full-scale building industrialization must be planned within the framework of general economic development.

167. These then are some of the argument for centralizing the planning of the construction industry. Neither the technical problems, nor the economic choices, nor the social objectives should be treated in isolation. A sound and dynamic policy for the construction industry can only emerge from a complete and profound study of every factor and its relevance to the overall objective. The present structure of government departments dealing with construction (public works ministries, housing ministries, etc.) reflecting as they do the pattern of industrialized countries, falls short of satisfying the short and long-term needs that arise out of rapid economic growth. A major reorganization of existing government departments or, alternatively, a new centralized agency is felt to be timely and justifiable. Such a department charged with the overall and specific problems of the construction industry could be instrumental to a dynamic and balanced growth of this important economic sector. As it would be knowledgeable of all aspects of the construction industry, the centralized national agency would not only facilitate international co-operation but also make it effective in such important areas as exchange of know-how, applied research, and skilled manpower. In this way, the elaboration of short and long-term plans and policies would be facilitated and follow-up actions ensured.

168. It is through far-sighted comprehensive planning and co-ordinated attack on all the problems influencing the construction industry that the central objectives of (a) reducing construction costs and increasing the performance of the industry and (b) maximizing the contribution of the construction industry to overall economic and social progress, could be achieved.

**GRAPH 1 — Relationship between the share of Construction in GDP and that of Capital Formation to GDP.**

**GRAPHIQUE 1 — Part du secteur de la construction et part de la formation brute de capital intérieure dans le produit intérieur brut.**



**GRAPH 2 — Diagrammatic Representation of the share of construction in Capital Formation and the share of Capital Formation in GDP**

**GRAPHIQUE — Part du secteur de la construction dans la formation brute de capital intérieur et part de la formation brute de capital intérieur dans le produit intérieur brut.**

